



520 Green Lane
Union, NJ 07083

T: (908) 662-8448
F: (908) 662-8496

dfranco@sjindustries.com

Deborah M. Franco, Esq.
Vice President, Clean Energy and Sustainability

July 31, 2020

Electronic Filing

Aida Camacho-Welch, Secretary
NJ Board of Public Utilities
44 South Clinton Avenue, 3rd Floor, Ste 314
P. O. Box 350
Trenton, NJ 08625-0350

**Re: In the Matter of the Petition of Elizabethtown Gas Company to Revise The
Remediation Adjustment Clause Component Of Its Societal Benefits Charge Rate
BPU Docket No. _____**

Dear Secretary Camacho-Welch:

Enclosed herewith is Elizabethtown Gas Company's Petition to Revise the Remediation Adjustment Clause Component Of Its Societal Benefits Charge Rate, which has been filed electronically today utilizing the Board's e-filing Program. Due to the pandemic, and in accordance with the New Jersey Board of Public Utilities ("BPU") March 19, 2020 and May 20, 2020 Orders issued in BPU Docket No. EO20030254, hard copies are not being provided at this time, but can be provided at a later time, as needed.

Please do not hesitate to contact me with any questions you may have. Thank you for your attention to this matter.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read "Deborah M. Franco", is written over a light blue horizontal line.

Deborah M. Franco

DMF:caj
Enclosures

cc: Service list (electronically)

**IN THE MATTER OF THE PETITION OF ELIZABETHTOWN GAS COMPANY
TO REVISE THE REMEDIATION ADJUSTMENT CLAUSE COMPONENT
OF ITS SOCIETAL BENEFITS CHARGE RATE
BPU DOCKET NO. GR_____**

SERVICE LIST

Steven Cook
Elizabethtown Gas Company
520 Green Lane
Union, NJ 07083
scook@sjindustries.com

Thomas Kaufmann
Elizabethtown Gas Company
520 Green Lane
Union, NJ 07083
tkaufmann@sjindustries.com

Susan Potanovich
Elizabethtown Gas Company
520 Green Lane
Union, NJ 07083
spotanovich@sjindustries.com

Dominick DiRocco
SJI Utilities
1 South Jersey Place
Atlantic City, NJ 08401
ddirocco@sjindustries.com

Stefany Graham
SJI Utilities
1 South Jersey Place
Atlantic City, NJ 08401
sgraham@sjindustries.com

Deborah M. Franco, Esq.
SJI
520 Green Lane
Union, NJ 07083
dfranco@sjindustries.com

Stacy Peterson
Board of Public Utilities
44 South Clinton Avenue
3rd Floor, Suite 314
P.O. Box 350
Trenton, NJ 08625-0350
Stacy.Peterson@bpu.nj.gov

Scott Sumliner
Board of Public Utilities
44 South Clinton Avenue
3rd Floor, Suite 314
P.O. Box 350
Trenton, NJ 08625-0350
Scott.Sumliner@bpu.nj.gov

Heather Weisband, Esq.
Board of Public Utilities
44 South Clinton Avenue
3rd Floor, Suite 314
P.O. Box 350
Trenton, NJ 08625-0350
Heather.Weisband@bpu.nj.gov

Stefanie A. Brand, Director
Division of Rate Counsel
140 East Front Street, 4th Floor
P.O. Box 003
Trenton, NJ 08625
smassey@rpa.nj.gov

Maura Caroselli, Esq.
Division of Rate Counsel
140 East Front Street, 4th Floor
P.O. Box 003
Trenton, NJ 08625
mcaroselli@rpa.nj.gov

Brian Lipman, Esq.
Division of Rate Counsel
140 East Front Street 4th Floor
P.O. Box 003
Trenton, NJ 08625
blipman@rpa.nj.gov

Henry Ogden, Esq.
Division of Rate Counsel
140 East Front Street, 4th Floor
P.O. Box 003
Trenton, NJ 08625
hogden@rpa.nj.gov

Felicia Thomas-Friel, Esq.
Division of Rate Counsel
140 East Front Street 4th Floor
P.O. Box 003
Trenton, NJ 08625
ftthomas@rpa.nj.gov

Matko Ilic, DAG
Dept. of Law & Public Safety
Richard J. Hughes Justice Complex
Public Utilities Section
25 Market Street, P.O. Box 112
Trenton, NJ 08625
Matko.Ilic@law.njoag.gov

Pamela Owen, DAG
Dept. of Law & Public Safety
Division of Law
124 Halsey Street
P.O. Box 45029
Newark, NJ 07101
Pamela.Owen@law.njoag.gov

**STATE OF NEW JERSEY
BOARD OF PUBLIC UTILITIES**

IN THE MATTER OF THE PETITION OF :
ELIZABETHTOWN GAS COMPANY :
TO REVISE THE REMEDIATION : **BPU DOCKET NO. _____**
ADJUSTMENT CLAUSE COMPONENT OF :
ITS SOCIETAL BENEFITS CHARGE RATE :

CASE SUMMARY, PETITION, TESTIMONY AND SCHEDULES

July 31, 2020

**STATE OF NEW JERSEY
BOARD OF PUBLIC UTILITIES**

-----X		
In The Matter Of The Petition Of Elizabethtown	:	
Gas Company To Revise The Remediation	:	Docket No. GR
Adjustment Clause Component Of Its Societal	:	
Benefits Charge Rate	:	SUMMARY SHEET
-----X		

This Petition presents the request of Elizabethtown Gas Company (“Petitioner”) that the Board of Public Utilities (“Board”) accept the filing of Petitioner’s revised Remediation Adjustment Clause (“RAC”) component of the Societal Benefits Charge (“SBC”) rate. The Petitioner’s proposed RAC rate results in a decrease from \$0.0149 per therm to \$0.0082 per therm effective October 1, 2020. If approved by the Board, the proposed rate would decrease the monthly bill of a residential heating customer using 100 therms by \$0.67 or 0.6%.

**STATE OF NEW JERSEY
BOARD OF PUBLIC UTILITIES**

-----X		
In The Matter Of The Petition Of Elizabethtown	:	
Gas Company To Revise The Remediation	:	Docket No. GR
Adjustment Clause Component Of Its Societal	:	
Benefits Charge Rate	:	PETITION
-----X		

To The Honorable Board of Public Utilities:

Petitioner, Elizabethtown Gas Company (“Petitioner”), a public utility corporation duly organized under the laws of the State of New Jersey subject to the jurisdiction of the Board of Public Utilities (“Board”), respectfully states:

1. Petitioner’s principal business office is located at 520 Green Lane, Union, NJ, 07083.

2. Petitioner is engaged in the business of transmission and distribution of natural and mixed gas to approximately 298,000 customers within its service territory located principally in Hunterdon, Mercer, Middlesex, Morris, Sussex, Union and Warren Counties.

3. The purpose of this filing is to revise the rate associated with Petitioner's Remediation Adjustment Clause (“RAC”) component of the Societal Benefits Charge (“SBC”) and to reconcile costs and cost recoveries associated with the clause for the period in which the clause is applicable.

4. Annexed hereto and made a part of this Petition is Exhibit P-1, which Petitioner suggests be marked as indicated. Exhibit P-1 is the testimony and supporting schedules of Thomas Kaufmann, Manager of Rates and Tariffs for Petitioner. The following schedules supporting the tariff sheets and the derivation of the proposed RAC rate are attached and referred to in Exhibit P-1:

(a) Tariff Schedule TK-1;

(b) Forecast Schedule TK-1; and

(c) RAC Schedule TK-1 through RAC Schedule TK-6.

5. Also annexed hereto and made a part of this Petition is Exhibit P-2, which Petitioner suggests be marked as indicated. Exhibit P-2 is the testimony of Steven L. Cook, Manager of Environmental Programs for Petitioner. The following schedules are included with Mr. Cook's testimony:

(a) Schedule SLC-1 through Schedule SLC-2.

6. In a September 22, 2011 Board Order in BPU Docket Nos. GR07080645, GR08090836 and GR09080651 concerning the reconciliation of Petitioner's SBC for the 2006-2007, 2007-2008 and 2008-2009 periods, it was agreed that Petitioner would provide information responsive to certain minimum filing requirements ("MFRs") as part of future filings to reconcile its RAC rate. An Index to the MFRs is included with this Petition and attached hereto as Exhibit A. As noted in the MFR Index, some of the MFR information being provided by the Company is deemed confidential and as such will be redacted and provided to those parties executing a mutually acceptable confidentiality agreement entered into subsequent to the filing of this Petition.

The RAC Component of the SBC Rate

7. Petitioner's current RAC rate, a component of the SBC, of \$0.0149 per therm was approved by the Board in a March 9, 2020 Order authorizing that rate to become effective April 1, 2020 in Docket No. GR19070871.

8. In the current proceeding, Petitioner has proposed a new RAC rate of \$0.0082 per therm. Petitioner's RAC-related costs reflected in the calculation of the RAC factor is based on data for the period July 1, 2019 through June 30, 2020 plus prior period true-up amounts. In this year's filing, the rate is designed to recover approximately \$3.9 million as reflected on RAC Schedule TK-1 Line 4.

9. In accordance with Petitioner's tariff, the RAC component is determined by first calculating the sum of (a) one seventh of Petitioner's net deferred remediation costs incurred during the twelve months ended June 30th, for the periods ending 2020, 2019, 2018, 2017, 2016, 2015 and 2014, less the deferred tax benefit, as shown on RAC Schedule TK-2 pages 1 through 7. The calculation of the proposed rate of \$0.0082 per therm is described and detailed in Mr. Kaufmann's testimony. Interest accrued on RAC-related costs is calculated in the manner approved by the Board in its Order in BPU Docket No. GX99030121 dated March 30, 2001, *et al.* 10.

10. As discussed in the testimony of Mr. Cook, Petitioner owns, owned and/or operated six former MGP sites located at Erie Street in Elizabeth, South Street in Elizabeth, Rahway, Perth Amboy, Flemington and Newton. Petitioner's remediation costs are incurred to enable Petitioner to comply with applicable laws and regulations in a prudent manner.

11. Under the RAC, the total annual charge to Petitioner's customers during any Recovery Year may not exceed five percent (5%) of Petitioner's total revenues from sales, transportation and storage services during the annual July 1 through June 30 period. As set forth in Exhibit P-1, the application of this cap calculation does not require a reduction in the remediation costs recoverable during the 2021 Recovery Year, which is the twelve month period ending September 30, 2021.

12. Under the RAC, Petitioner is required to project its anticipated remediation costs for the July 1, 2020 through June 30, 2021 Remediation Year. As discussed by Mr. Cook, Petitioner estimates that it will incur approximately \$15 million of net deferred remediation costs during that period. However, this is only an estimate. Petitioner's actual costs will be determined by its need to comply with applicable environmental laws and regulations in a prudent manner.

Overall Impact

13. The overall impact of Petitioner's proposed rate in this proceeding is a decrease in the monthly bill of a residential heating customer using 100 therms by \$0.67, from \$106.14 to \$105.47, or a decrease of 0.6% as compared to the currently effective rates.

Miscellaneous

14. Petitioner is serving notice and a copy of this Petition, together with a copy of the exhibits and schedules annexed hereto on the Director, Division of Rate Counsel via electronic mail in lieu of providing hard copies. Due to the pandemic, and in accordance with the BPU's March 19, 2020 and May 20, 2020 Orders issued in BPU Docket No. EO20030254, hard copies cannot be provided at this time, but can be provided at a later time, as needed.

15. Similarly, Petitioner is also serving this notice and a copy of this Petition on the Department of Law and Public Safety via electronic mail in lieu of providing hard copies, but hard copies can be provided at a later time, as needed.

WHEREFORE, Petitioner respectfully requests that the Board (1) accept Petitioner's filing, (2) allow the proposed RAC rate and associated proposal to become effective October 1, 2020; (3) grant any waivers of Petitioner's tariff or Board regulations as may be required, and (4) grant such other relief as the Board may deem just and proper.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read "Deborah M. Franco".

Deborah M. Franco, Esq.
Vice President, Clean Energy and Sustainability
SJI

Date: July 31, 2020

Communications addressed to the Petitioner
in this case are to be sent to:

Deborah M. Franco, Esq.
Vice President, Clean Energy and Sustainability
SJI
520 Green Lane
Union, New Jersey 07083
908-662-8448
dfranco@sjindustries.com

Dominick DiRocco
Vice President, Rates and Regulatory Affairs
SJI Utilities, Inc.
1 South Jersey Place
Atlantic City, New Jersey 08401
ddirocco@sjindustries.com

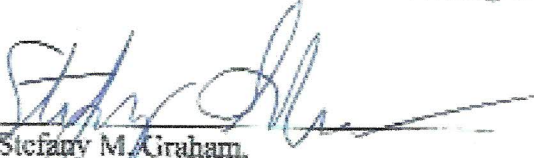
Stefany Graham
Director, Rates and Regulatory Affairs
SJI Utilities, Inc.
1 South Jersey Place
Atlantic City, NJ 08401
sgraham@sjindustries.com

Verification

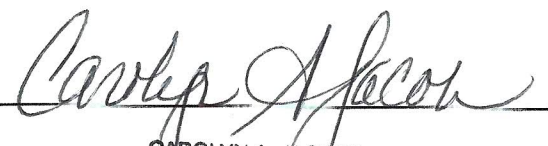
I, Stefany M. Graham, of full age, being duly sworn according to law, upon my oath, depose and say:

1. I am Director, Rates & Regulatory Affairs of SJI Utilities Inc., the parent company to Elizabethtown Gas Company ("Company") and I am authorized to make this verification on behalf of the Company.

2. I have reviewed the within petition and the information contained therein is true according to the best of my knowledge, information and belief.


Stefany M. Graham,
Director, Rates & Regulatory Affairs

Sworn to and subscribed to before me this 31st day of July, 2020.


CAROLYN A. JACOBS

NOTARY PUBLIC OF NEW JERSEY

My Commission Expires October 28, 2023



**ELIZABETHTOWN GAS COMPANY
REMEDIAL ADJUSTMENT CLAUSE (“RAC”)
MINIMUM FILING REQUIREMENTS (MFR) INDEX**

Minimum Filing Requirements	Schedule
1. Please provide a vendor listing for the prior RAC period that contains information concerning vendor expenditures by MGP site, also showing a description of the services provided and the amount of each vendor invoice. The vendor list should include the monthly actual expenditures for the twelve month RAC period.	SLC-2
2. Identify the three MGP sites with the highest level of expenditures during the prior RAC period. For each identified site, provide a copy of the latest work plan, remediation report, or major work product submitted to the NJDEP. The copies should include the narrative portion of the report or work plan but need not include the technical supporting workpapers, charts and tables.	SLC-2
3. For each of the same three MGP sites, provide all correspondence between the Company and the NJDEP concerning submissions for the site, reply comments, and other major items which have a material impact on remediation activities and associated costs incurred by the Company. The correspondence should span the twelve months of the most recent RAC period.	SLC-2
4. For each of the same three MGP sites, provide expense documentation for any contractor or supplier whose invoices for the RAC period exceed \$250,000 in aggregate. The expense documentation should include descriptions of services rendered, applicable invoices, and any tracking of invoiced charges vs. budgets. The expense detail need not include expense reports or time sheets, but it should include supporting documentation for any subcontractor and third party expenses totaling \$100,000 or more for the period.	SLC-2 Confidential
5. For each of the same three MGP sites, provide a narrative description and organization chart for that site, showing the vendors and project control structure for the remediation effort. The response should show what entities supervise all significant contractors and subcontractors and which Company personnel are involved in site and remediation supervision and control.	SLC-2
6. Provide a detailed narrative describing Company activities and any reimbursements related to insurance claims or potentially responsible parties' liabilities for all of the Company's MGP sites. The narrative, with supporting documentation, should cover the prior RAC period. In addition, the Company should provide a listing of all insurance reimbursements received from each insurance company through the end of the year covered by the filing, but need not disclose any insurance company's identity.	SLC-2
7. Provide copies of any RAC audit reports or related materials prepared by the Board's Audit Staff, FERC, or the Company's internal or external auditors during the previous twelve months. To the degree applicable, please also provide any materials prepared in response to the audits or in compliance with any audit findings.	SLC-2 Confidential
8. Provide a narrative concerning all material events, whether related to NJDEP mandates or not, which could have an impact on the Company's ultimate MGP remediation liability, with claimed confidential information provided pursuant to a confidentiality agreement. The narrative should encompass all sites, whether or not active remediation efforts on the site are under way.	SLC-2
9. Provide schedules and supporting workpapers and documents, which show the reconciliation of the prior period RAC expenditures and recoveries as well	RAC TK-2

**ELIZABETHTOWN GAS COMPANY
REMEDATION ADJUSTMENT CLAUSE (“RAC”)
MINIMUM FILING REQUIREMENTS (MFR) INDEX**

Minimum Filing Requirements	Schedule
as the derivation of the deferred tax credit and the interest accrual on any unamortized balances.	
10. Provide the Company’s bid evaluation studies, reports, workpapers or other material related to the two largest MGP remediation contracts awarded during the previous RAC period. The response should include the criteria utilized for bid evaluation and the comparisons between the terms and conditions offered by the competitive bidders.	SLC-2
11. Provide documentation relating to the two largest supplemental contract amendments authorized by the Company during their previous RAC period. The response should provide the contractor’s request for supplemental funding, the reasons cited for the request, and the Company’s evaluation and action taken concerning the request.	SLC-2 Confidential
12. Provide documentation relating to any instances during the previous RAC period where the Company sought to modify, change, or eliminate the NJDEP site remediation requirements for any of its MGP sites. The response should provide copies of any such Company requests, the NJDEP responses, and the ultimate outcome concerning the requests.	SLC-2
13. Provide a calculation of the carrying costs that the Company seeks to recover in its filing, including workpapers and supporting documentation.	RAC TK-3
14. The Company currently provides a schedule that summarizes the expenditures incurred by major cost category by site on a quarterly basis. These data will be reported with its annual filing.	SLC-2
15. For each of the Company’s MGP sites, provide a schedule showing the status of the remediation effort and estimated dates for the completion of remaining milestones, along with a discussion of major remediation problems. The parties understand that the timeframes to complete the remediation efforts are subject to a great deal of uncertainty due to factors beyond the Company’s control.	SLC-2
16. Provide an update concerning the status of discussions with the NJDEP concerning its NRD initiative as well as any other NRD-related activities, with claimed confidential information provided pursuant to a confidentiality agreement. Such update will include information about NRD-related expenditures during the prior RAC period and related documentation, as well as total NRD-related expenses deferred to date.	SLC-2
17. Provide information about unreasonable delays in remediation efforts caused by the inability to obtain requisite approvals, clearances or other rights from the NJDEP, local authorities or property owners, or other circumstances that are unduly impeding remediation efforts. The Company will address issues that are outside of the ordinary experience for these matters.	SLC-2
18. Provide details concerning all remediation related charges to the Company from or through the Company’s parent, SJI Utilities, and its affiliates for the past RAC period. The response should show amounts by month, by entity, and should describe the nature of services provided.	SLC-2

**IN THE MATTER OF THE PETITION
OF ELIZABETHTOWN GAS COMPANY TO REVISE THE
REMEDATION ADJUSTMENT CLAUSE COMPONENT
OF ITS SOCIETAL BENEFITS CHARGE RATE**

BPU DOCKET NO. _____

DIRECT TESTIMONY

OF

THOMAS KAUFMANN

**On Behalf Of
Elizabethtown Gas Company**

Exhibit P-1

July 31, 2020

**ELIZABETHTOWN GAS COMPANY
DIRECT TESTIMONY OF
THOMAS KAUFMANN**

1 **I. INTRODUCTION**

2 **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

3 **A.** My name is Thomas Kaufmann. My business address is 520 Green Lane, Union, New
4 Jersey 07083.

5 **Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?**

6 **A.** I am employed by Elizabethtown Gas Company (“Elizabethtown” or “Company”) as
7 Manager of Rates and Tariffs.

8 **Q. WHAT IS THE SCOPE OF YOUR DUTIES AT ELIZABETHTOWN?**

9 **A.** I am responsible for designing and developing rates and rate schedules for regulatory
10 filings with the New Jersey Board of Public Utilities (“Board”) and internal
11 management purposes. I also oversee daily rate department functions, including tariff
12 administration, monthly parity pricing, competitive analyses and preparation of
13 management reports.

14 **Q. PLEASE DESCRIBE YOUR PROFESSIONAL QUALIFICATIONS AND**
15 **BUSINESS EXPERIENCE.**

16 **A.** In June 1977, I graduated from Rutgers University, Newark, N.J. with a Bachelor of
17 Arts degree in Business Administration, majoring in accounting and economics. In
18 July 1979, I graduated from Fairleigh Dickinson University, Madison, N.J. with a
19 Masters of Business Administration, majoring in finance.

20 My professional responsibilities have encompassed financial analysis,
21 accounting, planning, and pricing in manufacturing and energy services companies in

1 both regulated and unregulated industries. In 1977, I was employed by Allied
2 Chemical Corp. as a staff accountant. In 1980, I was employed by Celanese Corp. as
3 a financial analyst. In 1981, I was employed by Suburban Propane as a Strategic
4 Planning Analyst, promoted to Manager of Rates and Pricing in 1986 and to Director
5 of Acquisitions and Business Analysis in 1990. In 1993, I was employed by
6 Concurrent Computer as a Manager, Pricing Administration. In 1996, I joined NUI
7 Corporation (“NUI”) as a Rate Analyst, was promoted to Manager of Regulatory
8 Support in August 1997 and Manager of Regulatory Affairs in February 1998, and
9 named Manager of Rates and Tariffs in July 1998. NUI Corporation was acquired by
10 AGL Resources Inc. (“AGL”) in November 2004. AGL was acquired by Southern
11 Company in July 2016. SJI acquired Elizabethtown in July 2018.

12 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?**

13 **A.** I will discuss the derivation of the Remediation Adjustment Clause (“RAC”)
14 component of the Societal Benefits Charge (“SBC”) rate to be assessed to the
15 Company’s customer classes subject to the RAC for the 2021 Recovery Year, which is
16 the twelve month period ending September 30, 2021.

17 **Q. WHAT EFFECTIVE DATE IS THE COMPANY PROPOSING FOR THE RAC**
18 **RATE?**

19 **A.** The Company is proposing that the final proposed RAC rate take effect on October 1,
20 2020.

21 **Q. WHEN WAS THE COMPANY’S RAC RATE LAST REVISED?**

22 **A.** This rate was last revised by a March 9, 2020 Order (“March 9 Order”) with an
23 effective date of April 1, 2020 in Docket No. GR19070871. The March 9 Order

1 resolved the Company's 2019 annual RAC reconciliation filing and approved the
2 Company's current RAC rate of \$0.0149 per therm.

3 **Q. DOES YOUR TESTIMONY INCLUDE ANY ILLUSTRATIVE SCHEDULES?**

4 **A.** Yes. My testimony includes schedules and proposed tariff sheets that were prepared
5 under my direction and supervision. As explained in the Petition, some of these
6 schedules contain information responsive to the Minimum Filing Requirements
7 ("MFRs") agreed to in a Board Order involving the Company's 2007, 2008 and 2009
8 SBC filings. An Index to the MFRs is included with the Petition as Exhibit A. The
9 schedules are as follows:

10 (1) **Tariff Schedule TK-1** consists of revised tariff sheets in redlined and clean
11 form which reflect the proposed RAC rate.

12 (2) **Forecast Schedule TK-1** provides the level of forecast sales and services for
13 the 2021 Recovery Year, which was utilized in the calculation of the RAC rate.

14 (3) **RAC Schedule TK-1** sets forth the calculation of the proposed RAC rate for
15 the 2021 Recovery Year.

16 (4) **RAC Schedule TK-2** consists of seven pages and presents the calculation of
17 the recoverable portion of remediation costs for the twelve months ended June
18 30, 2020, 2019, 2018, 2017, 2016, 2015 and 2014, respectively, to be recovered
19 through the RAC rate.

20 (5) **RAC Schedule TK-3** sets forth the calculation of carrying costs applied to the
21 RAC consistent with the Board's Order dated March 30, 2001 in Docket No.
22 GX99030121, *et al.*

23 (6) **RAC Schedule TK-4** sets forth the prior year reconciliation of 2020 Recovery
24 Year recoverable costs versus actual and projected recoveries for the twelve

month period ended June 30, 2020, which is included in the calculation of the RAC rate.

(7) **RAC Schedule TK-5** sets forth the calculation to determine whether Elizabethtown's proposed recovery of remediation costs exceeds 5% of the Company's total revenues from sales, transportation and storage services during the twelve months ended June 30, 2020.

(8) **RAC Schedule TK-6** sets forth the actual and estimated RAC recoveries for the twelve months ended June 30, 2020.

II. REVENUE FORECAST

Q. WHAT IS THE METHODOLOGY USED TO PROJECT FIRM SALES AND SERVICES FOR THE RECOVERY YEAR IN ORDER TO DERIVE THE COMPANY'S CALCULATED RAC RATE?

A. The methodology used is the same as that used in the demand forecast which supports Elizabethtown's Basic Gas Supply Service ("BGSS") rates. A summary of the forecast of normalized sales and services is set forth on Forecast Schedule TK-1.

Q. WHAT PERIOD IS COVERED BY THE DEMAND FORECAST?

A. The gas sales demand forecast as set forth on Forecast Schedule TK-1 for the RAC is for the twelve month period ended September 30, 2021, a period of 12 months, also referred to as the 2021 Recovery Year.

Q. WERE THE COMPANY'S FIRM AND NON-FIRM SALES AND TRANSPORTATION REVENUE FORECASTS PREPARED USING THE SAME METHODOLOGY USED BY THE COMPANY IN PREPARING LAST YEAR'S REVENUE FORECASTS?

1 **A.** Yes. The Company continues to use regression equations based on actual historical
2 sales demand data as well as any known customer changes to develop the forecast
3 demand.

4 **III. THE RAC COMPONENT OF THE SBC RATE**

5 **Q. PLEASE DESCRIBE THE SBC.**

6 **A.** The SBC currently consists of the following components: (1) the RAC, (2) the New
7 Jersey Clean Energy Program (“CEP”), (3) the Universal Service Fund (“USF”) charge,
8 and (4) the Lifeline charge.

9 **Q. WHAT CUSTOMERS ARE ASSESSED THE SBC?**

10 **A.** The SBC charge is applicable to all customers, with the exception of those exempt from
11 the charge pursuant to the Long-Term Capacity Agreement Pilot Program legislation
12 enacted on January 28, 2011.

13 **Q. IS THE COMPANY PROPOSING ANY CHANGES TO THE CEP, USF OR**
14 **LIFELINE RATES IN THIS FILING?**

15 **A.** No, the reconciliations of those rates are addressed in separate filings.

16 **Q. WHAT RAC RATE HAS THE COMPANY PROPOSED IN THIS FILING?**

17 **A.** Elizabethtown has proposed a RAC rate of \$0.0082 per therm, which is a decrease of
18 \$0.0067 per therm from its currently effective RAC rate of \$0.0149 per therm.

19 **Q. PLEASE EXPLAIN HOW THIS RAC RATE WAS CALCULATED.**

20 **A.** The RAC rate is calculated by determining the sum of one seventh of the Company’s
21 net deferred remediation costs, less the deferred tax benefit associated with the
22 unamortized balances of these costs during each of the Remediation Years ended June
23 30, 2020, 2019, 2018, 2017, 2016, 2015 and 2014 respectively, as shown on Pages 1-
24 7 of RAC Schedule TK-2, and adjusted for applicable carrying costs as shown on RAC

1 Schedule TK-3, and the prior year's over or under-recovery balance shown on RAC
2 Schedule TK-4. All of these items are as shown on RAC Schedule TK-1. The net total
3 represents the amount to be recovered in the 2021 Recovery Year through the RAC
4 component, as shown on RAC Schedule TK-1. This total is then divided by the
5 volumes projected for the Recovery Year for the service classifications and customers
6 subject to the SBC as shown on Forecast Schedule TK-1, with the resulting quotient
7 adjusted for applicable taxes to arrive at a proposed RAC rate of \$0.0082 per therm.

8 **Q. WHAT IS THE LEVEL OF DEFERRED REMEDIATION COSTS ELIGIBLE**
9 **FOR RECOVERY FOR THE REMEDIATION YEAR ENDED JUNE 30, 2020?**

10 **A.** The level of total deferred remediation costs for the twelve month period ended June
11 30, 2020 is \$2,280,307 as discussed in the testimony and supporting schedules of
12 Company witness Steven L. Cook. The amount is then adjusted for third party
13 recoveries and deferred insurance litigation costs as shown on RAC Schedule TK-2,
14 page 1 of 7. The resulting net amortizable amount is divided by seven and adjusted for
15 the deferred tax benefit as set forth on line 5 on RAC Schedule TK-2, page 1 of 7 line
16 5. This amount is further adjusted for a deferred tax amount described below, yielding
17 (\$623,760) for the current remediation year and is the same methodology applied to
18 the prior years that are being amortized

19 **Q. WHAT ARE THE CURRENT REMEDIATION COSTS ELIGIBLE FOR**
20 **RECOVERY?**

21 **A.** The table below presents the eligible recoverable costs after adjusting for a deferred
22 tax benefit by year as shown on RAC Schedule TK-2 pages 1 through 7 as well as each
23 year's filing status:

<u>Year</u>	<u>Eligible Amount</u>	<u>Filing Status / Date Approved:</u>
2020	(\$623,760)	
2019	(\$461,818)	March 9, 2020 in Docket No. GR19070871
2018	\$3,725,783	May 8, 2019 in Docket No. GR18080885
2017	\$2,170,503	October 29, 2018 in Docket No. GR17091005
2016	(\$3,241,834)	September 22, 2017 in Docket No. GR16080794
2015	(\$3,662,485)	July 12, 2016 in Docket No. GR15101210
2014	\$541,324	June 18, 2015 in Docket No. GR14101135
Total	<u>(\$1,552,287)</u>	

1

2 **Q. HOW IS THE DEFERRED TAX BENEFIT CALCULATED?**

3 **A.** The deferred tax benefit is calculated by multiplying the unamortized portion of the
4 Company's net deferred remediation costs by the effective statutory income tax rate
5 and the RAC Interest Rate. In accordance with the Board's Order dated July 8, 1999 in
6 Docket No. GR98080535, *et al.*, the statutory tax rate used in the calculation of the
7 deferred tax benefit is 40.85% and includes Corporate Business Tax for the years
8 through 2017. Due to the January 1, 2018 change in the Federal Income Tax rate which
9 results in a combined rate of 28.11%, the Company has used a weighted tax rate for
10 2018 of 36.92% based on the amount of spending during the applicable 2017 and 2018
11 months. The statutory tax rate used for 2019 forward is 28.11%. This calculation
12 results in a deferred tax benefit of \$26,219 for the twelve months ended June 30, 2020.
13 This calculation is presented in RAC Schedule TK-2, page 1 of 7 which is the same
14 methodology applied to the prior years that are being amortized.

15 **Q. WHAT ARE THE RESULTS OF THE PRIOR YEAR'S RECOVERY**
16 **RECONCILIATION?**

17 **A.** RAC Schedule TK-4 provides a reconciliation of the 2020 Recovery Year which shows
18 an estimated under-recovery balance of \$5,082,373 as of June 30, 2020.

1 **Q. WHAT LEVEL OF COSTS IS THE PROPOSED RAC RATE DESIGNED TO**
2 **RECOVER?**

3 **A.** The proposed RAC rate is designed to recover an amount of \$3,854,744 as set forth on
4 RAC Schedule TK-1, Line 4.

5 **Q. PLEASE DESCRIBE THE ANNUAL CAP CALCULATION.**

6 **A.** Under the RAC, total annual remediation costs charged to the Company's customers
7 during any recovery year may not exceed five percent (5%) of the Company's total
8 revenues from sales, transportation and storage services during the preceding July 1
9 through June 30 period. For the twelve month period ended June 30, 2020, total
10 revenues were \$342,104,910. RAC Schedule TK-5 illustrates that the estimated total
11 remediation costs do not exceed the five percent cap based on last year's revenues.

12 **Q. ARE CARRYING COSTS INCLUDED IN THE RAC CALCULATION?**

13 **A.** Yes. In accordance with the Board's Order dated March 30, 2001 in Docket No.
14 GX99030121 *et al.*, the Company is permitted to recover carrying costs.

15 **Q. HOW ARE THE CARRYING COSTS CALCULATED?**

16 **A.** Carrying cost rates are applied to each year's net prior year balance and current year
17 expenditures and recoveries. The interest rate is based on the rate available from seven
18 year constant maturity Treasury securities established closest to August 31st of each
19 year plus 60 basis points. This interest rate, currently 2.05%, is applied to monthly net
20 RAC balances as shown on RAC Schedule TK-3. Interest on monthly balances is not
21 compounded.

1 **IV. CONCLUSION**

2 **Q. PLEASE SUMMARIZE THE PROPOSED CHANGE TO THE RAC RATE**
3 **AND THE IMPACT OF THE PROPOSED RATE CHANGE ON A**
4 **RESIDENTIAL CUSTOMER.**

5 **A.** The total impact of the proposed October 1, 2020 adjustment to the rate from \$0.0149
6 per therm to the proposed RAC rate of \$0.0082 per therm on a residential customer
7 using 100 therms is a decrease to the customer's monthly bill of \$0.67 from \$106.14 to
8 \$105.47, or a decrease of 0.6%, as compared to the Company's currently effective rates.

9 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

10 **A.** Yes, it does.

ELIZABETHTOWN GAS COMPANY

B. P. U. NO. 17 – GAS

~~1st~~ REVISED SHEET NO. 115

RIDER "D"

SOCIETAL BENEFITS CHARGE ("SBC")

Applicable to all tariff Service Classifications except those Customers under special contracts that explicitly do not permit the Company to apply increased charges as filed and approved by the BPU and those customers exempted pursuant to the Long-Term Capacity Agreement Pilot Program ("LCAPP"), P.L. 2011, c.9, codified as N.J.S.A. 48:3-60.1. See the LCAPP Exemption Procedures at the end of this Rider.

The SBC is designed to recover the components listed below and any other new programs which the Board determines should be recovered through the Societal Benefits Charge.

<u>SBC Rate Components:</u>		<u>Per Therm</u>
I.	New Jersey Clean Energy Program ("CEP")	\$0.0213
II.	Remediation Adjustment Charge ("RAC")	\$0.0149 <u>0.0082</u>
III.	<u>Universal Service Fund and Lifeline:</u>	
	1. Universal Service Fund ("USF")	\$0.0066
	2. Lifeline	<u>\$0.0055</u>
TOTAL		\$0.0483 <u>0.0416</u>

The charges applicable under this Rider include provision for the New Jersey Sales and Use Tax, and when billed to customers exempt from this tax shall be reduced by the amount of such tax included therein.

I. New Jersey Clean Energy Program Component ("CEP")

The Comprehensive Resource Analysis ("CRA") name was changed to the Clean Energy Program - CEP per Board Order dated January 22, 2003 in Docket No. EX99050347 *et.al*. The CEP is a mechanism that will (1) establish a rate to recover the costs of the Core and Standard Offer Programs in the Company's CEP Plan which was approved by the BPU in Docket No. GE92020104, and (2) compensate the Company for the revenue erosion resulting from conservation savings created by the Standard Offer Program. The annual recovery period for the CEP is from October 1 through September 30. The CEP recovers program costs and revenue erosion incurred during the previous CEP year ended June 30.

- CEP program costs include the costs of core programs, standard offer payments and any administrative costs not recovered directly from standard offer providers.

Date of Issue: ~~March 16, 2020~~Effective: Service Rendered
on and after ~~April 1, 2020~~

Issued by: Christie McMullen, President
520 Green Lane
Union, New Jersey 07083

Filed Pursuant to Order of the Board of Public Utilities

Dated ~~March 9, 2020~~ in Docket Nos. ~~GR19070871 and GR19070873~~

CLEAN

ELIZABETHTOWN GAS COMPANY

B. P. U. NO. 17 – GAS

REVISED SHEET NO. 115

RIDER "D"

SOCIETAL BENEFITS CHARGE ("SBC")

Applicable to all tariff Service Classifications except those Customers under special contracts that explicitly do not permit the Company to apply increased charges as filed and approved by the BPU and those customers exempted pursuant to the Long-Term Capacity Agreement Pilot Program ("LCAPP"), P.L. 2011, c.9, codified as N.J.S.A. 48:3-60.1. See the LCAPP Exemption Procedures at the end of this Rider.

The SBC is designed to recover the components listed below and any other new programs which the Board determines should be recovered through the Societal Benefits Charge.

<u>SBC Rate Components:</u>		<u>Per Therm</u>
I.	New Jersey Clean Energy Program ("CEP")	\$0.0213
II.	Remediation Adjustment Charge ("RAC")	\$0.0082
III.	<u>Universal Service Fund and Lifeline:</u>	
	1. Universal Service Fund ("USF")	\$0.0066
	2. Lifeline	<u>\$0.0055</u>
TOTAL		\$0.0416

The charges applicable under this Rider include provision for the New Jersey Sales and Use Tax, and when billed to customers exempt from this tax shall be reduced by the amount of such tax included therein.

I. New Jersey Clean Energy Program Component ("CEP")

The Comprehensive Resource Analysis ("CRA") name was changed to the Clean Energy Program - CEP per Board Order dated January 22, 2003 in Docket No. EX99050347 *et.al*. The CEP is a mechanism that will (1) establish a rate to recover the costs of the Core and Standard Offer Programs in the Company's CEP Plan which was approved by the BPU in Docket No. GE92020104, and (2) compensate the Company for the revenue erosion resulting from conservation savings created by the Standard Offer Program. The annual recovery period for the CEP is from October 1 through September 30. The CEP recovers program costs and revenue erosion incurred during the previous CEP year ended June 30.

1. CEP program costs include the costs of core programs, standard offer payments and any administrative costs not recovered directly from standard offer providers.

Date of Issue:

Effective: Service Rendered
on and after

Issued by: Christie McMullen, President
520 Green Lane
Union, New Jersey 07083

Filed Pursuant to Order of the Board of Public Utilities
Dated in Docket No.

ELIZABETHTOWN GAS COMPANY
FORECASTED SALES VOLUME - THERMS
RECOVERY YEAR - 2021

	SBC (RAC) *
<hr/> Residential	231,643,700
Commercial	74,979,474
Industrial	7,592,773
Interruptible	22,296
Total Sales	<hr/> 314,238,243 <hr/>
 <hr/> Residential, <i>included above</i>	-
Commercial	71,971,500
Industrial	46,017,153
Interruptible	71,163,798
Total Transportation	<hr/> 189,152,451 <hr/>
 Total Sales and Transportation	<hr/> 503,390,694 <hr/>

* Excludes LCAPP therms used for wholesale electric generation.

ELIZABETHTOWN GAS COMPANY
SOCIETAL BENEFITS CHARGE (SBC)
REMEDATION ADJUSTMENT CLAUSE (RAC)

CALCULATION OF THE RAC RATE BASED ON VOLUMES FROM
October 1, 2020 through September 30, 2021
RECOVERY YEAR - 2021

1a Recovery Year Amortization Costs (Sch. TK-2, L5, pgs 1+2+3+4+5+6+7)	(\$1,514,638)
1b Recovery Year Deferred Tax Adjustments (Sch. TK-2, L16, pgs 1+2+3+4+5+6+7)	<u>(\$37,649)</u>
1 Recovery Year Recoverable Costs (L1a +L1b)	(\$1,552,287)
2 Accrued Carrying Costs (Sch. TK-3)	\$324,658
3 Prior Year RAC Underrecovery (Sch. TK-4)	<u>\$5,082,373</u>
4 Total Recovery Year Recoverable / (Refund) Costs (L1+L2+L3)	\$3,854,744
5 Projected Normalized Sales and Services (Forecast Sch. TK-1)	503,390,694 therms
6 RAC COMPONENT, before taxes (L4/L5)	\$0.0077 /therm
7 Sales & Use Tax @ 6.625%	<u>\$0.0005</u>
8 RAC COMPONENT (L6+L7)	<u><u>\$0.0082</u></u> /therm

ELIZABETHTOWN GAS COMPANY
REMEDATION ADJUSTMENT CLAUSE

AMORTIZATION RECOVERY YEAR 2021

Y/E 6/30/20

1	Total Recoverable Costs		\$2,280,307
2	Adjustments to Recoverable Costs		\$0
2A	A. 100% of Third Party Recoveries		(\$6,815,338)
2B	B. 50% Deferred Ins. Litigation - Opening Balance		\$0
2C	C. 50% Deferred Ins. Litigation - Ending Balance		(\$14,822)
3	Less Miscellaneous Adjustments		\$0
4	Amortizable Recoverable Costs		(\$4,549,853)
5	Amortization Recoverable Cost (L4/7)		(\$649,979)
6	Deferred Tax Calculation		
7	Unamortized Recoverable Costs:		
8	Upcoming Recovery Year	2021	
9	Remediation Year	2020	
10	Difference (L8-L9)	1	
11	Unamortized Factor (7-(difference-1))/7	1	
12	Unamortized Recoverable Costs (L4*L11)		(\$4,549,853)
13	Tax Rate		28.11%
14	Deferred Taxes on Net Deferred Remediation Cost (L12*L13)		(\$1,278,964)
15	Interest on Deferred Taxes at the RAC interest rate set August 31st equal to the seven year constant maturity Treasuries plus 60 basis points.		2.05%
16	Deferred Tax Benefit (L14*L15)		\$26,219
17	2020 Remediation Year 2019-20 (L5+L16)		(\$623,760)

ELIZABETHTOWN GAS COMPANY
REMEDATION ADJUSTMENT CLAUSE

AMORTIZATION RECOVERY YEAR 2021

Y/E 6/30/19

1	Total Recoverable Costs		\$5,239,768
2	Adjustments to Recoverable Costs		\$0
2A	A. 100% of Third Party Recoveries		(\$9,334,111)
2B	B. 50% Deferred Ins. Litigation - Opening Balance		\$745,845
2C	C. 50% Deferred Ins. Litigation - Ending Balance		\$0
3	Less Miscellaneous Adjustments		\$0
4	Amortizable Recoverable Costs		(\$3,348,498)
5	Amortization Recoverable Cost (L4/7)		(\$478,357)
6	Deferred Tax Calculation		
7	Unamortized Recoverable Costs:		
8	Upcoming Recovery Year	2021	
9	Remediation Year	2019	
10	Difference (L8-L9)	2	
11	Unamortized Factor	$(7-(\text{difference}-1))/7$	0.857143
12	Unamortized Recoverable Costs (L4*L11)		(\$2,870,141)
13	Tax Rate		28.11%
14	Deferred Taxes on Net Deferred Remediation Cost (L12*L13)		(\$806,797)
15	Interest on Deferred Taxes at the RAC interest rate set August 31st equal to the seven year constant maturity Treasuries plus 60 basis points.		2.05%
16	Deferred Tax Benefit (L14*L15)		\$16,539
17	2020 Remediation Year 2018-19 (L5+L16)		(\$461,818)

ELIZABETHTOWN GAS COMPANY
REMEDATION ADJUSTMENT CLAUSE

AMORTIZATION RECOVERY YEAR 2021

Y/E 6/30/18

1	Total Recoverable Costs		\$27,414,334
2	Adjustments to Recoverable Costs		\$0
2A	A. 100% of Third Party Recoveries		\$0
2B	B. 50% Deferred Ins. Litigation - Opening Balance		\$437,769
2C	C. 50% Deferred Ins. Litigation - Ending Balance		(\$745,845)
3	Less Miscellaneous Adjustments		\$0
4	Amortizable Recoverable Costs		\$27,106,258
5	Amortization Recoverable Cost (L4/7)		\$3,872,323
6	Deferred Tax Calculation		
7	Unamortized Recoverable Costs:		
8	Upcoming Recovery Year	2021	
9	Remediation Year	2018	
10	Difference (L8-L9)	3	
11	Unamortized Factor	$(7 - (\text{difference} - 1)) / 7$	0.714286
12	Unamortized Recoverable Costs (L4*L11)		\$19,361,613
13	Tax Rate pro-rated based on Schedule TK-3 remediation costs		36.92%
14	Deferred Taxes on Net Deferred Remediation Cost (L12*L13)		\$7,148,308
15	Interest on Deferred Taxes at the RAC interest rate set August 31st equal to the seven year constant maturity Treasuries plus 60 basis points.		2.05%
16	Deferred Tax Benefit (L14*L15)		(\$146,540)
17	2020 Remediation Year 2017-18 (L5+L16)		\$3,725,783

ELIZABETHTOWN GAS COMPANY
REMEDATION ADJUSTMENT CLAUSE

AMORTIZATION RECOVERY YEAR 2021

Y/E 6/30/17

1	Total Recoverable Costs		\$15,959,849
2	Adjustments to Recoverable Costs		\$0
2A	A. 100% of Third Party Recoveries		(\$2,400)
2B	B. 50% Deferred Ins. Litigation - Opening Balance		\$200,416
2C	C. 50% Deferred Ins. Litigation - Ending Balance		(\$437,769)
3	Less Miscellaneous Adjustments		\$0
4	Amortizable Recoverable Costs		\$15,720,096
5	Amortization Recoverable Cost (L4/7)		\$2,245,728
6	Deferred Tax Calculation		
7	Unamortized Recoverable Costs:		
8	Upcoming Recovery Year	2021	
9	Remediation Year	2017	
10	Difference (L8-L9)	4	
11	Unamortized Factor	$(7 - (\text{difference} - 1)) / 7$	0.571429
12	Unamortized Recoverable Costs (L4*L11)		\$8,982,912
13	Tax Rate		40.85%
14	Deferred Taxes on Net Deferred Remediation Cost (L12*L13)		\$3,669,520
15	Interest on Deferred Taxes at the RAC interest rate set August 31st equal to the seven year constant maturity Treasuries plus 60 basis points.		2.05%
16	Deferred Tax Benefit (L14*L15)		<u>(\$75,225)</u>
17	2020 Remediation Year 2016-17 (L5+L16)		\$2,170,503

ELIZABETHTOWN GAS COMPANY
REMEDATION ADJUSTMENT CLAUSE

AMORTIZATION RECOVERY YEAR 2021

Y/E 6/30/16

1	Total Recoverable Costs		\$7,305,684
2	Adjustments to Recoverable Costs		
2A	A. 100% of Third Party Recoveries		(\$30,400,000)
2B	B. 50% Deferred Ins. Litigation - Opening Balance		\$17,090
2C	C. 50% Deferred Ins. Litigation - Ending Balance		(\$200,416)
3	Less Miscellaneous Adjustments		\$0
4	Amortizable Recoverable Costs		(\$23,277,642)
5	Amortization Recoverable Cost (L4/7)		(\$3,325,377)
6	Deferred Tax Calculation		
7	Unamortized Recoverable Costs:		
8	Upcoming Recovery Year	2021	
9	Remediation Year	2016	
10	Difference (L8-L9)	5	
11	Unamortized Factor	$(7-(\text{difference}-1))/7$	0.428571
12	Unamortized Recoverable Costs (L4*L11)		(\$9,976,132)
13	Tax Rate		40.85%
14	Deferred Taxes on Net Deferred Remediation Cost (L12*L13)		(\$4,075,250)
15	Interest on Deferred Taxes at the RAC interest rate set August 31st equal to the seven year constant maturity Treasuries plus 60 basis points.		2.05%
16	Deferred Tax Benefit (L14*L15)		\$83,543
17	2020 Remediation Year 2015-16 (L5+L16)		(\$3,241,834)

ELIZABETHTOWN GAS COMPANY
REMEDATION ADJUSTMENT CLAUSE

AMORTIZATION RECOVERY YEAR 2021

Y/E 6/30/15

1	Total Recoverable Costs		\$16,287,242
2	Adjustments to Recoverable Costs		
2A	A. 100% of Third Party Recoveries		(\$42,750,000)
2B	B. 50% Deferred Ins. Litigation - Opening Balance		\$405,751
2C	C. 50% Deferred Ins. Litigation - Ending Balance		(\$17,090)
3	Less Miscellaneous Adjustments		\$0
4	Amortizable Recoverable Costs		(\$26,074,097)
5	Amortization Recoverable Cost (L4/7)		(\$3,724,871)
6	Deferred Tax Calculation		
7	Unamortized Recoverable Costs:		
8	Upcoming Recovery Year	2021	
9	Remediation Year	2015	
10	Difference (L8-L9)	6	
11	Unamortized Factor	$(7-(\text{difference}-1))/7$	0.285714
12	Unamortized Recoverable Costs (L4*L11)		(\$7,449,742)
13	Tax Rate		40.85%
14	Deferred Taxes on Net Deferred Remediation Cost (L12*L13)		(\$3,043,220)
15	Interest on Deferred Taxes at the RAC interest rate set August 31st equal to the seven year constant maturity Treasuries plus 60 basis points.		2.05%
16	Deferred Tax Benefit (L14*L15)		\$62,386
17	2020 Remediation Year 2014-15 (L5+L16)		(\$3,662,485)

ELIZABETHTOWN GAS COMPANY
REMEDATION ADJUSTMENT CLAUSE

AMORTIZATION RECOVERY YEAR 2021

Y/E 6/30/14

1	Total Recoverable Costs		\$3,984,044
2	Adjustments to Recoverable Costs		
2A	A. 100% of Third Party Recoveries		(\$4,500)
2B	B. 50% Deferred Ins. Litigation - Opening Balance		\$247,470
2C	C. 50% Deferred Ins. Litigation - Ending Balance		(\$405,751)
3	Less Miscellaneous Adjustments		\$0
4	Amortizable Recoverable Costs		\$3,821,263
5	Amortization Recoverable Cost (L4/7)		\$545,895
6	Deferred Tax Calculation		
7	Unamortized Recoverable Costs:		
8	Upcoming Recovery Year	2021	
9	Remediation Year	2014	
10	Difference (L8-L9)	7	
11	Unamortized Factor	$(7 - (\text{difference} - 1)) / 7$	0.142857
12	Unamortized Recoverable Costs (L4*L11)		\$545,895
13	Tax Rate		40.85%
14	Deferred Taxes on Net Deferred Remediation Cost (L12*L13)		\$222,998
15	Interest on Deferred Taxes at the RAC interest rate set August 31st equal to the seven year constant maturity Treasuries plus 60 basis points.		2.05%
16	Deferred Tax Benefit (L14*L15)		(\$4,571)
17	2020 Remediation Year 2013-14 (L5+L16)		\$541,324

ELIZABETHTOWN GAS COMPANY
SOCIETAL BENEFITS CHARGE (SBC)
REMEDIATION ADJUSTMENT CLAUSE (RAC)

RAC Schedule
TK-3

Carrying Costs

	Beginning Balance	Total Remediation Costs (2)	Third Party Recoveries at 100% (3)	Adjustments (see below)	(Recoveries) / Disbursement TK-6	Credit for Deferred Tax Benefit (4)	Ending Balance	Average Balance	Interest Rate *	Carrying Costs	Ending Balance plus Cumulative Interest **
a	b	c	d	e	f	g	h=sum(b:g)	i=(b+h)/2	j	k=i*j/12	l=h+ cum of k
Beginning Balance (1)											(Over) / Under
Jul-19	\$16,097,044	\$313,872	\$0	\$0	(\$27,330)	(\$8,335)	\$16,375,251	\$16,236,148	3.41%	\$46,138	\$16,421,389
Aug-19	\$16,375,251	\$44,827	\$0	\$0	(\$31,264)	(\$8,335)	\$16,380,479	\$16,377,865	3.41%	\$46,540	\$16,473,157
Sep-19	\$16,380,479	\$47,673	\$0	\$0	(\$30,315)	(\$8,335)	\$16,389,502	\$16,384,991	2.05%	\$27,991	\$16,510,171
Oct-19	\$16,389,502	\$157,793	\$0	\$0	(\$36,187)	(\$8,335)	\$16,502,773	\$16,446,138	2.05%	\$28,095	\$16,651,537
Nov-19	\$16,502,773	\$98,046	\$0	\$0	(\$70,569)	(\$8,335)	\$16,521,915	\$16,512,344	2.05%	\$28,209	\$16,698,888
Dec-19	\$16,521,915	\$301,568	(\$7,838)	\$0	(\$122,889)	(\$8,335)	\$16,684,421	\$16,603,168	2.05%	\$28,364	\$16,889,758
Jan-20	\$16,684,421	\$414,894	\$0	\$0	(\$133,688)	(\$8,335)	\$16,957,292	\$16,820,857	2.05%	\$28,736	\$17,191,365
Feb-20	\$16,957,292	\$69,862	(\$6,807,500)	\$0	(\$135,533)	(\$8,335)	\$10,075,786	\$13,516,539	2.05%	\$23,091	\$10,332,950
Mar-20	\$10,075,786	\$150,488	\$0	\$0	(\$116,905)	(\$8,335)	\$10,101,034	\$10,088,410	2.05%	\$17,234	\$10,375,432
Apr-20	\$10,101,034	\$238,159	\$0	\$0	(\$407,716)	(\$8,335)	\$9,923,142	\$10,012,088	2.05%	\$17,104	\$10,214,644
May-20	\$9,923,142	\$230,838	\$0	\$0	(\$482,359)	(\$8,335)	\$9,663,286	\$9,793,214	2.05%	\$16,730	\$9,971,518
Jun-20	\$9,663,286	\$212,287	\$0	\$0	(\$299,685)	(\$8,340)	\$9,567,548	\$9,615,417	2.05%	\$16,426	\$9,892,206
Total		\$2,280,307	(\$6,815,338)	\$0	(\$1,894,440)	(\$100,025)				\$324,658	

Notes:

(1) Beginning Balance is the ending balance from June 2019.

(2) These costs include 100% of all expenses as such, they may vary from the amortizable recoverable costs on RAC Schedule TK-2. The primary difference would be the deferral of all NRD expenses and fifty percent of the costs incurred in pursuit of third party claims which are deferred pending a Third Party recovery.

(3) Recovery credit at 100%, as all expenses have been included, for purposes of deriving carrying costs.

(4) Reduction of the Remediation Costs to reflect a Deferred Tax Benefit on a monthly basis sourced from last year's RAC TK-2 Schedules 1-7.

* Interest Rate seven year constant maturity Treasuries closest to August 31 of each year plus 60 basis points per the Board's Order in Docket No.

GX99030121 et al. www.federalreserve.gov/releases/h15/

** Net (Over) / Under Recovery Position

ELIZABETHTOWN GAS COMPANY
SOCIETAL BENEFITS CHARGE (SBC)
REMEDATION ADJUSTMENT CLAUSE (RAC)
AMORTIZATION RECOVERY YEAR

Prior Year's Reconciliation

FOR RECOVERY YEAR 2020

1	Total to be Recovered / (Refunded), (prior year Sch TK-1)	\$6,976,813
2	Other	<u>\$0</u>
3	Adjusted Prior Year Balance (L1+L2)	\$6,976,813
4	Actual Recoveries / (Refunds) (Sch TK-6)	<u>\$1,894,440</u>
5	Prior Year Under Recovery, (L3-L4)	<u><u>\$5,082,373</u></u>

ELIZABETHTOWN GAS COMPANY
SOCIETAL BENEFITS CHARGE (SBC)
REMEDATION ADJUSTMENT CLAUSE (RAC)
Annual Cap Calculation
RECOVERY YEAR -
2021

1	Total Revenues 12 mos ended June 30, 2020	\$342,104,910
2	5% of Line 1	\$17,105,246
3	Total Remediation Costs to be Recovered this Year, (Sch TK-1)	\$3,854,744
4	Excess Remediation Costs to be Deferred (L4 = If L3 < L2 then zero, else L3 - L2)	\$0

ELIZABETHTOWN GAS COMPANY
SOCIETAL BENEFITS CHARGE (SBC)
REMEDIATION ADJUSTMENT CLAUSE (RAC)

Cost Recoveries

12 Months Ended

June-20

	<u>Therms</u>	<u>Rate w/o tax *</u>	<u>Recovery / (Disbursement)</u>
Jul-19	18,978,717	\$0.0014	\$27,330
Aug-19	17,007,459	\$0.0018	\$31,264
Sep-19	16,952,704	\$0.0018	\$30,315
Oct-19	19,861,550	\$0.0018	\$36,187
Nov-19	37,233,944	\$0.0019	\$70,569
Dec-19	65,680,586	\$0.0019	\$122,889
Jan-20	71,390,607	\$0.0019	\$133,688
Feb-20	72,489,712	\$0.0019	\$135,533
Mar-20	61,990,988	\$0.0019	\$116,905
Apr-20	44,430,770	\$0.0092	\$407,716
May-20	34,677,680	\$0.0139	\$482,359
Jun-20	21,576,017	\$0.0139	\$299,685
Total	<u>482,270,734</u>		<u>\$1,894,440</u>

* Billing at the tariff rate yields the dollars recovered, inclusive of rate proration or cancel/rebills, if any. The rate presented is derived from dividing that amount by the therms, as such rounding differences to the tariff / billing rate may result.

**IN THE MATTER OF THE PETITION
OF ELIZABETHTOWN GAS COMPANY TO REVISE THE
REMEDATION ADJUSTMENT CLAUSE COMPONENT
OF ITS SOCIETAL BENEFITS CHARGE RATE**

BPU DOCKET NO. _____

DIRECT TESTIMONY

OF

STEVEN L. COOK

**On Behalf Of
Elizabethtown Gas Company**

Exhibit P-2

July 31, 2020

**ELIZABETHTOWN GAS COMPANY
DIRECT TESTIMONY
OF STEVEN L. COOK**

1 **I. INTRODUCTION**

2 **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

3 **A.** My name is Steven Cook. My business address is 520 Green Lane, Union, New
4 Jersey 07083.

5 **Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?**

6 **A.** I am employed by SJI, now the parent of Elizabethtown Gas Company, as
7 Environmental Specialist Lead. As such, I am responsible for the efforts of
8 Elizabethtown Gas Company ("Elizabethtown" or "Company") to investigate,
9 contain, and remediate its former Manufactured Gas Plant ("MGP") sites.

10 **Q. WHAT IS YOUR PROFESSIONAL AND EDUCATIONAL BACKGROUND?**

11 **A.** I am a graduate of East Texas State University where I received my BA Degree in
12 political science and of Seton Hall University School of Law where I earned a Juris
13 Doctorate degree. I am also a member of the New Jersey Bar. I have over thirty years
14 of experience in the environmental field.

15 I have been employed by SJI, for approximately two years. Prior to the
16 acquisition of Elizabethtown by SJI in 2018, I was employed by Southern Company
17 Gas, formerly AGL Resources, since December 2004. Prior to AGL's acquisition of
18 NUI Corporation in 2004, I worked for more than nine years in the environmental
19 department of NUI Utilities, Inc. ("NUI Utilities"), a subsidiary of NUI Corporation.
20 In this position, I managed environmental compliance and liability issues associated

1 with the operations of NUI Utilities, including its New Jersey Division, Elizabethtown
2 Gas. In this position, I participated in managing specific issues associated with the
3 investigation and remediation of Elizabethtown's MGP sites. From 1990 to 1995, I
4 was employed by Foster Wheeler Environmental Corporation. There, I held the title
5 of Regulatory Affairs Specialist where I was responsible for assessing the impacts of
6 federal, state and local environmental laws and regulations on various environmental
7 projects. My particular responsibilities included site remediation, permitting and
8 compliance, and environmental liability management.

9 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

10 **A.** The purpose of my testimony is to support Elizabethtown's Petition in this proceeding
11 to review the Remediation Adjustment Clause ("RAC") component of the Societal
12 Benefits Charge ("SBC") during the period July 1, 2019 through June 30, 2020 ("2020
13 RAC year"). I will discuss Elizabethtown's efforts to investigate, contain and
14 remediate its former MGP sites in a prudent manner and will discuss the costs
15 associated with the 2020 RAC year. I will also discuss the Company's treatment of
16 costs incurred to obtain third party and/or insurance recoveries of MGP-related costs
17 and briefly describe the MGP-related rate and third party recovery that the Company
18 has obtained during the period. Finally, I will provide a projection of the MGP-related
19 costs for the period July 1, 2020 through June 30, 2021.

20 **Q. DOES YOUR TESTIMONY INCLUDE ANY ILLUSTRATIVE SCHEDULES?**

21 **A.** Yes. My testimony includes the schedules listed below that were prepared under my
22 direction and supervision. As explained in the Petition, these schedules contain
23 information responsive to the Minimum Filing Requirements ("MFRs") reflected in
24 a Stipulation that was approved in the proceedings involving the Company's 2007,

2008 and 2009 SBC filings. An Index to the MFRs is included with the Petition as Exhibit A. The schedules are as follows:

(1) **Schedule SLC-1** consists of a summary of MGP-related expenses for the period July 1, 2019 through June 30, 2020. This schedule also provides information concerning insurance, third party and rate recoveries of MGP-related expenses associated with this period.

(2) **Schedule SLC-2** contains information responsive to MFRs 1 through 8, MFRs 10 through 12 and MFRs 14 through 18.

II. FORMER MGP SITE AND COST DISCUSSIONS

Q. HOW MANY FORMER MGP SITES HAS ELIZABETHTOWN OWNED OR OPERATED?

A. Elizabethtown owns, owned and/or operated MGPs at six sites located within the State of New Jersey. These six sites will be referred to as (1) Erie Street, Elizabeth; (2) South Street, Elizabeth; (3) Rahway; (4) Perth Amboy; (5) Flemington; and (6) Newton. Four of these six sites (Erie Street, South Street, Rahway, and Perth Amboy) were owned and/or operated solely by Elizabethtown and/or its predecessor companies. The remaining sites (Newton and Flemington) were also owned and operated by a predecessor of Jersey Central Power & Light Company, which is now owned by First Energy, herein referred to as ("JCP&L"). Elizabethtown also has responsible party liability for a site that I will refer to as the Renora Landfill.

Q. HAVE ELIZABETHTOWN'S MGP-RELATED COSTS AT ITS VARIOUS SITES BEEN INCURRED TO COMPLY WITH APPLICABLE LAWS AND REGULATIONS?

1 **A.** Yes. In all instances, Elizabethtown's efforts to test, contain, and remediate its former
2 MGP sites have been directed toward complying with applicable laws and regulations
3 in a reasonable, cost prudent manner.

4 **Q.** **PLEASE UPDATE THE STATUS OF EACH OF ELIZABETHTOWN'S**
5 **FORMER MGP SITES.**

6 **A.** Set forth below is a discussion of the activities that were either completed or ongoing
7 at each of the Company's MGP sites. A breakdown of expenses for each of these sites
8 during the period is included in Schedule SLC-1.

9 **Erie Street**

10 In accordance with applicable laws and regulations, including mandatory
11 remediation deadlines, the Company has completed the remedial investigation at the
12 Erie Street site. In addition, the Company continues to perform work related to the
13 implementation of remedial measures at the site and third party owned properties
14 impacted by historic MGP operations.

15 Erie Street is comprised of eight (8) general Areas of Concern ("AOC"), Areas
16 A through H. The remediation of Areas A, B and G were completed in the prior RAC
17 periods. During the current RAC period, Elizabethtown continued pre-design
18 investigation activities, remedy selection and permitting to support the remediation
19 of the remaining on-site AOCs and an off-site residential property, as well as
20 negotiating access to other third party owned off-site properties for further
21 investigation/remediation. Elizabethtown expects to begin remediation of AOC D
22 and the residential off-site property during the 2021 RAC period.

23 **Renora Landfill**

1 Remediation of the Renora site was completed by the Renora RD/RA trust in
2 early 1996. On September 27, 1999 the United States Environmental Protection
3 Agency (“USEPA”) issued a letter constituting a Certificate of Completion of the
4 Remedial Action for the Renora site. Effective March 20, 2000, the Renora site was
5 deleted from the National Priorities List. Elizabethtown anticipates future costs, if
6 any, for the Renora site will be limited to reimbursement of a portion of site inspection
7 and maintenance fees.

8 **South Street**

9 In accordance with applicable laws and regulations, including mandatory
10 remediation deadlines, the Company has completed the remedial investigation at the
11 South Street site. Further, in accordance with applicable laws and regulations and an
12 Administrative Consent Order with the NJDEP dated April 9, 1991, Elizabethtown is
13 continuing to conduct environmental investigations and evaluate further remediation
14 at the South Street site.

15 During the current RAC period, the Company continued to perform
16 groundwater investigations on-Elizabethtown and the City of Elizabeth owned
17 property. In addition, Elizabethtown continued negotiations with the New Jersey
18 Department of Transportation to implement further groundwater investigations in
19 order to assess the feasibility of groundwater remedial alternatives. The Company
20 also submitted a Remedial Funding Source in accordance with the AOC.

21 Future work will include groundwater investigations within the New Jersey
22 Department of Transportation owned property and the selection and implementation
23 of a site-wide groundwater remedial action.

24 **Rahway**

1 In accordance with applicable laws and regulations, the Company has completed
2 the remediation of the Rahway site, including the remediation of MGP impacted
3 sediments within the Robinson's Branch of the Rahway River which is adjacent to
4 the site. The Company recorded a deed notice with environmental restrictions for this
5 property for residual MGP impacts in soil and a Classification Exemption Area
6 ("CEA") for naturally occurring constituents in groundwater has been issued by
7 NJDEP. A Response Action Outcome ("RAO") has been issued by the site registered
8 LSRP and a Remedial Action permit ("RAP") has been issued by the NJDEP.

9 The Company sold the property to the Rahway Redevelopment Authority in
10 November 2016 and the proceeds associated with that sale were addressed in the
11 Company's 2017 RAC.

12 **Perth Amboy**

13 In accordance with applicable laws and regulations, including mandatory
14 remediation deadlines, the Company has completed the remedial investigation and
15 remedial action at the Perth Amboy site.

16 During the remediation of the Perth Amboy MGP site, MGP impacts were
17 identified as migrating off-site to a City owned roadway and into a City owned park.
18 In order to address these impacts, Elizabethtown negotiated an access agreement with
19 the City of Perth Amboy and conducted additional permitting activities with the State
20 of New Jersey to investigate/remediate offsite MGP impacts. The Company
21 performed the investigation/remediation activities during this RAC period and
22 expects to receive an RAO from the site LSRP.

Flemington

During this RAC period, in coordination with JCP&L, the Company continued to conduct post remediation groundwater monitoring to support a monitoring and natural attenuation groundwater remedy. The Company also monitored wetland restoration efforts in accordance with applicable NJDEP regulation. The Company does not expect to conduct further remediation activities at the site. Remaining activities required to close out the site and receive a RAO from the site LSRP include filing deed notices to Company owned property and submitting remediation related documentation to NJDEP in order to receive Remedial Action Permit.

Newton

During this period, in accordance with applicable laws and regulations, including mandatory remediation deadlines, the Company and JCP&L has completed the remedial investigation at the Newton site.

Also during this period, the Company and JCP&L continued negotiations with the adjacent property owner in an attempt to secure deed restrictions for offsite property with MGP impacts that will be required to implement the remedial strategy for the site and reduce the extent of required wetland remediation.

The Company and JCP&L also conducted remedial investigation activities on property owned by the company and a third-party property owner to refine remediation limits and assist in remedy selection. The Company anticipates the development and implementation of a site soils remedial action, and to complete associated permitting, to address impacts associated with a subsurface gas holder and

1 to remove free and residual product both on-site and in offsite wetlands during the
2 2020 RAC period.

3 **Q. HAS ELIZABETHTOWN INCURRED ANY MGP-RELATED COSTS THAT**
4 **ARE NOT SPECIFICALLY RELATED TO ANY PARTICULAR MGP**
5 **SITES?**

6 **A.** Yes. In addition to the costs specifically allocated to the individual Elizabethtown
7 MGP sites, the Company has incurred additional costs related to the overall
8 investigation and remediation of the Company's MGP sites. These unallocated costs
9 are included in Schedule SLC-1, Lines 8 and 9. These unallocated costs include
10 internal labor costs in accordance with the Stipulation approved by the Board in the
11 Company's base rate case proceeding in BPU Docket No. GR09030195 and costs
12 associated with liability cost estimating in accordance with the Stipulation approved
13 by the Board in BPU Docket Nos. GR07080645, GR08090836 and GR09080651.

14 **Q. HAS ELIZABETHTOWN OBTAINED BASE RATE RECOVERY OF ANY**
15 **MGP-RELATED EXPENSES?**

16 **A.** No. As a result of the Board's March 30, 2001 Order in Docket No. GX99030121 et
17 al, Elizabethtown has, since June 1, 2001, deferred all MGP-related costs for recovery
18 through the RAC component of the SBC.

19 **Q. DO ELIZABETHTOWN'S NET DEFERRED MGP-RELATED COSTS**
20 **INCLUDE ANY COSTS ASSOCIATED WITH INSURANCE LITIGATION**
21 **AND PURSUING THIRD PARTY CLAIMS?**

22 **A.** Yes. Elizabethtown has incurred \$439,761 of such costs during the period July 1,
23 2019 through June 30, 2020 associated with third party claims. Fifty percent of these
24 costs were initially deferred pending receipt of third party recoveries. As shown on

1 Line 10 of Schedule SLC-1, third party recoveries amounted to \$6,815,338, allowing
2 for a like amount of the deferred balance to be recovered. As a result as shown on
3 RAC Schedule TK-2 page 1 of 7 line 2C, \$14,822 is currently being deferred pending
4 receipt of future third party recoveries. This third party recovery amount represents
5 payment in settlements with multiple insurance carriers.

6 **III. CONCLUSION**

7 **Q. PLEASE SUMMARIZE THE TOTAL MGP-RELATED EXPENDITURES**
8 **THAT ELIZABETHTOWN SEEKS TO RECOVER IN THIS PROCEEDING.**

9 **A.** As set forth on Schedule SLC-1, Elizabethtown incurred remediation costs of
10 \$2,280,307. In this proceeding, after adjusting for the receipt of Third Party
11 Recoveries and deferred litigation costs, the Company is seeking to refund
12 \$4,549,853. The net costs are used to calculate the proposed RAC factor in this
13 proceeding.

14 **Q. PLEASE PROVIDE AN ESTIMATE OF THE REMEDIATION COSTS FOR**
15 **THE PERIOD JULY 1, 2020 THROUGH JUNE 30, 2021.**

16 **A.** Based on the scope of work planned during this period, I estimate that the Company
17 may incur approximately \$15 million of remediation costs during the year ending
18 June 30, 2021. However, this is only an estimate. The Company's costs will continue
19 to be driven by its need to comply with applicable laws and regulations and access to
20 third party owned property.

21 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

22 **A.** Yes, it does.

**Elizabethtown Gas Company
Manufactured Gas Plant Remediation Program**

**Summary Statement of Site Expenses
Annual Report
July 1, 2019 through June 30, 2020**

Line No.	Description	Consulting/ Remediation	Legal	NJDEP Oversight	Natural Resource Damages (NRD)	Other	(1) Total Remediation Expenses	(2) NRD Deferral 100%	(3) Ins. Lit/ Third Party Deferral 50%	(4) Recovery of Prior Deferred Expenses	(5) Third Party Recoveries	Net Remediation Cost This Period
1	Elizabeth (Erie Street)	\$1,157,048					\$1,157,048					\$1,157,048
2	Elizabeth (South Street)	\$153,649					\$153,649					\$153,649
3	Rahway						\$0					\$0
4	Perth Amboy	\$158,309					\$158,309					\$158,309
5	Flemington						\$0					\$0
6	Newton	\$46,790					\$46,790					\$46,790
7	Renora (Erie Street)						\$0					\$0
8	Internal					\$63,380	\$63,380					\$63,380
9	Misc.	\$261,104				\$266	\$261,370					\$261,370
10	Insurance Litigation/ Third Party Claims		\$439,761				\$439,761		(\$219,881)	\$205,059	(\$6,815,338)	(\$6,390,399)
11		\$1,776,900	\$439,761	\$0	\$0	\$63,646	\$2,280,307	\$0	(\$219,881)	\$205,059	(\$6,815,338)	(\$4,549,853)

Notes:

- 1 Line 10 - Pursuit of Third Party Claims at 100% of expenses incurred, 50% of which is deferred pending a Third Party recovery.
- 2 100% of Natural Resource Damages deferred pending BPU resolution.
- 3 50% of the expenses incurred in the pursuit of Insurance and/or Third Party Claims.
- 4 Allowable recovery of the deferred expenses incurred in pursuit of Insurance and/or Third Party recoveries.
- 5 Credit of 100% of amounts received from Third Parties.

MFR-1 Please provide a vendor listing for the prior RAC period that contains information concerning vendor expenditures by MGP site, also showing a description of the services provided and the amount of each vendor invoice. The vendor list should include the monthly actual expenditures for the twelve month RAC period.

Please see attachment MFR-1.1 for vendor expenditures by site and MFR-1.2 for a description of the services provided by each vendor.

**Elizabethtown Gas Company
MGP Vendor Expenditures
July 2019 through June 2020**

Vendor Name	Erie St	South St	Rahway	Flemington	Perth Amboy	Newton	Misc.	Ins Litigation/ Ins Recovery	Internal	Total
AECOM, Inc							12,260.31			\$12,260.31
City of Elizabeth *	8,799.30									\$8,799.30
Covington & Burling LLP								439,761.60		\$439,761.60
Expense Journal							265.74			\$265.74
GEI Consultants Inc	1,099,301.04						12,864.50			\$1,112,165.54
GZA Geo Environmental, Inc.	6,554.30									\$6,554.30
H&G Public Affairs, LLC	2,042.89	195.00			7,576.58					\$9,814.47
Insurance Recovery (checks)								(6,815,337.81)		(\$6,815,337.81)
JCP&L						46,790.27				\$46,790.27
Langan Engineering & Environmental	(5,103.50)	130,248.67			145,722.10		19,524.03			\$290,391.30
Larry's Landscaping		298.55								\$298.55
National Fence Systems, Inc	1,600.00									\$1,600.00
NJ DEP	12,645.00	3,320.00			5,010.00					\$20,975.00
O'Brien & Gere Inc of North America							216,454.91			\$216,454.91
Payroll									63,379.22	\$63,379.22
PSE&G Co	7.79									\$7.79
Vargo Land Surveying, Inc.	8,310.00									\$8,310.00
Veolia Environmental Services	22,892.17	19,586.00								\$42,478.17
	\$1,157,048.99	\$153,648.22	\$0.00	\$0.00	\$158,308.68	\$46,790.27	\$261,369.49	(\$6,375,576.21)	\$63,379.22	(\$4,535,031.34)

Note: GEI Consultants represents the contractors or suppliers whose invoices exceeded \$250,000 in aggregate for the period for the top three sites.

* Related to purchase of property adjacent to Erie Street; does not represent a contractor or supplier.

Elizabethtown Gas Company
MGP Remediation Vendor Services*

July 2019 through June 2020

AECOM

All MGP Sites

- Consulting for Elizabethtown Gas Company's liability cost estimating

City of Elizabeth

Erie Street MGP

- Taxes related to purchased offsite MGP impacted residential property

Covington & Burling LLP

All MGP Sites

- Legal services relating to insurance recovery and insurance recovery litigation

GEI Consultants

Erie Street MGP

- Engineering consulting for the design and implementation of remedial investigation and remedial action activities

All MGP Sites

- Assist in the development of environmental liability cost estimates for ETG's MGP sites

GZA Geo Environmental, Inc.

Erie Street MGP

- Assist in remedy selection for the Erie Street MGP site.

H&G Public Affairs

Erie Street, South Street and Perth Amboy MGP

- Public relations and community outreach services

JCP&L

Newton MGP

- Responsible party for remedial investigation and remedial action

Langan Engineering and Environmental Services

South Street MGP

- Engineering consulting for the design and implementation of pre-design investigation activities to develop a groundwater remedial action.
- Remedial action permitting and third party owned site access.

Perth Amboy MGP

- Engineering consulting for the design and implementation of remedial investigation and remedial action
- Remedial investigation and remedial action permitting
- Implementation of remedial action on City of Perth Amboy property.
- Engineering oversight of the remediation construction contractor

All MGP Sites

- Assist in the development of environmental liability cost estimates for ETG's MGP sites

Larry's Landscaping

South Street MGP

- Property maintenance at MGP remediation site

National Fence Systems, Inc.

Erie Street MGP

- Installed fencing around remediation area

New Jersey Dept. of Treasury / Div. of Revenue

All MGP Sites except Rahway MGP

- NJDEP regulatory oversight

O'Brien & Gere Inc. of North America

All MGP Sites

- ETG MGP program management assistance

PSE&G

Erie Street MGP

- Electric bill related to purchased offsite MGP impacted residential property

Vargo Land Surveying

Erie Street MGP

- Land surveying services in support of MGP remediation and operation within remediation areas.

Veolia ES

Erie Street MGP

- Regulated waste disposal services for IDW and other MGP impacted material generated during operations on ETG owned MGP sites.

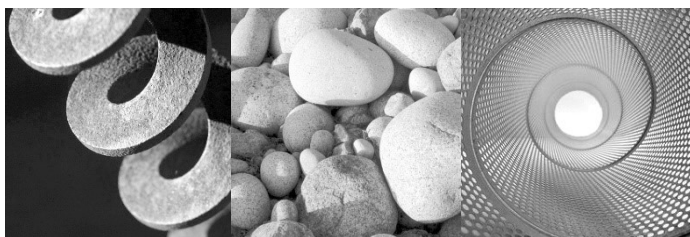
South Street MGP

- Regulated waste disposal services primarily for IDW

*** For a detailed description of specific services provided by a given vendor under the general categories listed above, please see description of services included with individual vendor invoices.**

MFR-2 Identify the three MGP sites with the highest level of expenditures during the prior RAC period. For each identified site, provide a copy of the latest work plan, remediation report, or major work product submitted to the NJDEP. The copies should include the narrative portion of the report or work plan but need not include the technical supporting workpapers, charts and tables.

The three MGP sites with the highest level of expenditure during the prior RAC period are the Erie Street former MGP site, the South Street former MGP site and the Perth Amboy former MGP site. See MFR-2.1, MFR-2.2, MFR-2.3 and MFR-2.4 for reports submitted during the 2019-2020 RAC period.



UST Site Investigation and Closure Report

Erie Street Former MGP Site

Block 5, Lot 1381
Elizabeth, New Jersey
NJDEP PI#030684
ISRA No. E2017166001
NJDEP Activity No. UCL180001
TMS No. N030684UCL180001
Spill Case No. 18-11-01-0846-54

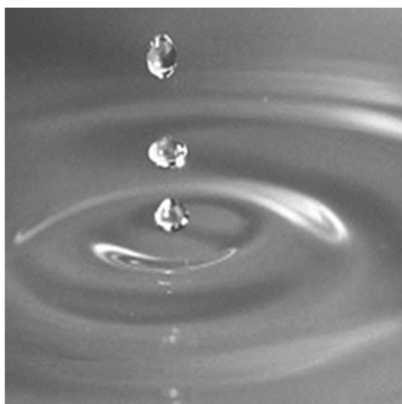
Prepared for:

Elizabethtown Gas Company
520 Green Lane
Union, New Jersey 07083

Prepared by:

GEI Consultants, Inc.
18000 Horizon Way, Suite 200
Mount Laurel, New Jersey 08054

July 2019
Project 1327080



Shu Xu, P.E.
Project Engineer

Susan B. Boyle
Project Manager

Table of Contents

1.	Introduction	1
1.1	Background	1
1.2	Objective	2
2.	Physical Setting	3
2.1	Topography	3
2.2	Soils	3
2.2.1	Naturally-Occurring Soils	3
2.2.2	Historic Fill	3
2.3	Site Geology	4
2.4	Hydrology	4
2.4.1	Surface Water	5
2.4.2	Groundwater	5
3.	UST Investigation and Closure	7
3.1	Pre-Closure Forensic Analysis	7
3.2	Permit	7
3.3	UST Site Investigation and Closure	7
3.4	Soil Analytical Results	9
3.5	Temporary Well Investigation and Soil Sampling	10
3.6	Temporary Well Point Soil and Groundwater Analytical Results	10
3.7	UST Investigation Result Discussion	11
3.7.1	Benzene Results Discussion	11
3.7.2	Lead Results Discussion	11
3.8	UST Disposal and Restoration	12
3.9	Reliability of Data	13
4.	Receptor Evaluation Status	14
5.	Conclusions and Recommendations	15
6.	References	16

Tables

1. Soil Analytical Results Summary
2. Temporary Well Groundwater Analytical Result Summary
3. QAQC Analytical Results Summary

UST Site Investigation and Closure Report
Erie Street Former MGP Site
Elizabeth, New Jersey
July 2019

Figures

1. Site Location Plan
2. Tax Map
3. Aerial Site Plan
4. Remediation Area Map
5. UST Investigation Soil Sample Location and Analytical Summary
6. UST Investigation Temporary Well Point Location and Analytical Summary

Appendices

- A. UST Forensic Analysis Report
- B. Local Construction Permit and UST Closure Notice of Intent
- C. Transportation Manifest and Disposal Receipt
- D. Construction Photo Log
- E. Laboratory Data Package (CD only)
- F. EDD Submission Email
- G. Groundwater Monitoring Well Installation, Construction and Development Standard Operating Procedures

SX/BM:gd

H:\TECH\project\AGL Resources\Erie St\Remediation\Area G\UST\closure report\Erie St June 2019 UST Closure Report memo_FINAL_7.1.19 Rev. 7.18.19.docx

1. Introduction

GEI Consultants, Inc. (GEI) has prepared this combined Underground Storage Tank (UST) Closure Report and Site Investigation Report (SIR) to document the findings of the UST investigation and closure activities associated with one 1,500-gallon gasoline UST located at the former Erie Street Manufactured Gas Plant (MGP) Site (herein referenced as “Site”). The Site is located at 200-334 3rd Avenue in the City of Elizabeth, New Jersey and consists of 24.19 acres of land located in a mixed commercial, industrial, and residential area. A Site Location Map prepared from the United States Geological Survey (USGS) Elizabeth, New Jersey 7½ minute topographic quadrangle is included as **Figure 1**. The Site consists of tax parcel Block 5, Lot 1381 and a portion of Block 5, Lot 1381 A and Block 5, Lot 1154. The Site tax map is included as **Figure 2**.

This UST closure report and SIR has been prepared in accordance with the New Jersey Department of Environmental Protection’s (NJDEP’s) *Technical Requirements for Site Remediation* (TRSR) (New Jersey Administrative Code [N.J.A.C.] 7:26E), *Administrative Requirements for the Remediation of Contaminated Sites* (N.J.A.C. 7:26C), and *UST Regulations* (N.J.A.C. 7:14B).

1.1 Background

The Site is located at 200-334 3rd Avenue in the City of Elizabeth, New Jersey and consists of 24.19 acres of land located in a mixed commercial, industrial, and residential area. The Site is presently used for storage, transfer, and distribution of liquefied natural gas (LNG) for peak shaving periods and as a regulator station for the distribution of natural gas. A chain-link fence runs along the perimeter of the Site. The majority of the Site is covered by gravel with an asphalt-paved driveway near the Site entrance at Geneva Street. A vegetated United States Army Corps of Engineers (USACE) flood control berm separates the southern perimeter of the Site and the Elizabeth River. The berm property is owned by the City of Elizabeth (Block 5, Lot 1381-A). An inactive railroad spur runs along the western central portion of the Site. Aerial view of the site is depicted on **Figure 3**.

The Site has been divided into eight large Areas of Concern (AOC)/Remediation Areas (AOC Areas) as agreed to by the NJDEP on November 14, 2008. The remediation areas are depicted on **Figure 4**. The area of the former UST is located within Area G of the Site and was identified in the Preliminary Assessment (PA, *GEI, November 2015*) as sub-area G1a. The location of the UST within Area G is depicted on **Figure 5**. The UST was discovered on June 5, 2018 and subsequently registered in the NJDEP database. Forensic analysis of the UST’s contents determined that gasoline had previously been contained in the UST. The age of the UST is unknown. It is presumed to have contained leaded gasoline. To comply with NJDEP

Regulations, specifically N.J.A.C. 7:14B-9.1, GEI recommended that the UST be closed by a New Jersey-certified UST closure contractor.

Remediation activities in large AOC Remediation Area G and large AOC Remediation Area B were conducted in 2016-2018. Remedial activities included soil excavation, capping, and in-situ stabilization and solidification (ISS). The Remedial Action Report for large AOCs Remediation Area A (remediation conducted and completed prior to the initiation of remediation in large Areas B and G in 2016), B and G is being finalized now and should be filed in this calendar year along with the deed notice and application for and receipt of the necessary remedial soil permit for large Areas A, B and G. The UST sub-area G1a is included in that remediation and under that deed notice and permit. A Classification Exception Area (CEA) for the entire Site is already in place and will remain in place, and a site-wide groundwater monitoring plan has begun implementation in preparation of a site-wide groundwater Response Action Outcome (RAO) and necessary groundwater remediation permit that will be issued at the completion of all remedial activities at the Site. The UST sub-area G-1a is included under that CEA and will be included under that future groundwater remediation permit.

1.2 Objective

The objective of this report is to document the closure of the sub-area G1a UST and associated piping, identified as AOC-G1a in this report, and associated soil and groundwater sampling activities to support inclusion of AOC-G1a in the Restricted Use, Soils Only, RAO to be issued for large AOCs Remediation Area A, B, and G.

2. Physical Setting

2.1 Topography

The Site is identified on a portion of the Elizabeth, New Jersey USGS 7.5-Minute Topographic Quadrangle (**Figure 1**). As shown in the aforementioned figure, ground surface on the Site is generally flat and slopes gently toward the Elizabeth River from an elevation of approximately 10 feet above mean sea level (AMSL) in the northern portion of the Site along 3rd Avenue, to a minimum elevation of approximately 4 feet AMSL in the southern portion of the Site.

The highest elevation at the Site is the containment berm around the LNG tank, at approximately 22 feet AMSL. The railroad spur has an elevation of approximately 15 feet AMSL. The berm adjacent to the Elizabeth River has a top elevation of approximately 13 feet AMSL. The Elizabeth River is tidally influenced and ranges from approximately 5 feet AMSL to -5 feet AMSL during maximum tidal fluctuation.

Regionally, elevations range from approximately 550 feet along the basalt ridges to sea level at the Arthur Kill near the Site. Topography and surficial features are primarily the result of Quaternary glacial events, which both scoured the existing bedrock surfaces and deposited a mantle of lacustrine deposits.

2.2 Soils

2.2.1 *Naturally-Occurring Soils*

Based on New Jersey Geographical Information System DGS10-2 Surficial Geology of New Jersey (Scale 1:24,000), the naturally-occurring soil underlying the northeastern portion of the Site is classified as Late Wisconsin GlacioFluvial Plain Deposits (Qwfv). These soils consist of sand, pebble to cobble gravel and minor silt of yellowish brown to reddish brown color. The remaining portions of the Site are classified as Salt-March and Estuarine Deposits (Qmm) consisting of silt, sand, peat, clay, and minor gravel. The presence of these soils underlying the Site was confirmed during subsurface investigations.

2.2.2 *Historic Fill*

Historic fill, as defined in the NJDEP TRSR, is mapped on the southern portion of the Site and adjacent properties based on New Jersey *Geographic Information System DGS04-7 Historic Fill for New Jersey as of February 2009, Elizabeth Quadrangle*. The presence of historic fill on and adjacent to the Site, and on the northern portion of the project area in the area of the UST, has been confirmed during subsurface investigations conducted by GEI.

2.3 Site Geology

Three naturally-occurring surface geologic units underlie the historic fill at the Site. These units consist of the Quaternary-aged Rahway Till (Qr), Elizabeth River Deposits (Qez), and Estuarine and Salt-Marsh Deposits (Qm). A brief description of each is presented below.

Rahway Till (Qr) – Rahway Till consists of reddish-brown to light-reddish brown silty sand and sandy clayey silt containing some to many sub-rounded and sub-angular pebbles and cobbles and a few sub-rounded boulders. The till is poorly sorted, nonstratified, generally compact below the soil zone. It may include thin, discontinuous beds and lenses of sorted sand and gravel. The maximum thickness is 90 feet, but it is generally less than 20 feet thick.

Estuarine and Salt-Marsh Deposits (Marsh Deposits, Qm) – Organic silt and clay, and peat, with some sand and fine gravel; black, dark-brown, and dark-gray. Maximum thickness is 25 feet. Based on data collected from soil borings, Qm deposits are present across two-thirds of the Site at depths ranging from approximately 5 to 15 feet. Due to the high fines content, the marsh deposits serve as an aquitard separating groundwater in overlying fill from flow in the deeper overburden.

Elizabeth River Deposits (Qez) – Elizabeth River deposits consist of fine-to-coarse sand, minor silt; reddish-brown, light reddish-brown, gray and fine to coarse gravel. These deposits are moderately-well sorted, with plane to cross-bedding to ripple cross-bedding with some lacustrine deposits. The maximum thickness is 150 feet. These underlie approximately the northeastern half of the Site.

The Site is underlain by the Upper Jurassic-Lower Triassic Passaic Formation of the Newark Super Group sedimentary sequence, which consists of predominantly of reddish-brown mudstone and siltstone. This is consistent with the bedrock encountered during subsurface investigations completed at the Site.

2.4 Hydrology

Site and regional hydrology are typical for urban coastal settings in a former estuary. Regional topography slopes toward the Elizabeth River and Arthur Kill. The area surrounding the Site is urbanized and rainfall runoff is collected in the City of Elizabeth's combined sewer system. Rainfall runoff in the northern two-thirds of the Site is collected in catch basins which connect to the City's combined sewer system. Runoff in the southern third of the Site percolates into the ground, at a swale and topographic low spot near the USACE Flood Control Berm. The USACE flood control berm protects the Site from flooding and prevents runoff from the Site from draining into the Elizabeth River. Highway runoff from the New Jersey Turnpike (NJTP) is directed to a drainage ditch west of the Site, which allows infiltration into groundwater. Storm drains from the Site had formerly discharged to the Elizabeth River. The drains discharging to

the Elizabeth River were plugged and abandoned in 2007 and the swale re-graded in 2011 to 2012 to keep storm water from flowing off-site as part of an Interim Remedial Measure (IRM).

Percolation into soils underlying the Site depends on the soil type. The naturally-occurring soils of the Roland Silt Loam are relatively less-permeable than the fill placed at the Site to achieve current grades. These soils are associated with the overburden aquifer that provides recharge to the bedrock in some areas and in other areas discharges into Elizabeth River. Gravel-covered areas of the Site are relatively porous. In the southern low-lying area of the Site, the water table is usually at or near ground surface; and accumulated runoff often ponds there until it can be absorbed by the aquifer.

Ground surface at most of the Site ranges from 10 feet AMSL to 4 feet AMSL, and gently slopes toward the USACE Flood Control Berm along the Elizabeth River south of the Site. Ground surface in the vicinity of the UST is approximately 10 feet AMSL. The USACE Flood Control Berm abuts the southern end of the Site. The berm crest elevation is approximately 13 feet AMSL. South of the berm, ground surface slopes down to sea level along the Elizabeth River.

2.4.1 Surface Water

The Site is located in the Elizabeth River sub-basin of the Arthur Kill drainage basin. Surface water in the area of the UST flows approximately southeast towards Area B of the Site. The Elizabeth River is the nearest surface water body, adjacent to the Site to the southwest. The Elizabeth River drains into the Arthur Kill approximately 3,200 feet from the Site to the east. The Arthur Kill flows into the New York Harbor approximately 5.5 miles to the east. The New York Harbor leads to the Atlantic Ocean approximately 4 miles south of the Arthur Kill.

2.4.2 Groundwater

GEI evaluated groundwater conditions on the Site via a monitoring well network during the full site Remedial Investigation (May 7, 2014). Groundwater is present in two overburden zones (Overburden A and B) and within bedrock beneath the Site. The Overburden A zone is situated in fill above the Qm (where present) or above the Qr and is under unconfined conditions. The Qm (meadow mat) underlies the fill in portions of the Site. The B zone is situated below the Qm (where present) and is under semi-confined conditions. Bedrock groundwater flow is connected to Overburden B groundwater where fractures intersect bedrock surface. During the UST investigation, the meadow mat was not observed. Soils were a reddish-brown silt with fine sand and trace amounts of gravel and are considered part of the Overburden A zone.

Site-wide groundwater flow is primarily southeasterly, with secondary flow direction to the east and south toward the Elizabeth River. Shallow groundwater flow originates along the NJTP and adjacent railroad, which appear to create a groundwater divide, and from surficial recharge on site from precipitation. Groundwater flow direction in the Overburden A and B zones appears to be toward the Elizabeth River; however, local discharge may be influenced by the presence of a

UST Site Investigation and Closure Report
Erie Street Former MGP Site
Elizabeth, New Jersey
July 2019

steel sheet pile within the core of the flood control berm along the river adjacent to the Site, downward flow to bedrock, and buried utilities along 3rd Avenue and South 2nd Street.

3. UST Investigation and Closure

3.1 Pre-Closure Forensic Analysis

Prior to closing the UST, GEI accessed the UST fill port and sampled the tank contents for forensic analysis. The tank contents were submitted to Integrated Analytical Laboratories, Inc. (IAL) of Randolph, New Jersey (NJDEP Laboratory Certification # 14751). The forensic analysis reported the tank contents as gasoline. Due to the age of the UST, the gasoline was presumed to be leaded gasoline. The forensic analysis reported is included as **Appendix A**.

3.2 Permit

On July 13, 2018, Christopher Dailey, a Licensed Site Remediation Professional (LSRP) with GEI, submitted a UST Closure – Notice of Intent form to the NJDEP. This closure was assigned NJDEP Activity # UCL180001, TMS# N030684UCL180001. Hill Environmental Group, Inc. (Hill) of Pennington, New Jersey, a NJDEP-certified UST Contractor (NJDEP UST Certification #US00576) was retained by GEI and procured a local demolition permit (Permit #18-1595) from the City of Elizabeth Construction Code Department to facilitate the closure of the UST. Copies of the above referenced documents are provided in **Appendix B**.

3.3 UST Site Investigation and Closure

On September 27, 2018, GEI mobilized to the Site in conjunction with Hill to remove and close the UST. The location of the UST within large AOC Remediation Area G is depicted on **Figure 5**. The top of the UST was exposed, and a suspected gas line was encountered on top of the UST. The status of the suspected gas line was unknown, and the UST closure work was temporarily suspended due to health and safety concerns. Groundwater was encountered at approximately one foot below ground surface (bgs). Because of the shallow depth to groundwater, tank sidewall samples were able to be collected with the UST still in place. One sidewall soil sample was collected from each of the four sides of the UST. Samples were collected at six inches above the observed groundwater table from 0.5 feet to 1 foot bgs, which is representative of the six-inch interval above the observed depth to groundwater and per the NJDEP Technical Guidance for Investigation of Underground Storage Tank Systems (NJDEP, 2012). These samples were labeled AOC-G1a-SW-1, AOC-G1a-SW-2, AOC-G1a-SW-3, and AOC-G1a-SW-4. Soil sample locations are shown on **Figure 5**. Lithology observed during the soil sampling event generally consisted of fill material followed by reddish brown silt, which is consistent with the rest of the Site.

The sidewall soil samples were placed into laboratory prepared bottleware then into a cooler and maintained at 4 degrees Celsius for transport to the laboratory for analysis. The samples were submitted under chain of custody to IAL for analysis. Soil samples were analyzed for volatile

organic compounds (VOCs) plus a library search of the fifteen highest tentatively identified compounds (VOCs+15), 1,2-dibromoethane, 1,2-dichloroethane, and lead, which correspond to the NJDEP TRSR Table 2-1 recommendations for leaded gasoline. Analytical results for the sidewall soil sampling activities are summarized on **Table 1**.

The above-mentioned gas line was purged by Elizabethtown Gas in October 2018. On November 1, 2018, GEI returned to the Site with Hill to remove and close the UST. The UST was exposed, cut, and accessed by Hill. Approximately 3.25 tons of sludge were pumped out by Hill and disposed offsite at Bayshore Soil Management of Keasbey, New Jersey. Waste manifest and disposal receipt for the sludge is included as **Appendix C**.

After the UST content was removed and transported offsite, the UST and associated piping were removed from the ground by Hill on November 1, 2018. The area of the UST and associated piping is shown on **Figure 5**. GEI visually examined the interior of the UST and the associated piping. Corrosion holes were noted on the UST and on the pipe. A petroleum-like odor was present beneath and at the end of each pipe run. The City of Elizabeth instructed Hill to contact the NJDEP hotline and report a release. Spill case #18-11-01-0846-54 was assigned. In addition to the former UST and piping, approximately five cubic yards of petroleum impacted soil were removed beneath the UST pipes. A photo log documenting the UST investigation activities is included as **Appendix D**.

The NJDEP Technical Guidance for Investigation of Underground Storage Tank Systems (NJDEP, 2012) specifies that tank bottom samples for USTs with contents with a density of less than one are collected from the six-inch interval above the groundwater. In this case, groundwater was observed at one foot bgs. Therefore, tank bottom samples per the guidance were not collected. However, as requested by the LSRP, samples were collected from below the UST invert upon its removal. GEI collected three tank bottom samples. The sample locations were designated AOC-G1a-TB-1, AOC-G1a-TB-2, and AOC-G1a-TB-3 and were taken from the centerline of the UST excavation at a depth of 8 feet to 8.5 feet bgs. GEI collected two post-excavation bottom soil samples, AOC-G1a-P-1 and AOC-G1a-P-2, below the pipe runs at the depth of 4 feet to 4.5 feet bgs. An additional surface soil sample (AOC-G1a-SS-1) was collected at the end of the northwest pipe run in soils exhibiting strong petroleum-like odors. **Figure 5** shows the location of the soil samples. The samples previously collected in September 2018 functioned as the requisite sidewall samples.

The soil samples were placed into laboratory-supplied glassware and transported under chain of custody to IAL for analysis. The samples were analyzed for VOCs+15, 1,2-dibromoethane, 1,2-dichloroethane and lead, which correspond to the NJDEP TRSR Table 2-1 recommendations for leaded gasoline. Analytical results for the sidewall soil sampling activities are summarized on **Table 1**.

3.4 Soil Analytical Results

Soil analytical results compared to NJDEP Direct Contact Soil Remediation Standards (SRS) and default Impact to Ground Water Soil Screening Levels (IGWSSLs) are summarized on **Table 1** and presented below. The laboratory analytical data package is included as **Appendix E**. Electronic data deliverables have been submitted to NJDEP. Submission confirmation emails are included in **Appendix F**.

Sample ID/Depth	Location	Depth (ft)	Compound Concentration Exceedances (mg/kg)		
			Lead	Benzene	Total Xylene
AOC-G1a-SW-1	Sidewall	0.5-1	162	ND	ND
AOC-G1a-SW-3	Sidewall	0.5-1	122	ND	ND
AOC-G1a-SW-4	Sidewall	0.5-1	184	ND	ND
AOC-G1a-TB-1	Tank Bottom	8-8.5	71.7	5.13	20.9
AOC-G1a-SS-1	Surface	1.5-2	1,770	0.641	10.0
RDCSRS			400	2	12,000
NRDCSRS			800	5	170,000
IGWSSL			90	0.005	19

NOTES:

ft=feet/foot

mg/kg=milligrams per kilogram

ND=Non-Detect

RDCSRS=Residential Soil Remediation Standard

NRDCSRS= Non-Residential Soil Remediation Standard

IGWSSL=Impact to Ground Water Soil Screening Level

Benzene was detected in the soil sample collected at the end of the northwest pipe run, AOC-G1a-SS-1, at a concentration of 0.641 milligrams per kilogram (mg/kg), which is below the applicable soil remediation standard but exceeding Impact to Ground Water Soil Screening Level (IGWSSL). However, the IGWSSL is not applicable for soil sample AOC-G1a-SS-1 because the sample was collected below the depth to groundwater. Benzene was reported in sample AOC-G1a-TB-1 at a concentration of 5.13 mg/kg. The current NJDEP Non-Residential Soil Remediation Standard (NRDCSRS) for benzene is 5 mg/kg. The NJDEP Data Quality Assessment and Data Usability Evaluation Technical Guidance dated April 2014 (QA/QC Guidance) allows this result to be rounded down to 5 mg/kg. No exceedance was reported in two soil samples collected at the bottom of the UST pipe run excavation.

Lead was detected in AOC-G1a-SS-1 at 1,770 mg/kg, which is above the NJDEP NRDCSRS of 800 mg/kg.

Total xylene was reported at 20.9 mg/kg in AOC-G1a-TB-1, but depth to groundwater in this area was observed to be one-foot bgs, so the IGWSSL is not applicable to this sample and the concentration does not exceed the RDCSRS and NRDCSRS.

3.5 Temporary Well Investigation and Soil Sampling

In the 2015 PA, an unknown source of VOC was identified. Benzene was detected in two soil samples in the UST area. To further evaluate if benzene at AOC-G1a is impacting groundwater, a follow-up investigation was performed on January 14, 2019.

On January 14, 2019, GEI returned to the Site in conjunction with Summit Drilling of Bridgewater, New Jersey (Summit) to conduct a follow-up groundwater investigation at AOC-G1a. Summit installed a temporary well point (TWP) to evaluate groundwater quality beneath the location of the former UST. The TWP, designated TWP-UST-1, was installed at the location of former soil sample AOC-G1a-TB-1. A soil sample, AOC-G1a-TB-4, was collected from the TWP boring at the 9.5 to 10 feet interval to vertically delineate the previously detected benzene concentration in AOC-G1a-TB-1. The temporary well point TWP-UST-1 and soil sample AOC-G1a-TB-4 locations are depicted on **Figure 5** and **Figure 6**.

The TWP was screened from 0.5 feet to 10 feet bgs to intersect the water table. The TWP was developed using a submersible pump to reduce turbidity, with a minimum of three volumes of water purged prior to sample collection. The methodology for the installation and development of the TWP is included as **Appendix G**. Temporary well sample TWP-UST-1 was submitted to IAL and analyzed for VOCs+15, 1,2-dibromoethane, 1,2-dichloroethane, and total lead. The TWP was removed by Summit upon completion of the sampling event.

3.6 Temporary Well Point Soil and Groundwater Analytical Results

No exceedances to applicable criteria were detected in the analysis of soil sample AOC-G1a-TB-4. Benzene was reported at non-detect. Soil sample analytical results are summarized in **Table 1**. The laboratory analytical data package is included as **Appendix E**.

Groundwater sample TWP-UST-1 results are summarized on **Table 2**. The laboratory analytical data package is included as **Appendix E**. No VOC exceedances of NJDEP Class IIA Groundwater Quality Standards (GWQS) were reported. 1,4-Dioxane was reported as non-detect; however, the reporting limit for 1,4-dioxane was higher than the GWQS. Since 1,4-dioxane is a compound commonly associated with chlorinated solvents in which it acts as a stabilizer and the contaminants of concern associated with the gasoline UST are petroleum hydrocarbons, no further action is recommended for 1,4-dioxane despite the method detection limit for 1,4 dioxane being higher than the GWQS.

A concentration of 33.4 micrograms per liter ($\mu\text{g/L}$) was reported for lead, which exceeds its GWQS of 5 $\mu\text{g/L}$. However, analytical results for the entire Site show similar or higher lead levels attributable to historic fill present throughout the Site. Specifically, lead concentrations from 54 TWPs (located on and offsite) included as part of the May 7, 2014 *Remedial Investigation Report* ranged from non-detect to over 7,400 $\mu\text{g/L}$ and randomly distributed throughout the Site.

3.7 UST Investigation Result Discussion

Analysis of soil samples collected as part of the UST closure and investigation detected benzene at 5.13 mg/kg in subsurface soil sample AOC-G1a-TB-1 and lead at 1,770 mg/kg in surface soil sample AOC-G1a-SS-1 and in groundwater in TWP-UST-1 at 33.4 µg/L. Discussion of these results is described in the following sections.

3.7.1 Benzene Results Discussion

Based on NJDEP *Technical Guidance for Attainment of Remediation Standards and Site-Specific Criteria* dated September 24, 2012 (Attainment Guidance), compliance averaging by calculating the arithmetic mean for the data set where there are two or fewer distinct sample values or nine or fewer total sample points can be used for ingestion-dermal and inhalation pathway to determine whether a remedial action is required. The functional area for non-residential exposure scenario is 2.0 acres. AOC-G1a area is less than 2 acres, the soils in AOC-G1a are divided into two zones that are two separate functional areas: the surface soil (0-2 feet bgs) and the subsurface soil (>2 feet bgs). The subsurface soil impact is limited to benzene in sample AOC-G1a-TB-1 at 8 to 8.5 feet bgs. Benzene is vertically delineated by soil sample AOC-G1a-TB-4 from 9.5 to 10 feet bgs. For compliance averaging calculation, tank bottom samples AOC-G1a-TB-1 through AOC-G1a-TB-4 and pipe bottom soil samples AOC-G1a-P-1 and AOC-G1a-P-2 are used for compliance averaging calculation. The compliance averaging calculation for benzene subsurface soil impact is shown in the table below. The result of compliance average calculation shows that the concentrations of benzene in the subsurface soil is in compliance with NJDEP RDCSRS (2 mg/kg) and NRDCSRS (5 mg/kg); and is further supplemented by the fact that the 5.13 mg/kg result, when rounded down to 5 mg/kg (as allowed by the NJDEP April 2014 QA/QC Guidance) is not above the NRDCSRS.

Sample ID	Sampling Interval (ft)	Benzene Concentration (mg/Kg)
AOC-G1a-TB-1	8.5-9	5.13
AOC-G1a-TB-2	8.5-9	ND
AOC-G1a-TB-3	8.5-9	ND
AOC-G1a-TB-4	9.5-10	ND
AOC-G1a-P-1	4-4.5	ND
AOC-G1a-P-2	4-4.5	ND
Compliance Averaging Concentration:		0.86

3.7.2 Lead Results Discussion

During UST closure and soft clearing activities, GEI observed the presence of historic fill at AOC-G1a. Metals exceedances associated with general filling of tidal wetlands have been identified throughout the entire Site in soil and groundwater during the remedial investigation.

The presence of metals, including lead in soil and groundwater at concentrations above SRS and GWQS, is likely a result of this historic filling activity.

Using USEPA ProUCL version 5.1, statistical analysis of soil samples collected from zero to four feet bgs in Area G from the Remedial Investigation Report (RIR) was conducted to further demonstrate that the NRDCSRS exceedance of lead in AOC-G1a-SS-1 is representative to other concentrations of lead found in Area G. Concentrations of lead identified in Area G soil samples from 0 to 4 feet bgs ranged from 30.4 mg/kg to 48,500 mg/kg. Assuming a normal distribution, the 95% Upper Confidence Limit (UCL) is 10,787 mg/kg which is above the concentration identified in AOC-G1a-SS-1. Therefore, the concentration identified in AOC-G1a-SS-1 is typical of other Area G concentrations.

As discussed in Section 3.6, the RIR presented temporary well point groundwater samples collected across the Site, which were in exceedance of the GWQS and well above the concentration of lead detected UST-TWP-1. Therefore, the concentration of 33.4 µg/L is not an anomalous concentration of lead in groundwater found across the Site in shallow temporary well points. Statistically, in conjunction with analytical results from the Overburden A aquifer, the concentration detected in UST-TWP-1 is within the 95% UCL for normal distribution, further indicating that the concentration of lead is comparable to concentrations found at the Site.

As discussed in Section 1.1, large AOC Remediation Area G, in which the area around and over AOC-G1a is located, is capped and a deed notice and soil remediation permit application is being prepared now to serve as engineering and institutional controls to prevent direct contact exposure. The entire Site will be capped after the conclusion of all proposed remediation activities. Not only is capping with a deed notice and permit the presumptive remedy for historic fill, it is applicable for the lead exceedance in AOC-G1a; therefore, no additional action is necessary prior to the issuance of the deed notice and permit.

Regarding groundwater conditions, the entire Site is under the administrative control of a Classification Exception Area, or CEA. The CEA was established to provide notice that the constituent standards for this aquifer classification are not being met in a localized area due to natural water quality or anthropogenic influences, and that designated aquifer uses are suspended in the affected area for the term of the CEA. Use of the aquifer remains restricted until standards are achieved. GEI is currently implementing a groundwater monitoring plan for the portions of the site that have been remediated and will prepare and implement the plan for the other areas of the site as remediation is completed. This effort is in preparation of a site-wide groundwater RAO that will be issued at the completion of all remedial activity.

3.8 UST Disposal and Restoration

The excavated UST was cleaned and disposed at All American Alloys of Elizabeth New Jersey. UST disposal receipt is included in **Appendix C**. The UST area was restored to the previous condition following the UST closure, where a cap consisting of a geogrid demarcation layer and

stone cover was installed. The depth of the geogrid was approximately eight inches below the finished grade of the stone cap. Photo log documenting the site restoration is included as **Appendix D**.

3.9 Reliability of Data

Field sampling activities were conducted in accordance with the NJDEP *Field Sampling Procedures Manual*, dated May 1992 (revised August 2005) and the *Technical Requirements for Site Remediation* (N.J.A.C. 7:26E). Field equipment was properly decontaminated prior to each use. Following collection, samples were collected in laboratory-prepared glassware with appropriate preservative, properly labeled, placed into a cooler with ice, and transported under chain-of-custody to IAL for analysis. Field blanks were collected using laboratory-supplied reagent grade distilled water poured over the sampling device into the appropriate bottleware. Trip blanks contained laboratory-supplied distilled water in unopened, properly preserved containers which accompanied sample cooler shipments. No target compounds were detected in the field blank and trip blank samples. Field blank and trip blank analytical results are summarized in **Table 3**.

Laboratory methodologies are in accordance with those specified in the NJDEP TRSR (N.J.A.C. 7:26E). No anomalous analytical results or field conditions were reported or identified during the investigations documented in this report. As such, the laboratory analytical data are considered to be reliable and accurate.

4. Receptor Evaluation Status

The remedial status of the UST closure documented in this report is Site Investigation, and no new AOCs were identified during activities documented in this report. No new contaminant was discovered that is not already the subject of the remediation activities conducted in 2016-2018 in large AOC Remediation Area G and large AOC Remediation Area B. The Remedial Action Report for large AOCs Remediation Area A (remediation conducted and completed prior to the initiation of remediation in large Areas B and G in 2016), B and G is being finalized now and should be filed in this calendar year along with the deed notice and application for and receipt of the necessary remedial soil permit for large Areas A, B and G. Remedial activities included in that RAR, deed notice and/or permit include soil excavation, capping, and/or ISS. The UST sub-area G1a is included in that remediation and under that deed notice and permit. A CEA for the entire Site is already in place and will remain in place; no new contaminant was discovered that is not already the subject of the sitewide CEA. A site-wide groundwater monitoring plan has begun implementation in preparation of a site-wide groundwater RAO and necessary groundwater remediation permit that will be issued at the completion of all remedial activities at the Site. The UST sub-area G-1a will be included under that future groundwater remediation permit. Therefore, in accordance with the NJDEP *TRSR*, an updated receptor evaluation is not required.

5. Conclusions and Recommendations

Based on the results of the investigation and closure activities for the UST identified as AOC-G1a, no new contaminant was discovered that is not already the subject of the remediation activities conducted in 2016-2018 in large AOC Remediation Area G and large AOC Remediation Area B. Lead exceedances in soil and groundwater are already identified in association with the historic fill that is ubiquitously present at the Site as described in Section 3.7.2. The area around and over the sub-area AOC-G1a is capped and a deed notice and soil remediation permit are being prepared to serve as engineering and institutional controls to prevent direct contact exposure. In addition, the entire Site is under the administrative control of a CEA. GEI believes the in-place engineering and institutional controls of the cap, deed notice, remedial permits and CEA, along with the analytical results presented in this report, provide sufficient information regarding conditions related to AOC-G1a. Therefore, no further action is warranted for sub-area AOC-G1a. GEI recommends the closure of the UST. The issuance of a restricted use, soils only RAO for large AOCs Remediation Area A, B and G that is being finalized now and should be filed in this calendar year includes the UST sub-area G1a.

6. References

The following documents, publications, maps, etc. were used as source materials for this report:

- *Data Quality Assessment and Data Usability Evaluation Technical Guidance*, NJDEP, April 2014.
- *Field Sampling Procedures Manual*, NJDEP, revised August 2005.
- GEI Consultants, Inc (2014). “*Remedial Investigation Report – Erie Street Former MGP Site*”, May7, 2014.
- GEI Consultants, Inc. (2015). “*Preliminary Assessment Report – Erie Street Former MGP Site*”, November 24, 2015.
- *N.J.A.C. 7:14B Underground Storage Tanks*, NJDEP, amended August 6, 2018.
- *N.J.A.C. 7:26C Administrative Requirements for the Remediation of Contaminated Sites*, NJDEP, amended August6, 2018.
- *N.J.A.C. 7:26E Technical Requirements for Site Remediation*, NJDEP, amended August 6, 2018.
- *Technical Guidance for Attainment of Remediation Standards and Site-Specific Criteria*, NJDEP, September 24, 2012.
- *Technical Guidance for Investigation of Underground Storage Tank Systems*, NJDEP, July 31, 2012.

UST Site Investigation and Closure Report
Erie Street Former MGP Site
Elizabeth, New Jersey
July 2019

Tables

UST Site Investigation and Closure Report
Erie Street Former MGP Site
Elizabeth, New Jersey
July 2019

Figures

UST Site Investigation and Closure Report
Erie Street Former MGP Site
Elizabeth, New Jersey
July 2019

Appendix A

UST Forensic Analysis Report

UST Site Investigation and Closure Report
Erie Street Former MGP Site
Elizabeth, New Jersey
July 2019

Appendix B

Local Construction Permit and UST Closure Notice of Intent

UST Site Investigation and Closure Report
Erie Street Former MGP Site
Elizabeth, New Jersey
July 2019

Appendix C

Transportation Manifest and Disposal Receipt

UST Site Investigation and Closure Report
Erie Street Former MGP Site
Elizabeth, New Jersey
July 2019

Appendix D

Construction Photo Log

UST Site Investigation and Closure Report
Erie Street Former MGP Site
Elizabeth, New Jersey
July 2019

Appendix E

Laboratory Data Package (CD only)

UST Site Investigation and Closure Report
Erie Street Former MGP Site
Elizabeth, New Jersey
July 2019

Appendix F

EDD Submission Email

UST Site Investigation and Closure Report
Erie Street Former MGP Site
Elizabeth, New Jersey
July 2019

Appendix G

Groundwater Monitoring Well Installation, Construction and Development Standard Operating Procedures

2 July 2019

Mr. Steven Cook
Elizabethtown Gas
520 Green Lane
Union, NJ 07083

Re: Response Action Outcome

Remedial Action Type: Unrestricted Use

Scope of Remediation: Areas of Concern:

Soils associated with:

AOC 1 – Western property off-site impacts

AOC 2 – Two former gas holders

AOC 3 – Former meter house, purifier house, engine house, and retort house

AOC 4 – Two tar wells, workshop, coke crusher, engine room, and scales

AOC 5 – Former tar shed, scrap storage, and coal shed

and all media associated with:

AOC 6 – Former 1,300-gallon unregulated heating oil UST

AOC 7 – Former 3,000-gallon unregulated heating oil UST

AOC 8 – Former 500-gallon unregulated UST of unknown contents

AOC 9 – Former 500-gallon unregulated UST of unknown contents

and no other areas

Case Name: Perth Amboy Former MGP Site

Address: Sadowski Parkway and Wisteria Street

Municipality: Perth Amboy

County: Middlesex

Block: 3 **Lot:** 11

Preferred ID: G000005443

Communication Center # 17-08-18-1641-30

UST Registration # 167401, 167402, 167403, 167404

UST Closure # NG000005443UCL170001, NG000005443UCL180001,
NG000005443UCL180002

Well Permit # 26-41214, 26-50173, 26-56392, E201902056, E201902057,
E201902058, E201902059, E201902060, E201902061

Langan Project No.: 1724501

Dear Steve:

As a Licensed Site Remediation Professional authorized pursuant to N.J.S.A. 58:10C to conduct business in New Jersey, I hereby issue this Response Action Outcome for the remediation of the areas of concern specifically referenced above. I personally reviewed and accepted all of the referenced remediation and based upon this work, it is my professional opinion that this remediation has been completed in compliance with the Administrative Requirements for the Remediation of Contaminated Sites (N.J.A.C. 7:26C), that is protective of public health, safety and the environment. Also, full payment has been made for all Department fees and oversight costs pursuant to N.J.A.C. 7:26C-4.

Response Action Outcome

Case Name: Perth Amboy Former MGP Site

Address: Sadowski Parkway and Wisteria Street

Municipality: Perth Amboy / **County:** Middlesex

Block: 3 **Lot:** 11 / **Preferred ID:** G000005443

Communication Center # 17-08-18-1641-30

UST Registration # 167401, 167402, 167403, 167404

UST Closure # NG000005443UCL170001, NG000005443UCL180001, NG000005443UCL180002

Well Permit # 26-41214, 26-50173, 26-56392, E201902056, E201902057, E201902058,

E201902059, E201902060, E201902061

Langan Project No.: 1724501

This remediation includes the completion of a Site Investigation, Remedial Investigation and Remedial Action as defined pursuant to the Technical Requirements for Site Remediation (N.J.A.C. 7:26E),

My decision in this matter is made upon the exercise of reasonable care and diligence and by applying the knowledge and skill ordinarily exercised by licensed site remediation professionals in good standing practicing in the State at the time these professional services are performed.

As required pursuant to N.J.A.C. 7:26C-6.2(b)2ii, a copy of all records related to the remediation that occurred at this location is being simultaneously filed with the New Jersey Department of Environmental Protection (Department). These records contain all information upon which I based my decision to issue this Response Action Outcome.

By operation of law a Covenant Not to Sue pursuant to N.J.S.A. 58:10B-13.2 applies to this remediation. The Covenant Not to Sue is subject to any conditions and limitations contained herein. The Covenant Not to Sue remains effective only as long as the real property referenced above continues to meet the conditions of this Response Action Outcome.

CONDITIONS

Pursuant to N.J.S.A. 58:10B-12o, Elizabethtown Gas and any other person who is liable for the cleanup and removal costs, and remains liable pursuant to the Spill Compensation and Control Act, N.J.S.A. 58:10-23.11 et seq. shall inform the Department in writing, on a form available from the Department, within 14 calendar days after its name or address changes. Any notices you submit pursuant to this paragraph shall reference the above case numbers and shall be sent to:

New Jersey Department of Environmental Protection
Bureau of Case Assignment and Initial Notice
Mail Code 401-05H
401 East State Street, 5th floor
PO Box 420
Trenton, New Jersey 08625-0420

NOTICES

Well Decommissioning

Pursuant to N.J.A.C. 7:9D-3 any wells installed as part of this remediation that will no longer be used for remediation have been properly decommissioned by a New Jersey licensed driller of the proper class and I have verified that the well driller's well decommissioning report has been submitted to the Bureau of Water Allocation and Well Permitting. Wells considered to be abandoned, lost, damaged, or destroyed pursuant to N.J.A.C. 7:9D have been reported to the Bureau of Water Allocation and Well Permitting pursuant to N.J.A.C. 7:9D. Pursuant to N.J.S.A.

Response Action Outcome**Case Name:** Perth Amboy Former MGP Site**Address:** Sadowski Parkway and Wisteria Street**Municipality:** Perth Amboy / **County:** Middlesex**Block:** 3 **Lot:** 11 / **Preferred ID:** G000005443**Communication Center #** 17-08-18-1641-30**UST Registration #** 167401, 167402, 167403, 167404**UST Closure #** NG000005443UCL170001, NG000005443UCL180001, NG000005443UCL180002**Well Permit #** 26-41214, 26-50173, 26-56392, E201902056, E201902057, E201902058, E201902059, E201902060, E201902061**Langan Project No.:** 1724501

58:4A, any monitoring wells remaining onsite shall be properly decommissioned prior to the termination of the applicable remedial action permit. A New Jersey licensed well driller shall decommission the well(s) in accordance with the requirements of N.J.A.C. 7:9D-3 and submit the decommissioning report on your behalf to the Bureau of Water Allocation and Well Permitting. More information about regulations regarding the maintenance and decommissioning of wells in New Jersey can be found at www.nj.gov/dep/watersupply. For a list of New Jersey licensed well drillers, click on the "reports" button in the left column and select "access the well permit reports." Questions can be emailed to wellpermitting@dep.nj.gov.

Regional Natural Background Levels of Materials in Soil

Please be advised that concentrations of aluminum and manganese were detected in the soil at this site above the Department's Residential Direct Contact Remediation Standards. However, these concentrations are associated with natural background levels of these materials in the soil. Pursuant to N.J.S.A. 58:10B, remediation beyond natural background levels is not required.

Existing Classification Exception Area or Deed Notice from Prior Remediations

Please be advised that this Response Action Outcome does not address the contamination at this site covered under the *Classification Exception Area* for the case(s) covered under Department Program Interest # G000005443.

Soils Only Response Action Outcome when Ground Water Contamination remains from that Area(s) of Concern or Site

This Response Action Outcome only applies to the soils at the referenced location. By issuing this Response Action Outcome, I have relied on both the implementation of the remedial action for soil and on the ground water data to support the determination that soil contamination is no longer affecting ground water. Please be advised that if changes in future ground water data no longer support this conclusion, additional soil remediation may be necessary. Also, any redevelopment on this site should take into consideration the potential for vapor intrusion from the ground water contamination. Please note that you may have an affirmative obligation, pursuant to the Brownfield and Contaminated Site Remediation Act, N.J.S.A. 58:10B-1.3, to remediate the remaining contamination, within specific regulatory and mandatory timeframes and within the statutory timeframe specified at N.J.S.A. 58:10C-27.

In concluding that this remediation has been completed, I am offering no opinions concerning whether either primary restoration (restoring natural resources to their pre-discharge condition) or compensatory restoration (compensating the citizens of New Jersey for the lost interim value of the natural resources) has been completed.

Pursuant to N.J.S.A. 58:10C-25, the Department may audit this Response Action Outcome and associated documentation up to three years following issuance. Based on a finding by the Department that a Response Action Outcome is not protective of public health, safety and the environment, the Department can invalidate the Response Action Outcome. Other justifications

Response Action Outcome

Case Name: Perth Amboy Former MGP Site
Address: Sadowski Parkway and Wisteria Street
Municipality: Perth Amboy / **County:** Middlesex
Block: 3 **Lot:** 11 / **Preferred ID:** G000005443
Communication Center # 17-08-18-1641-30
UST Registration # 167401, 167402, 167403, 167404
UST Closure # NG000005443UCL170001, NG000005443UCL180001, NG000005443UCL180002
Well Permit # 26-41214, 26-50173, 26-56392, E201902056, E201902057, E201902058, E201902059, E201902060, E201902061
Langan Project No.: 1724501

for the Department's invalidation of this Response Action Outcome are listed in the Administrative Requirements for the Remediation of Contaminated Sites at N.J.A.C. 7:26C-6, including, but not limited to, a Department audit following issuance of this document may be initiated at any time if: a) undiscovered contamination is found that was not addressed by the Response Action Outcome, b) if the Site Remediation Professional Licensing Board conducts an investigation of the Licensed Site Remediation Professional issuing the Response Action Outcome or, c) if the license of that person is suspended or revoked.

Thank you for your attention to these matters. If you have any questions, please contact me at (973) 560-4985.

Sincerely,
Langan Engineering and Environmental Services, Inc.



Brian A. Blum CPG,
Licensed Site Remediation Professional #573990

CRB/BAB:mf

Encls: Attachment A - Cover/Certification Form
Attachment B - Case Inventory Document
Attachment C - RAO Form
Attachment D - RE Form
Attachment E - Financial Obligation Report
Attachment F - CD Containing Previously Submitted Reports

- 2011 RASR/RAWP
- 2014 RI Complete Supporting Documentation Form
- 2018 UST SIR
- 2019 RAR

c: Wilda Diaz, Mayor - City of Perth Amboy
Municipal Clerk - City of Perth Amboy
Middlesex County Health Department
Elaine M. Flynn - Middlesex County Clerk
NJDEP Bureau of Case Assignment and Initial Notice

ATTACHMENT A
COVER/CERTIFICATION FORM


New Jersey Department of Environmental Protection
 Site Remediation and Waste Management Program

COVER/CERTIFICATION FORM

(Submit with Remedial Phase Report, Receptor Evaluation, and CEA Forms)

 Date Stamp
 (For Department use only)

SECTION A. SITE INFORMATION

Site Name: _____

AKAs: _____

Street Address: _____

Municipality: _____ (Township, Borough or City)

County: _____ Zip Code: _____

Program Interest (PI) Number(s): _____

Case Tracking Number(s) for this submission: _____

Date Remediation Initiated Pursuant to N.J.A.C. 7:26C-2: _____

State Plane Coordinates for a central location at the site: Easting: _____ Northing: _____

List current Municipal Block and Lot Numbers of the Site:

Block # _____ Lot #(s) _____ Block # _____ Lot #(s) _____

Block # _____ Lot #(s) _____ Block # _____ Lot #(s) _____

Block # _____ Lot #(s) _____ Block # _____ Lot #(s) _____

Block # _____ Lot #(s) _____ Block # _____ Lot #(s) _____

SECTION B. SUBMISSION STATUS

1. Indicate how the Electronic Data Deliverable (EDD) for this submission is being provided to the NJDEP:

☐ Via Email at srpedd@dep.state.nj.us (attach NJDEP confirmation email); or

☐ CD (attach to this submission)

☐ Not Applicable – No EDD

2. Complete the following Submission and Permit Status Table:

		Included in this Submission	Previously Submitted	Date of Submission	Date of Revised Submission	Date of Previous NJDEP Approval	Date of Document Withdrawal
Remedial Phase Documents	N/A						
Preliminary Assessment Report	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
Site Investigation Report	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
Remedial Investigation Report	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
Remedial Action Work Plan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
Remedial Action Report	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
Response Action Outcome	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
Other Submissions							
Alternative Soil Remediation Standard and/or Screening level Application Form	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
Case Inventory Document		<input type="checkbox"/>					
Classification Exception Area / Well Restriction Area (CEA/WRA)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
Discharge to Ground Water Permit by Rule Authorization Request	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				

IEC Engineered System Response Action Report	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
Immediate Environmental Concern Report	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
LNAPL Interim Remedial Measure Report	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
Public Notification	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
Receptor Evaluation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
Technical Impracticability Determination	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
Vapor Concern Mitigation Report	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
Permit Application – list:	<input type="checkbox"/>						
		<input type="checkbox"/>	<input type="checkbox"/>				
		<input type="checkbox"/>	<input type="checkbox"/>				
		<input type="checkbox"/>	<input type="checkbox"/>				
		<input type="checkbox"/>	<input type="checkbox"/>				
Radionuclide Remedial Action Report	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
Radionuclide Remedial Action Workplan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
Radionuclide Remedial Investigation Report	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
Radionuclide Remedial Investigation Workplan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				

SECTION C. SITE USE

Current Site Use: *(check all that apply)*

- ☐ Industrial ☐ Agricultural
☐ Residential ☐ Park or recreational use
☐ Commercial ☐ Vacant
☐ School or child care ☐ Government
☐ Other: _____

Intended Future Site Use, if known: *(check all that apply)*

- ☐ Industrial ☐ Park or recreational use
☐ Residential ☐ Vacant
☐ Commercial ☐ Government
☐ School or child care ☐ Future site use unknown
☐ Other: _____

SECTION D. CASE TYPE: *(check all that apply)*

- | | |
|--|---|
| <input type="checkbox"/> Administrative Consent Order (ACO) | <input type="checkbox"/> Landfill (SRP subject only) |
| <input type="checkbox"/> Brownfield Development Area (BDA) | <input type="checkbox"/> Regulated Underground Storage Tank (UST) |
| <input type="checkbox"/> Child Care Facility | <input type="checkbox"/> Remediation Agreement (RA)/Remediation Certification |
| <input type="checkbox"/> Chrome Site (Chromate chemical production waste) | <input type="checkbox"/> School Development Authority (SDA) |
| <input type="checkbox"/> Coal Gas | <input type="checkbox"/> School facility |
| <input type="checkbox"/> Due Diligence with RAO | <input type="checkbox"/> Spill Act Defense – Government Entity |
| <input type="checkbox"/> Hazardous Discharge Remediation Fund (HDSRF) Grant/Loan | <input type="checkbox"/> Spill Act Discharge |
| <input type="checkbox"/> ISRA | <input type="checkbox"/> UST Grant/Loan |
| | <input type="checkbox"/> Other: _____ |

Federal Case *(check all that apply)*

- ☐ RCRA GPRA 2020 ☐ CERCLA/NPL ☐ USDOD ☐ USDOE

1. Is the party conducting remediation a government entity? ☐ Yes ☐ No
- If “Yes,” check one: ☐ Federal ☐ State ☐ Municipal ☐ County

SECTION E. PUBLIC FUNDS

Did the remediation utilize public funds? ☐ Yes ☐ No

If “Yes,” check applicable:

- | | | |
|--------------------------------------|--|---|
| <input type="checkbox"/> UST Grant | <input type="checkbox"/> UST Loan | <input type="checkbox"/> Brownfield Reimbursement Program |
| <input type="checkbox"/> HDSRF Grant | <input type="checkbox"/> HDSRF Loan | <input type="checkbox"/> Landfill Reimbursement Program |
| <input type="checkbox"/> Spill Fund | <input type="checkbox"/> Schools Development Authority | <input type="checkbox"/> Environmental Infrastructure Trust |

SECTION F. LICENSED SITE REMEDIATION PROFESSIONAL INFORMATION AND STATEMENTLSRP ID Number: 573990First Name: BrianLast Name: BlumPhone Numbers: (973) 560-4985

Ext.: _____

Fax: (973) 560-4901Mailing Address: 300 Kimball DriveMunicipality: ParsippanyState: NJZip Code: 07054Email Address: bblum@langan.com

This statement shall be signed by the LSRP who is submitting this notification in accordance with N.J.S.A. 58:10C-14, and N.J.S.A. 58:10B-1.3b(1) and (2).

(1) I certify, as a Licensed Site Remediation Professional authorized pursuant to N.J.S.A. 58:10C-1 et seq. to conduct business in New Jersey, that for the remediation described in this submission, and all attachments included in this submission, I personally: Managed, supervised, or performed the remediation conducted at this site that is described in this submission, and all attachments included in this submission; and/or periodically reviewed and evaluated the work performed by other persons that forms the basis for the information in this submission; and/or completed the work of another site remediation professional, licensed or not, after having: (1) reviewed all available documentation on which I relied; (2) conducted a site visit and observed the then-current conditions and verified the status of as much of the work as was reasonably observable; and (3) concluded, in the exercise of my independent professional judgment, that there was sufficient information upon which to complete any additional phase of remediation and prepare workplans and reports related thereto.

(2) I certify:

- That I have read this submission and all attachments to this submission;
- That in performing the professional services as the licensed site remediation professional for the entire site or each area of concern, I adhered to the professional conduct standards and requirements governing licensed site remediation professionals provided in N.J.S.A. 58:10C-16;
- That the remediation conducted at the entire site or each area of concern, that is described in this submission and all attachments to this submission, was conducted pursuant to and in compliance with the remediation requirements in N.J.S.A. 58:10C-14.c;
- That the remediation described in this submission, and all attachments to this submission, was conducted pursuant to and in compliance with the regulations of the Site Remediation Professional Licensing Board at N.J.A.C. 7:26l; and
- That the information contained in this submission and all attachments to this submission is true, accurate, and complete.

(3) I certify, when this submission includes a response action outcome, that the entire site or each area of concern has been remediated in compliance with all applicable statutes, rules, and regulations and is protective of public health and safety and the environment.

(4) I certify that no other person is authorized or able to use any password, encryption method, or electronic signature that the Board or the Department have provided to me.

(5) I certify that I understand and acknowledge that:

- If I knowingly make a false statement, representation, or certification in any document or information I submit to the Department I may be subject to civil and administrative enforcement pursuant to N.J.S.A. 58:10C-17.a.1(a) through (f) by the Board, including but not limited to license suspension, revocation, or denial of renewal; and
- If I purposely, knowingly, or recklessly make a false statement, representation, or certification in any application, form, record, document or other information submitted to the Department or required to be maintained pursuant to the Site Remediation Reform Act, I shall be guilty, upon conviction, of a crime of the third degree and shall, notwithstanding the provisions of subsection b. of N.J.S.2C:43-3, be subject to a fine of not less than \$5,000 nor more than \$75,000 per day of violation, or by imprisonment, or both.

(6) I certify that I have read this certification prior to signing, certifying, and making this submission.

LSRP Signature: _____

Date: _____

LSRP Name: Brian A. Blum, CPG, LSRP/Senior AssociateCompany Name: Langan Engineering & Environmental Services

SECTION G. PERSON RESPONSIBLE FOR CONDUCTING THE REMEDIATION INFORMATION AND CERTIFICATION

Full Legal Name of the Person Responsible for Conducting the Remediation: Elizabethtown Gas

Representative First Name: Steven Representative Last Name: Cook

Title: Environmental Programs Manager

Phone Number: (908) 662-8317 Ext.: _____ FAX: _____

Mailing Address: 520 Green Lane

Municipality: Union State: NJ Zip code: 07083

Email Address: scCook@sjindustries.com

This certification shall be signed by the person responsible for conducting the remediation who is submitting this notification in accordance with Administrative Requirements for the Remediation of Contaminated Sites rule at N.J.A.C. 7:26C-1.5(a).

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein, including all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, to the best of my knowledge, I believe that the submitted information is true, accurate and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for the penalties.

Signature:  Date: 07/02/2019

Name/Title: Steven Cook/Environmental Programs Manager

For CEA Submissions:

☐ Check this box if the person above is also the property owner of the site or their representative. If this person is not the site property owner, please ensure the site property owner's name and address is in the first line of the table in Section E.2 of the Classification Exception Area / Well Restriction Area (CEA/WRA) Fact Sheet Form.

Completed forms should be sent to:

Bureau of Case Assignment & Initial Notice
Site Remediation Program
NJ Department of Environmental Protection
401-05H
PO Box 420
Trenton, NJ 08625-0420



January 22, 2019

To whom it may concern:

I, Christie McMullen, President and Chief Operating Officer for Elizabethtown Gas, hereby authorize Steven L. Cook, Manager, Environmental Programs for Elizabethtown Gas, to certify site remediation related submissions in accordance with the requirements of N.J.A.C. 7:26C-1.5 on behalf of Elizabethtown Gas.

This authorization is valid until further written notice from Elizabethtown Gas.

Sincerely,

A handwritten signature in blue ink, appearing to read "Christie McMullen", is written over a faint, larger version of the same signature.

Christie McMullen
President and Chief Operating Officer
Elizabethtown Gas

ATTACHMENT B
CASE INVENTORY DOCUMENT

CASE INVENTORY DOCUMENT
FORMER PERTHY AMBOY MGP SITE
PERTH AMBOY, NEW JERSEY

Case Name: Perth Amboy Former MGP Site
PI #: G000005443

IMPORTANT: 1) Do not delete or copy and paste across multiple columns because it can disrupt hidden equations.
2) If pasting from a Word document, use the Paste option: **Match Destination Formatting**
3) If the text turns **red** you have exceeded the character limit for that column

Case Inventory Document Version 1.4 02/23/17

AOC ID	AOC Type	AOC Description	Confirmed Contamination	AOC Status	Status Date	Incident #	DEP AOC Number	Contaminated Media	Contaminants of Concern	Additional Contaminants of Concern	Additional Contaminants of Concern	Applicable Remediation Standard	Exposure Route	Additional Exposure Route	RA Type	Additional RA Type	Additional RA Type	Was an Order of Magnitude Evaluation Conducted?	Activity
AOC 1	Other areas of concern - Any area suspected of containing contaminants	Western property off-site impacts	Yes	RAO-A (Unrestricted Use)	7/1/2019			None	Not Applicable			AOC Specific ARS and Remediation Standards			Excavation				Delineation completed for COCs in soil (PAHs, metals, cyanide, and liquid tar) to 2008 SRS during the 2012 Pre-Remedial Action Investigation. Impacted soil excavated as part of a 2017-2018 RA and includes removal of soil contaminants from the Church Auditorium property and adjacent city streets to the south and west of the Church Auditorium building. RA complete in September 2018. July 2019 - An unrestricted use RAO-A is being issued for soil.
AOC 2	Storage tank and appurtenance - Above ground storage tank	Two former gas holders	Yes	RAO-A (Unrestricted Use)	7/1/2019			Soil	Not Applicable			AOC Specific ARS and Remediation Standards			Excavation				Delineation completed for COCs in soil (ethylbenzene, PAHs, metals, cyanide, and oil) to 2008 SRS during the 2012 Pre-Remedial Action Investigation. Impacted soil excavated as part of a 2017-2018 RA that includes removal of soil contaminants and associatd MGP structures. RA complete in September 2018. July 2019 - An unrestricted use RAO-A is being issued for soil.
AOC 3	Other areas of concern - Any area suspected of containing contaminants	Former meter house, purifier house, engine house, and retort house	Yes	RAO-A (Unrestricted Use)	7/1/2019			Soil	Not Applicable			AOC Specific ARS and Remediation Standards			Excavation				Delineation completed for COCs in soil (PAHs) to 2008 SRS during the 2012 Pre-Remedial Action Investigation. Impacted shallow soil excavated as part of a 2017-2018 RA that includes removal of soil contaminants and associatd MGP structures. RA complete in September 2018. July 2019 - An unrestricted use RAO-A is being issued for soil.
AOC 4	Other areas of concern - Any area suspected of containing contaminants	Tar well #1 (nearest retort house), workshop, coke crusher, engine room, tar well #2 (nearest workshop), and scales	Yes	RAO-A (Unrestricted Use)	7/1/2019			Soil	Not Applicable			AOC Specific ARS and Remediation Standards			Excavation				Delineation completed for mixed media (soil and ground water) COCs (BTEX, PAHs, metals, cyanide, and liquid tar) to 2008 SRS and GWQS during the 2012 Pre-Remedial Action Investigation. Impacted soil excavated as part of a 2017-2018 RA that includes removal of soil contaminants and associatd MGP structures. RA complete in September 2018. July 2019 - An unrestricted use RAO-A is being issued for soil.
AOC 5	Other areas of concern - Any area suspected of containing contaminants	Former tar shed, scrap storage, and coal shed	Yes	RAO-A (Unrestricted Use)	7/1/2019			Soil	Not Applicable			AOC Specific ARS and Remediation Standards			Excavation				Delineation completed for mixed media (soil and ground water) COCs (BTEX, PAHs, metals, phenols, cyanide, hard tar, and oil) to 2008 SRS and GWQS during the 2012 Pre-Remedial Action Investigation. Impacted soil excavated as part of a 2017-2018 RA that includes removal of soil contaminants and associatd MGP structures. RA complete in September 2018. July 2019 - An unrestricted use RAO-A is being issued for soil.
AOC 6	Storage tank and appurtenance - Unregulated underground storage tank	Former 1,300-gallon unregulated heating oil UST	No	RAO-A (Unrestricted Use)	7/1/2019			None	Not Applicable			AOC Specific ARS and Remediation Standards							A 1,300-gallon unregulated UST was uncovered in 1999. It is not known if this UST is related to former MGP operations or was installed when the existing building was constructed in the 1970s. Fingerprint analysis was completed during a 2017 RA and UST contents were identified as fuel oil. The UST was evaluated and closed under the direction of an LSRP in accordance with the requirements of N.J.A.C. 7:14B and 7:26E. The UST was removed in conjunction with the 2017-2018 RA and post-excavation samples confirmed the absence of associated contaminants in soil above the SRS. Registered as UST1 on 7/19/17. Notice of Intent to Close Filed on 7/26/17. Tank removed from ground 8/18/17. Questionnaire updated on 9/13/17. A SIR was submitted on 9/28/2018. The RA was completed in September 2018. July 2019 - An unrestricted use RAO-A is being issued for soil.

CASE INVENTORY DOCUMENT
FORMER PERTHY AMBOY MGP SITE
PERTH AMBOY, NEW JERSEY

Case Name: Perth Amboy Former MGP Site
PI #: G000005443

IMPORTANT: 1) Do not delete or copy and paste across multiple columns because it can disrupt hidden equations.
2) If pasting from a Word document, use the Paste option: **Match Destination Formatting**
3) If the text turns **red** you have exceeded the character limit for that column

Case Inventory Document Version 1.4 02/23/17

AOC ID	AOC Type	AOC Description	Confirmed Contamination	AOC Status	Status Date	Incident #	DEP AOC Number	Contaminated Media	Contaminants of Concern	Additional Contaminants of Concern	Additional Contaminants of Concern	Applicable Remediation Standard	Exposure Route	Additional Exposure Route	RA Type	Additional RA Type	Additional RA Type	Was an Order of Magnitude Evaluation Conducted?	Activity
AOC 7	Storage tank and appurtenance - Unregulated underground storage tank	Former 3,000-gallon unregulated heating oil UST	No	RAO-A (Unrestricted Use)	7/1/2019	17-08-18-1641-30		None	Not Applicable			AOC Specific ARS and Remediation Standards							A 3,000-gallon heating oil UST was in use on the Church property until the start of the 2017 RA. The UST is unrelated to former MGP operations. The UST was found to be unregulated and was evaluated and closed under the direction of an LSRP in accordance with the requirements of N.J.A.C. 7:14B and 7:26E. The UST was removed in conjunction with the 2017-2018 RA. Registered as UST2 on 7/19/17. Notice of Intent to Close was filed on 7/24/17. Tank was removed on 8/18/17. Holes were observed in the tank and an incident (17-08-18-1641-30) was called-in to the hotline. Impacted soil was removed from the tank excavation and post-excavation samples were collected. PAHs were detected above the SRS; however, this is consistent with MGP coJuly 2019 - An unrestricted use RAO-A is being issued for soil.An unrestricted RAO-A will be issued for soil.
AOC 8	Storage tank and appurtenance - Unregulated underground storage tank	Former 500-gallon unregulated UST of unknown contents	No	RAO-A (Unrestricted Use)	7/1/2019			None	Not Applicable			AOC Specific ARS and Remediation Standards			Excavation				A 500-gallon unregulated UST of unknown contents was identified during the 2017 RA excavation. The UST was evaluated and closed under the direction of an LSRP in accordance with the requirements of N.J.A.C. 7:14B and 7:26E. The UST was removed in conjunction with the 2017-2018 RA. Tank was registered as UST3 and Notice of Intent to Close was filed on 7/3/18. Tank was removed on 2/6/18. Questionnaire was update on 2/14/18. Post-excavation samples were collected from the tank excavation. PAH concentrations were detected above the SRS; however, this is consistent with MGP impacts at the site. A SIR was submitted on 9/28/2018. The RA was completed in September 2018. July 2019 - An unrestricted use RAO-A is being issued for soil.
AOC 9	Storage tank and appurtenance - Unregulated underground storage tank	Former 500-gallon unregulated UST of unknown contents	No	RAO-A (Unrestricted Use)	7/1/2019			None	Not Applicable			AOC Specific ARS and Remediation Standards			Excavation				A 500-gallon unregulated UST of unknown contents was identified during the 2018 RA excavation. The UST was evaluated and closed under the direction of an LSRP in accordance with the requirements of N.J.A.C. 7:14B and 7:26E. The UST was removed in conjunction with the 2017-2018 RA and post-excavation samples confirmed the absence of associated contaminants in soil above the SRS. Tank registered as UST 4 on 6/5/18. Notice of Intent to Close was filed on 6/11/18. Tank was removed on 7/10/18. Questionnaire was updated on 7/16/18. A SIR was submitted on 9/28/2018. The RA was completed in September 2018. July 2019 - An unrestricted use RAO-A is being issued for soil.
AOC 10	Environmental media - Media Ground water	Ground water	Yes	RI	5/7/2014			Ground Water	Metals + PAHs	Other		Remediation Standards	Ground Water		Monitored Natural Attenuation				A CEA was established for site ground water in 2009 based on historical sample data. Contaminants include PAHs, metals, and cyanide. A September 2011 RAW was approved by the Department. The source material in soil has been removed (via excavation) as of September 2018. Monitoring wells that were abandoned as part of the excavation RA will be reinstalled and ground water will be monitored for natural attenuation of site contaminants.

ATTACHMENT C

RAO FORM



New Jersey Department of Environmental Protection
Site Remediation Program

RESPONSE ACTION OUTCOME FORM

Date Stamp
(For Department use only)

SECTION A. SITE

Site Name: _____

Program Interest (PI) Number(s): _____

Case Tracking Number(s) for this submission: _____

This form must be attached to the Cover/Certification Form

☐ **All Oversight Invoices and Annual Remediation Fees are Paid in Full.**

SECTION B. SCOPE OF THE RESPONSE ACTION OUTCOME

1. Indicate the extent of remediation covered by the Response Action Outcome.

Check only 1 box:

- ☐ Unrestricted RAO
☐ Limited Restricted RAO
☐ Restricted RAO

2. Check only 1 box:

- ☐ Area(s) of Concern Only
☐ Entire Site
☐ ISRA Subject Industrial Establishment (leasehold portion only)

3. Total number of contaminated AOCs associated with the case: _____

4. Total number of contaminated AOCs addressed in this submission: _____

5. Are there any outstanding contaminated AOCs associated with the case where an RAO has not been filed? ☐ Yes ☐ No

6. Does this RAO address a discharge/release from a federally regulated UST? ☐ Yes ☐ No

SECTION C. RESPONSE ACTION OUTCOME PREPARATION CHECKS

1. Was the RAO issued only to the "Person(s) that conducted the Remediation"? ☐ Yes ☐ No
2. Does the language in the issued RAO document conform to the RAO shell document? ☐ Yes ☐ No
3. Were all the applicable individuals/agencies noted in the shell document copied on the RAO? ☐ Yes ☐ No
4. Are there electronic copies of all remediation related records included with this submission? ☐ Yes ☐ No
5. Did the remedial action render the property unusable for future redevelopment or recreation use? ☐ Yes ☐ No
6. Have any NJDEP-documented deficiencies been addressed in this or prior submission? ☐ Yes ☐ No ☐ N/A

SECTION D. RESPONSE ACTION OUTCOME NOTICES (check all the apply and were used in the RAO document)

1. General Notices

- ☐ Well Decommissioning
☐ Building Interiors Not Addressed (Non-Child Care)
☐ Building Interiors Addressed

2. Contamination Remaining Onsite

- ☐ Regional Natural Background Levels (above Direct Contact Standards) of Materials in Soil
- ☐ Existing Classification Exception Area or Deed Notice from Prior Remediations
- ☐ Soils Only RAO when Ground Water Contamination remains from that Area(s) of Concern or Site
- ☐ Ground Water Contamination Not Yet investigated
- ☐ Ground Water Contamination Due to Regional Historic Fill
- ☐ Contamination Remaining Onsite Due to Off-site Contamination
- ☐ Known Onsite Contamination Source Not Yet Remediated
- ☐ Order of Magnitude Change to a Remediation Standard after approval of a Remedial Action Workplan
- ☐ Order of Magnitude Change to a Remediation Standard after Approval of a Final Remediation Document

3. ISRA Specific Notices

- ☐ ISRA Specific – RCRA Situations - Bureau of Case Assignment and Initial Notice Referral
- ☐ ISRA Specific – Multi-Tenant Situations - Bureau of Case Assignment and Initial Notice Referral
- ☐ ISRA Specific – Landfill Situations - Bureau of Case Assignment and Initial Notice Referral

4. Additions to Model Document

- ☐ In-Service Railroad Line, Spurs and Sidings Not Remediated
- ☐ Known Onsite Contamination Source Not Remediated - Historic Fill (RAO-A)
- ☐ Soil Contamination From an Off-Site Source Not Remediated- General
- ☐ Soil Contamination From an Off-Site Source Not Remediated - Diffuse Anthropogenic Pollution
- ☐ Naturally Occurring Levels of Constituents in Ground Water
- ☐ Historically Applied Pesticides not Addressed

SECTION E. REMEDIATION FUNDING SOURCE

1. Has a Remediation Funding Source been posted for this site pursuant to N.J.A.C. 7:26C-5? ☐ Yes ☐ No

If "Yes, check a. or b. below as applicable:

- a. ☐ This RAO is for the entire site and serves as notice to the NJDEP to return the Remediation Funding Source posted for this site*.
- b. ☐ This RAO is for an Area of Concern only and (check one below):
 - ☐ Serves as notice to the NJDEP to decrease the Remediation Funding Source posted for this site*.
 - ☐ No adjustments to the Remediation Funding Source are requested at this time.

Note: If any box in a. or b. above identified with an asterisk (*) is checked, be sure to include the completed "Remediation Cost Review and RFS-FA Form" available at <http://nj.gov/dep/srp/srra/forms>.

ATTACHMENT D
RE FORM



New Jersey Department of Environmental Protection
Site Remediation and Waste Management Program

RECEPTOR EVALUATION (RE) FORM

Date Stamp
(For Department use only)

SECTION A. SITE

Site Name: _____

Program Interest (PI) Number(s): _____

Communication Center Number(s) and/or ISRA number(s) for this submission: (as many as will fit in the space provided)

**This form must be attached to the Cover/Certification Form
if not submitted through a Remedial Phase Online Service**

Indicate the type of submission:

☐ Initial RE Submission

☐ Updated RE Submission

Indicate the reason for submission of an updated RE form

☐ Submission of an Immediate Environmental Concern (IEC) source control report;

☐ Submission of a Remedial Investigation Report;

☐ Submission of a Remedial Action Report;

Check if included in updated RE

☐ The known concentration or extent of contamination in any medium has increased;

☐ A new AOC has been identified;

☐ A new receptor is identified;

☐ A new exposure pathway has been identified.

SECTION B. ON SITE AND SURROUNDING PROPERTY USE

1. Identify any sensitive populations/uses that are currently on-site or surrounding property usage within 200 feet of the site property boundary (*check all that apply*):

	On-site	Off-site
None of the following	<input type="checkbox"/>	<input type="checkbox"/>
Residences or residential property	<input type="checkbox"/>	<input type="checkbox"/>
Public or Private Schools Grades K-12	<input type="checkbox"/>	<input type="checkbox"/>
Child care centers	<input type="checkbox"/>	<input type="checkbox"/>
Public parks, playgrounds or other recreation areas	<input type="checkbox"/>	<input type="checkbox"/>
Other sensitive population use(s) Explain	<input type="checkbox"/>	<input type="checkbox"/>

If any of the above applies, attach a list of addresses, facility names, type of use, and a map depicting each location relative to the site.

2. Current site uses (*check all that apply*):

<input type="checkbox"/> Industrial	<input type="checkbox"/> Residential	<input type="checkbox"/> Commercial
<input type="checkbox"/> School or child care	<input type="checkbox"/> Government	<input type="checkbox"/> Park or recreational use
<input type="checkbox"/> Vacant	<input type="checkbox"/> Agricultural	<input type="checkbox"/> Other: _____

3. Planned future on-site uses and off-site uses within 200 feet of the site boundary (*check all that apply*):

On-Site	Off-Site	On-Site	Off-Site	On-Site	Off-Site
<input type="checkbox"/>	<input type="checkbox"/> Industrial	<input type="checkbox"/>	<input type="checkbox"/> Residential	<input type="checkbox"/>	<input type="checkbox"/> Commercial
<input type="checkbox"/>	<input type="checkbox"/> School or child care	<input type="checkbox"/>	<input type="checkbox"/> Government	<input type="checkbox"/>	<input type="checkbox"/> Park or recreational use
<input type="checkbox"/>	<input type="checkbox"/> Vacant	<input type="checkbox"/>	<input type="checkbox"/> Agricultural	<input type="checkbox"/>	<input type="checkbox"/> Other: _____

Provide a map depicting the location of the proposed changes in land use.*

SECTION C. DESCRIPTION OF CONTAMINATION

1. Identify if any of the following exist at the site:

Yes No

☐ ☐ Free product [N.J.A.C. 7:26E-1.8] identified is ☐ LNAPL* or ☐ DNAPL**.

Date identified: _____

☐ ☐ Residual product [N.J.A.C. 7:26E-1.8]

☐ ☐ Other primary source materials not identified above (e.g., buried drums, containers, unsecured friable asbestos). See form instructions for additional information.

Explain: _____

* LNAPL – measured thickness of .01 feet or more

**DNAPL – See *Ground Water Technical Guidance and USEPA Assessment and Delineation of DNAPL Source Zones at Hazardous Waste Sites* (attached as Appendix A of the NJDEP GW Guidance) available at: http://www.nj.gov/dep/srp/guidance/#pa_si_ri_gw. Also, see US EPA DNAPL Overview available at: [http://clu.in.org/contaminantfocus/default.focus/sec/Dense_Nonaqueous_Phase_Liquids_\(DNAPLS\)/cat/Overview](http://clu.in.org/contaminantfocus/default.focus/sec/Dense_Nonaqueous_Phase_Liquids_(DNAPLS)/cat/Overview)

2. Soil Migration Pathway

Has soil contamination been delineated to the applicable Direct Contact Soil

Remediation Standard pursuant to N.J.A.C. 7:26E-4.2? ☐ Yes ☐ No

Are all soils either below the applicable Direct Contact Criteria or under an institutional control (i.e. deed notice)? ☐ Yes ☐ No

3. If this evaluation is submitted with a technical document that includes contaminant summary information, proceed to Section D. Otherwise, attach a brief summary of all currently available data and information to be included in the site investigation or remedial investigation report.

SECTION D. GROUND WATER USE

1. Have all potentially contaminated areas of concern been evaluated to determine if there is a potential that ground water is contaminated pursuant to N.J.A.C. 7:26E-3.5? ☐ Yes ☐ No

If “No,” proceed to Section E.

2. Is a ground water investigation required? ☐ Yes ☐ No

If “No,” proceed to Section E.

3. Has a groundwater investigation been conducted? ☐ Yes ☐ No

If “Yes”:

Has the laboratory data package been received? ☐ Yes ☐ No

If the laboratory data package has not been received, provide the expected due date for data: _____ and proceed to Section E.

If “No”:

Proceed to Section E.

4. Is ground water contaminated above the Ground Water Remediation Standards [N.J.A.C. 7:9C]? ☐ Yes ☐ No

If “Yes”: Provide the date that the laboratory data package was available and confirmed contamination was identified above the Ground Water Remediation Standards. Date: _____

If “No”: Proceed to Section E.

5. Has ground water contamination been delineated to the applicable Remediation Standard pursuant to N.J.A.C. 7:26E-4.3? ☐ Yes ☐ No

6. What is the ground water classification for this site as per N.J.A.C. 7:9C? (check all that apply)

☐ Class I-A ☐ Class II-A
☐ Class I-PL Pinelands Protection Area ☐ Class III-A
☐ Class I-PL Pinelands Preservation Area ☐ Class III-B

7. Has a well search been completed? ☐ Yes ☐ No

Date of most recent or updated well search: _____

8. Is a completed Well Search Spreadsheet or historical well search table attached and has an electronic copy of the spreadsheet been submitted to srpgis_wrs@dep.nj.gov. ☐ Yes ☐ No

Note: Redacted wells must be excluded from all non-confidential documents including maps, tables, etc. (see RE Instructions).

If "No," explain: _____

9. Are any potable or irrigation wells located within ½ mile of the currently known extent of contamination? ☐ Yes ☐ No

If "Yes,":

- A door to door survey is required in accordance with [N.J.A.C.7:26E-1.14(a)ii]. Attach results of the door to door survey.
- Identify if any of the following conditions exist based on the well search and door to door survey [N.J.A.C.7:26E-1.14(a)]:

Yes No

- | | | |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | Potable wells located within 500 feet from the downgradient edge of the currently known extent of contamination. |
| <input type="checkbox"/> | <input type="checkbox"/> | Potable wells located 250 feet upgradient or 500 feet side gradient of the currently known extent of contamination. |
| <input type="checkbox"/> | <input type="checkbox"/> | Ground water contamination from the discharge is located within a Tier 1 wellhead protection area (WHPA). |

10. Has sampling been conducted of ☐ potable well(s) and /or ☐ non-potable use well(s)? ☐ Yes ☐ No

If "No," provide justification then proceed to Question 12.

11. Has contamination been identified in potable well(s), **not attributed to background conditions**, above the Class II Ground Water Remediation Standards or State Safe Drinking Water levels, N.J.A.C 7:1E, whichever is applicable? ☐ Yes ☐ No

If "Yes":

- Provide the date laboratory data package was received: _____
- Follow the **IEC** Guidance Document at <http://www.nj.gov/dep/srp/guidance/IEC/index.html> for required actions and answer the following:
- Has an engineered system response action been completed on all impacted receptors? ☐ Yes ☐ No
Provide a brief narrative description:

Date completed: _____ NJDEP Case Manager: _____

12. Has contamination been identified in non-potable well(s), **not attributed to background conditions**, above the Class II Ground Water Remediation Standards? ☐ Yes ☐ No

If "Yes," provide the date laboratory data package was received: _____

13. Has the ground water use evaluation been completed pursuant to N.J.A.C. 7:26E-1.14? ☐ Yes ☐ No

SECTION E. VAPOR INTRUSION (VI)

1. Indicate if any of the following conditions exist that trigger a Vapor Intrusion investigation. For each condition checked "Yes", provide the date the condition was first identified (e.g. date laboratory data package was available).
(see NJDEP Vapor Intrusion Technical Guidance)

<u>Yes</u>	<u>No</u>		<u>Date Condition First Identified</u>
<input type="checkbox"/>	<input type="checkbox"/>	Ground water contamination in excess of the NJDEP Vapor Intrusion Ground Water Screening Levels (VIGWSL) and within 30 feet of a building for Petroleum Hydrocarbon Compounds (PHC) or 100 feet for non-PHC compounds ..	_____
<input type="checkbox"/>	<input type="checkbox"/>	Free product within 30 feet of a building for PHC or 100 feet for non-PHC compounds ..	_____
<input type="checkbox"/>	<input type="checkbox"/>	Soil gas contamination detected at concentrations that exceed the Soil Gas Screening Levels (SGSL) ..	_____
<input type="checkbox"/>	<input type="checkbox"/>	Indoor air contamination that exceeds the Indoor Air Screening Levels.....	_____
<input type="checkbox"/>	<input type="checkbox"/>	Wet basement or sump containing free product or ground water containing detectable concentration of volatile organic contaminants ..	_____
<input type="checkbox"/>	<input type="checkbox"/>	Methane generating conditions causing oxygen deficient or explosion concern ..	_____
<input type="checkbox"/>	<input type="checkbox"/>	Other human or safety concern from the VI pathway (i.e. elemental mercury, unsaturated soil contamination), <i>explain below:</i> ..	_____

If you checked "No" to all boxes in Question 1., proceed to Section F, "Ecological Receptors", otherwise complete the rest of this section.

2. Has ground water contamination been delineated to the applicable Vapor Intrusion Ground Water Screening Levels pursuant to N.J.A.C 7:26E-4.3? ☐ Yes ☐ No
3. Was a site-specific screening level, modeling or other alternative approach employed for the VI pathway? ☐ Yes ☐ No
4. Identify and locate, on a scaled map, any buildings/sensitive populations that exist within the following distances from ground water contaminant concentrations above the Vapor Intrusion Ground Water Screening Levels or other specific triggers noted in Question 1 above.:
- | <u>Yes</u> | <u>No</u> | |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | 30 feet of petroleum free product or dissolved petroleum hydrocarbon contamination in ground water |
| <input type="checkbox"/> | <input type="checkbox"/> | 100 feet of any non-petroleum free product (e.g. chlorinated hydrocarbons) or any non-petroleum dissolved volatile organic ground water contamination |
| <input type="checkbox"/> | <input type="checkbox"/> | Other specific triggers |
| <input type="checkbox"/> | <input type="checkbox"/> | No buildings exist within the specified distances or other specific triggers |
5. Is the vapor intrusion pathway a concern at or adjacent to the site? (if "No," attach justification)..... ☐ Yes ☐ No
6. Has soil gas sampling of the building(s) been conducted? ☐ Yes ☐ No
- If "Yes," has the laboratory data package been received? ☐ Yes ☐ No
- If the data package was received, did constituents exceed the Soil Gas Screening Levels? ☐ Yes ☐ No
- If "No," attach technical justification consistent with the NJDEP Vapor Intrusion Technical Guidance.
7. Has indoor air sampling been conducted at the identified building(s)? ☐ Yes ☐ No
- If "Yes," has the laboratory data package been received? ☐ Yes ☐ No
- If the data package has been received, did constituents exceed the Indoor Air Screening Levels? .. ☐ Yes ☐ No
- If "No," or awaiting indoor air laboratory data package, proceed to Question 12.

8. Has indoor air contamination been identified but not suspected to be from a discharge?
(if "Yes," attach justification) ☐ Yes ☐ No
9. Were indoor air results above the NJDEP's Rapid Action Levels? ☐ Yes ☐ No
- If "Yes":
- Provide the date laboratory data package was received: _____
 - Follow the IEC Guidance Document at <http://www.nj.gov/dep/srp/guidance/index.html#iec> for required actions and answer the following:
 - Was the IEC engineering system response for control implemented for all impacted structures? ☐ Yes ☐ No
- Date implemented: _____ NJDEP Case Manager: _____
10. Were the results of indoor air sampling above the NJDEP's Indoor Air Screening Levels but at, or below, the Rapid Action Levels ☐ Yes ☐ No
- If "Yes," answer the following:
- Provide the date laboratory data package was received: _____
 - Has the Vapor Concern (VC) Response Action Form notifying the NJDEP of the exceedances been submitted? ☐ Yes ☐ No
- Date: _____
- Has a plan to mitigate and monitor the exposure been submitted? ☐ Yes ☐ No
- Date: _____
- Has the Mitigation Response Action Report been submitted? ☐ Yes ☐ No
- Date: _____
11. Do one or more buildings have an Indeterminate VI Pathway status? ☐ Yes ☐ No
- If "Yes," attach a list of the building(s) with address(s) and block/lot(s)
12. Has the vapor intrusion investigation been completed? ☐ Yes ☐ No
- If "No", is the vapor intrusion investigation stepping out as part of the site investigation or remedial investigation. (If "No," attach justification) ☐ Yes ☐ No

SECTION F. ECOLOGICAL RECEPTORS

1. Has an Ecological Evaluation (EE) been conducted? [N.J.A.C. 7:26E-1.16] ☐ Yes ☐ No
- Date conducted: _____
2. Are any site-related contaminants above any Ecological Screening Criteria? ☐ Yes ☐ No
3. Are there any Environmentally Sensitive Natural Resources (ESNRs) on or adjacent to the site, or potentially impacted by site related contamination? [N.J.A.C. 7:26E-1.16] ☐ Yes ☐ No
4. Do any potential or complete migration pathways exist between Contaminant of Potential Ecological Concern (COPECs) and ESNRs, or did historic migration pathways exist? ☐ Yes ☐ No

If You answered "No" to Questions 2, 3, or 4, above **Stop Here** (form is complete).

5. If site-related free or residual product is/was present, does/did a potential or complete migration pathway exist to an ESNR? ☐ Yes ☐ No
6. Do the results of an EE trigger a remedial investigation of ecological receptors? [N.J.A.C. 7:26E-4.8] ☐ Yes ☐ No
- If "Yes", has a remedial investigation of ecological receptors been conducted? ☐ Yes ☐ No
- Date conducted: _____

7. Do available data indicate an impact (COPECs above Ecological Screening Criteria in ESNRs) to Ecological Receptor(s), Surface water, or Sediment? ☐ Yes ☐ No
- If "Yes,"
- a) Check all ESNRs or media that apply:
- ☐ Surface water ☐ Sediment ☐ Soil ☐ Wetlands
- b) If this information is not submitted with an ecological evaluation that includes contaminant summary information, attach a brief summary of all currently available data and a description of all actions to be taken to mitigate exposure.
8. Have COPECs been fully delineated to the Ecological Screening Criteria [N.J.A.C. 7:26E-4.8(a)] in:
- a) Migration pathways ☐ Yes ☐ No
- b) ESNR ☐ Yes ☐ No
9. Has an Ecological Risk Assessment been conducted? ☐ Yes ☐ No
10. Provide the following information for any on-site and/or off-site surface water body, which is potentially impacted by the site related discharges:
- | Surface Water Body Name | Stream Classification | Antidegradation Designation | Trout Production | Trout Maintenance |
|-------------------------|-----------------------|-----------------------------|--------------------------|--------------------------|
| | | | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | <input type="checkbox"/> | <input type="checkbox"/> |
11. Has a Program Interest (PI) or Permit number been issued for any regulated areas by the Division of Land Use Regulation? (e.g. wetlands, transition areas, flood hazard areas, coastal areas, tidelands, etc.). ☐ Yes ☐ No
- If "Yes,":
- Identify the type(s) of regulated areas: _____
- Provide the Land Use Regulation Program (LURP) PI or Permit number(s) for the site: _____
12. Are there any **pending** applications for LURP jurisdiction letters or approvals under review by the NJDEP for the remediation? ☐ Yes ☐ No
13. Are there any **valid** LURP jurisdiction letters or approvals issued for the remediation? ☐ Yes ☐ No

Completed forms should be sent to the municipal clerk, designate health department, and:

Bureau of Case Assignment & Initial Notice
Site Remediation Program
NJ Department of Environmental Protection
401-05H
PO Box 420
Trenton, NJ 08625-0420



LANGAN

300 Kimball Drive
Parsippany, NJ 07054
T: 973.560.4900 F: 973.560.4901 www.langan.com

Langan Engineering & Environmental Services, Inc.
Langan Engineering, Environmental, Surveying and
Landscape Architecture, D.P.C.
Langan International LLC
Collectively known as Langan

NJ CERTIFICATE OF AUTHORIZATION No. 24GA27996400

Project

*PERTH AMBOY
FORMER MGP SITE*

BLOCK No. 3, LOT No. 11
PERTH AMBOY

MIDDLESEX

NEW JERSEY

Drawing Title

*RECEPTOR
EVALUATION
LAND USE MAP*

Project No.

1724501

Date

5/15/2018

Scale

1" = 150'

Drawn By

KGC

Submission Date

Figure

RE-1

Sheet 1 of 1

RECEPTOR EVALUATION FORM

SECTION B. ON SITE AND SURROUNDING PROPERTY USE

1. Identify any sensitive populations/uses that are currently on-site or surrounding property usage within 200 feet of the site boundary:

Facility Name / Address	Facility Type
St. Demetrios Greek Orthodox Church / 41 Wisteria Street, Perth Amboy, NJ 08861	Church
109 Lewis Street, Perth Amboy, NJ 08861	Residence
105 Lewis Street, Perth Amboy, NJ 08861	Residence
103 Lewis Street, Perth Amboy, NJ 08861	Residence
101 Lewis Street, Perth Amboy, NJ 08861	Residence
97 Lewis Street, Perth Amboy, NJ 08861	Residence
93 Lewis Street, Perth Amboy, NJ 08861	Residence
91 Lewis Street, Perth Amboy, NJ 08861	Residence
89 Lewis Street, Perth Amboy, NJ 08861	Residence
87 Lewis Street, Perth Amboy, NJ 08861	Residence
85 Lewis Street, Perth Amboy, NJ 08861	Residence
83 Lewis Street, Perth Amboy, NJ 08861	Residence
81 Lewis Street, Perth Amboy, NJ 08861	Residence
73 Linden Street, Perth Amboy, NJ 08861	Residence
71 Linden Street, Perth Amboy, NJ 08861	Residence
75 Lewis Street, Perth Amboy, NJ 08861	Residence
71 Lewis Street, Perth Amboy, NJ 08861	Residence
74 State Street, Perth Amboy, NJ 08861	Residence
70 State Street, Perth Amboy, NJ 08861	Residence
68 State Street, Perth Amboy, NJ 08861	Residence
64 State Street, Perth Amboy, NJ 08861	Residence
62 State Street, Perth Amboy, NJ 08861	Residence
60 State Street, Perth Amboy, NJ 08861	Residence
58 State Street, Perth Amboy, NJ 08861	Residence
56 State Street, Perth Amboy, NJ 08861	Residence
54 State Street, Perth Amboy, NJ 08861	Residence
50 State Street, Perth Amboy, NJ 08861	Residence
48 State Street, Perth Amboy, NJ 08861	Residence
83 Wisteria Street, Perth Amboy, NJ 08861	Residence
73 Wisteria Street, Perth Amboy, NJ 08861	Residence
71 Wisteria Street, Perth Amboy, NJ 08861	Residence
69 Wisteria Street, Perth Amboy, NJ 08861	Residence
67 Wisteria Street, Perth Amboy, NJ 08861	Residence
65 Wisteria Street, Perth Amboy, NJ 08861	Residence
59 Wisteria Street, Perth Amboy, NJ 08861	Residence
55 Wisteria Street, Perth Amboy, NJ 08861	Residence
53 Wisteria Street, Perth Amboy, NJ 08861	Residence
Caledonia/Roessler Park	Recreational Park
Sadowski Park	Recreational Park

A map depicting the location of St. Demetrios Greek Orthodox Church, the residences, and recreational parks relative to the Site is provided as Drawing RE-1.

SITE NAME	Perth Amboy City Coal Gas (ETG) aka Perth Amboy Former MGP Site
SITE STREET ADDRESS	Linden Street and Sadowski Parkway
SITE COUNTY (select)	Middlesex
SITE MUNICIPALITY (select)	Perth Amboy City
PROGRAM INTEREST (PI) ID # :	G000005443
SOURCE COORDINATE X	556160
SOURCE COORDINATE Y	607334
GROUNDWATER FLOW DIRECTION USED (if any)	S
WERE APPLICABLE WELL TYPES FOUND? (Yes/No)	No
IS THIS SUBMISSION AN UPDATE? (Yes/No)	Yes
AUTHOR (name of company)	Langan Engineering & Environmental Services, Inc.
AUTHOR STREET ADDRESS (include town and zip code)	300 Kimball Drive, 4th Floor, Parsippany, NJ 07054-2172
LSRP LICENSE NUMBER OVERSEEING WORK	573990
LSRP NAME OVERSEEING WORK	Brian Blum
PROFESSIONAL WHO PREPARED SUBMISSION	Kylie Cush
EMAIL CONTACT	kcush@langan.com
PHONE CONTACT	973-560-4580

TABLE 1
WELL SEARCH UPDATE
PERTH AMBOY FORMER MGP SITE
PERTH AMBOY, NEW JERSEY

Download_Document	Permit_Number	Well_Use	Potentially_Potable	Document	Date (permitted/drilled)	Physical_Address	County	Municipality	Block	Lot	Location_Method

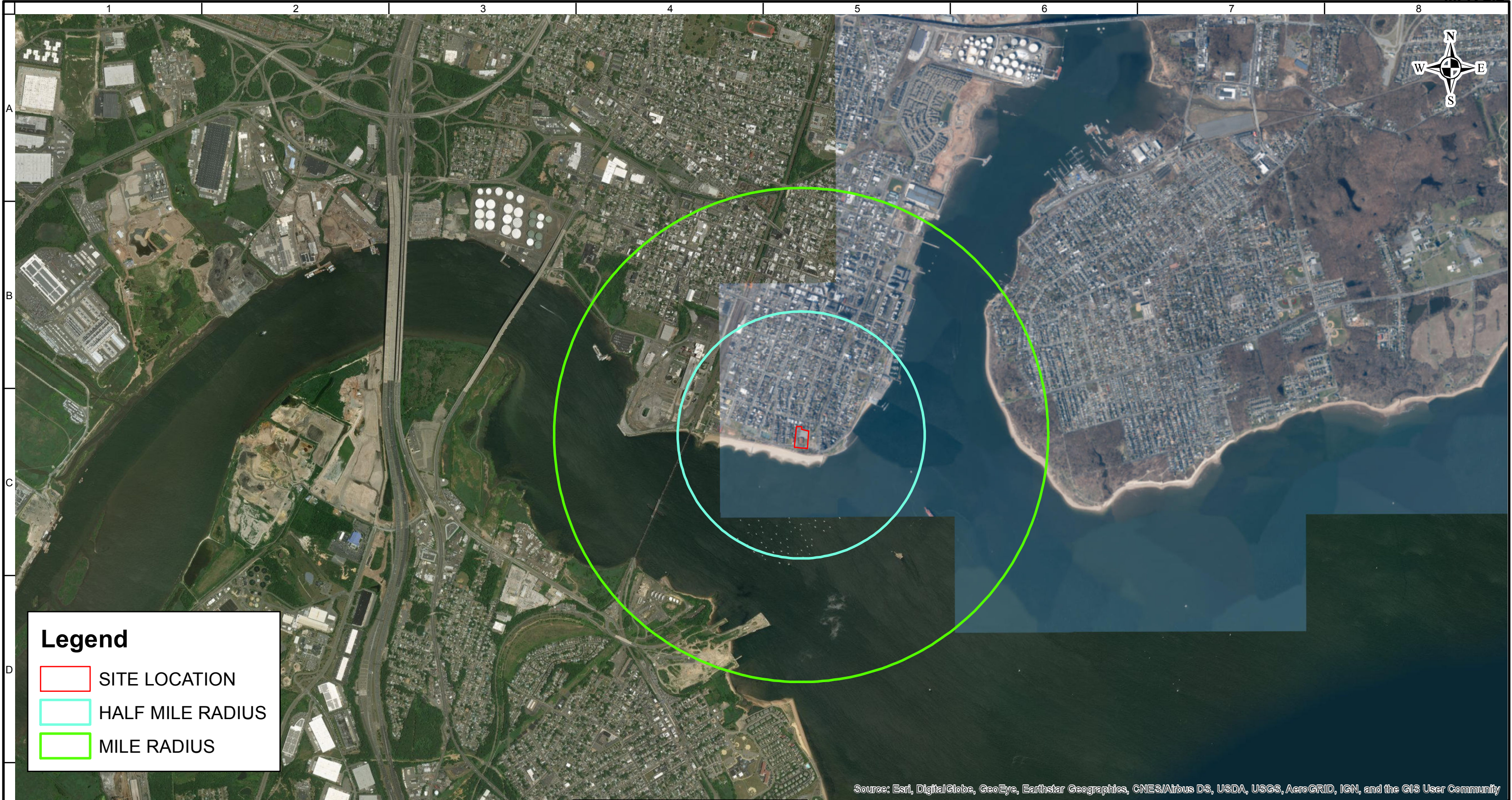
NOTE:
1. NO NEW WELLS WERE FOUND SUBSEQUENT TO THE 20 FEBRUARY 2013 WELL SEARCH.

TABLE 1
WELL SEARCH UPDATE
PERTH AMBOY FORMER MGP SITE
PERTH AMBOY, NEW JERSEY

[illegible]

NOTE:

1. NO NEW WELLS WERE FOUND SUBSEQUENT TO THE 20 FEBRUARY 2013 WELL SEARCH.



Legend

SITE LOCATION

HALF MILE RADIUS

MILE RADIUS

NOTES:
NO NEW WELLS WERE FOUND SUBSEQUENT
TO THE 20 FEBRUARY 2013 WELL SEARCH.



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

<div><div>LANGAN</div><div>300 Kimball Drive Parsippany, NJ 07054 T: 973.560.4900 F: 973.560.4901 www.langan.com</div><div>Langan Engineering & Environmental Services, Inc. Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C. Langan International LLC Collectively known as Langan</div><div>NJ CERTIFICATE OF AUTHORIZATION No. 24GA27996400</div></div>	Project PERTH AMBOY FORMER MGP SITE CITY OF PERTH AMBOY MIDDLESEX COUNTYNEW JERSEY	Drawing Title WELL SEARCH MAP	Project No. 1724501	Figure WS-1
			Date 4/30/2018	
			Scale 1 " = 2,000 '	
			Drawn By KGC	
			Submission Date XX/XX/XXXX	Sheet ### of ###

ATTACHMENT E
FINANCIAL OBLIGATION REPORT

Outstanding Bills by Program Interest

Run At: 6/27/2019 4:42 pm

PI Number	Activity Number	PI Name	PI Type	Assessment Type Desc	Assessment User Comments	Bill Status Description	Billed Amount	VCL Bill ID
							\$0.00	

A T T A C H M E N T F

CD CONTAINING PREVIOUSLY SUBMITTED REPORTS

- 2011 RASR/RAWP
- 2014 RI Complete Supporting Documentation Form
- 2018 UST SIR
- 2019 RAR

LANGAN
ENGINEERING & ENVIRONMENTAL SERVICES

electronic copy (.pdf) of the complete RAO Submission (including Supporting Documents)

**Response Action Outcome
Perth Amboy Former MGP Site
Sadowski Parkway and Wisteria Street
Block: 3 Lot: 11
Perth Amboy, Middlesex County
Preferred ID: G000005443
Langan Project No.: 1724501**

REMEDIAL ACTION WORK PLAN

for
PERTH AMBOY FORMER MGP SITE
BLOCK 3, LOT 11
PERTH AMBOY, MIDDLESEX COUNTY, NEW JERSEY

NJDEP PI# G000005443
NJDEP Incident #: 17-08-18-1641-30
TMS #: UCL170001, UCL180001, & UCL 180002

and
SADOWSKI PARK SITE
BLOCK 9.02, LOT 1
PERTH AMBOY, MIDDLESEX COUNTY, NEW JERSEY

NJDEP PI# 792832
NJDEP Incident #: 19-02-04-1114-39

Prepared For:
Elizabethtown Gas
520 Green Lane
Union, New Jersey 07083

Prepared By:

Langan Engineering and Environmental Services, Inc.
300 Kimball Drive
Parsippany, NJ 07054
NJ Certificate of Authorization No.: 24GA27996400

LANGAN

January 2020
1724501

TABLE OF CONTENTS

ACRONYMS	1
1.0 INTRODUCTION	1
1.2 Work Plan Organization	2
2.0 SITE BACKGROUND	4
2.1 Site Description	4
2.2 Site History and Land Use	4
2.3 Site Topography	5
2.4 Wetlands Inventory.....	5
2.5 Surface Water and Ground Water	5
2.6 Geology and Hydrogeology	6
2.7 Areas of Concern.....	7
2.7.1 AOC 1 – Western Property Off-Site Impacts	7
2.7.2 AOC 2 – Two Former Gas Holders.....	7
2.7.3 AOC 3 – Former Meter House, Purifier House, Engine House, and Retort House	8
2.7.4 AOC 4 – Tar Well #1, Workshop, Coke Crusher, Engine Room, Tar Well #2, and Scales	8
2.7.5 AOC 5 – Former Tar Shed, Scrap Storage, and Coal Shed	8
2.7.6 AOC 6 – Former 1,300 Gallon Unregulated Heating Oil UST	8
2.7.7 AOC 7 – Former 3,000 Gallon Unregulated Heating Oil UST	9
2.7.8 AOC 8 – Former 500 Gallon Unregulated UST of Unknown Contents	9
2.7.9 AOC 9 – Former 500 Gallon Unregulated UST of Unknown Contents	9
2.7.10 AOC 10 – Ground Water	9
2.7.11 AOC 1A – Western Property Off-Site Impacts in Sadowski Parkway	10
2.7.12 AOC 4A – Eastern MGP Impacts.....	10
2.7.13 AOC 5A – Western MGP Impacts.....	10
2.7.14 AOC 11A – Historic Fill	11
3.0 PROPOSED REMEDIAL ACTION	11
3.1 Remedial Action Strategy	11
3.2 Permits.....	12
3.3 Remedial Action.....	12

TABLE OF CONTENTS (CONTINUED)

3.3.1	Public Notification.....	13
3.3.2	Field Mobilization	13
3.3.3	Excavation	13
3.3.4	Post Excavation Sampling	14
3.3.5	Engineering Control.....	14
3.3.6	Institutional Control	15
3.4	Site Restoration	15
3.5	Decontamination and Residuals Management.....	16
3.5.1	Equipment Decontamination.....	16
3.5.2	Residuals Management	16
3.6	Remedial Action Overview	16
3.7	Quality Assurance Project Plan.....	17
4.0	SCHEDULE.....	18
5.0	REPORTING	19
6.0	REFERENCES	20

DRAWINGS

Drawing 1	Site Location Map
Drawing 2	AOC Location Plan
Drawing 3	Site Plan with Proposed Excavations
Drawing 4	Monitoring Well Location Map
Drawing 5	Land Use Map

APPENDICES

Appendix A	Quality Assurance Project Plan
------------	--------------------------------

ACRONYMS

AMS	Above Mean Sea Level
AOC	Area of Concern
bgs	Below Ground Surface
BTEX	Benzene, Toluene, Ethylbenzene, Xylene
CEA	Classified Exception Area
ETG	Elizabethtown Gas
FSPM	Field Sampling Procedures Manual
LSRP	Licensed Site Remediation Professional
MGP	Manufactured Gas Plant
MNA	Monitored Natural Attenuation
N.J.A.C.	New Jersey Administrative Code
NJDEP	New Jersey Department of Environmental Protection
NJDOT	New Jersey Department of Transportation
PAGL	Perth Amboy Gas Light Company
PAHs	Polynuclear Aromatic Hydrocarbons
PDI	Pre-Design Soil Investigation
PI	Program Interest
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
RA	Remedial Action
RAO-A	Response Action Outcome - AOC
RAR	Remedial Action Report
RAWP	Remedial Action Work Plan
SE1	Saline Estuary
SRP	Site Remediation Program
SRS	Soil Remediation Standard
TRSR	Technical Requirements for Site Remediation
UST	Underground Storage Tank

1.0 INTRODUCTION

Langan Engineering and Environmental Services, Inc. (Langan) has prepared this Remedial Action Work Plan (RAWP) for the Perth Amboy Former Manufactured Gas Plant (MGP) Site (Former MGP Site) and the Sadowski Park Site on behalf of Elizabethtown Gas Company (ETG). The Former MGP Site is located at Sadowski Parkway and Wisteria Street and encompasses Block 3, Lot 11 in the City of Perth Amboy, Middlesex County, New Jersey. The Sadowski Park Site is located adjacent to the Former MGP Site and encompasses parts of Block 9.02, Lot 1 and Sadowski Parkway in the City of Perth Amboy, Middlesex County, New Jersey. The location of both sites are shown on Drawing 1. This RAWP was prepared in accordance with the New Jersey Department of Environmental Protection (NJDEP) Technical Requirements for Site Remediation (TRSR), New Jersey Administrative Code (N.J.A.C.) 7:26E-5 and documents the proposed Remedial Action (RA) for the following areas of concern (AOC):

Former MGP Site:

- AOC 10 – Ground Water

Sadowski Park Site:

- AOC 1A – Western Property Off-Site Impacts in Sadowski Parkway
- AOC 4A – Eastern MGP Impacts
- AOC 5A – Ceramic Tar-Filled Pipe
- AOC 11A – Historic Fill

The location of each AOC is shown on Drawing 2.

The NJDEP Program Interest (PI) number for the Former MGP Site is G000005443. The NJDEP PI number for the Sadowski Park Site is 792832. Brian A. Blum of Langan is the Licensed Site Remediation Professional (LSRP) of record (License No. 573990) for both Sites.

A Remedial Action (RA) was conducted from July 2017 through September 2018 to close out USTs, excavate MGP-impacted soil from Block 3, Lot 11, and bring the property into compliance with the most stringent of NJDEP Soil Remediation Standards (SRS). Langan submitted a Remedial Action Report (RAR) to the NJDEP in June 2019 for these

soil RA activities. An unrestricted use RAO-A was issued on July 7, 2019 for soil associated with AOCs 1 through 9 on Block 3, Lot 11.

While excavating soil with MGP residuals beneath Sadowski Parkway in March 2018, project personnel observed a layer of hard tar-like material approximately 3 to 3.5 feet below ground surface (bgs) in the eastern portion of the excavation. The tar-like material appears to extend into Sadowski Park. Additionally, project personnel identified a broken 6-inch ceramic pipe that appeared to be filled with tar-like material at approximately 6 feet bgs on the western side of the Sadowski Parkway excavation. The ceramic pipe and impacted soil within the excavation were removed during the RA and the portion of the pipe on the southern side of the street was cut and capped at the curb line. A geophysical survey was conducted to trace the pipe, which appears to extend approximately 25 feet south into Sadowski Park.

The recommended remedy for the Sadowski Park Site is to excavate and remove the shallow layer of tar-like material and the remaining portion of pipe as shown on Drawing 3.

Ground water was not addressed during the 2018 RA. The former MGP Site impacted soil is considered the source material for ground water contamination and has been largely removed (via excavation). Ground water will be monitored for natural attenuation (MNA) of Former MGP Site contaminants. Existing and proposed monitoring well locations are shown on Drawing 4.

This RAWP presents the proposed additional RA for the Site that has a regulatory timeframe of 6 May 2019, and has been extended to 6 May 2021 in accordance with the Administrative Requirements for the Remediation of Contaminated Sites (N.J.A.C. 7:26C-3.2).

1.2 Work Plan Organization

This RAWP is comprised of the six sections described below. Drawings and appendices are referenced in the text and included herein.

Section 1.0 – Introduction. This section provides general information regarding the document submittal, including project background and report organization.

Section 2.0 – Site Background. This section presents information on site description, site history and land use, topography, wetlands inventory, local surface water, ground water, geology, and hydrogeology, site AOCs, and previous investigations for both the Former MGP Site and Sadowski Park Site.

Section 3.0 – Proposed Remedial Action. This section presents the remedial action strategy and provides a description of the proposed remedial action components.

Section 4.0 – Schedule. This section presents the estimated schedule for the remedial action.

Section 5.0 – Reporting. This section presents the information that will be documented in the RAR.

Section 6.0 – References. This section contains a list of references that were used to develop this RAWP.

2.0 SITE BACKGROUND

2.1 Site Description

The Former MGP Site encompasses approximately 1.1 acres. The majority of the Former MGP Site, where excavation of MGP residuals has taken place, was left “construction ready” with a layer of crushed stone. The remaining portions of the property are paved with asphalt. The Former MGP Site is bounded to the north by five residential properties and an additional two residential properties that are not immediately adjacent to the Former MGP Site, but are located within the same city block. While the Former MGP Site is bound to the south by Sadowski Parkway, the historical MGP boundary extends across Sadowski Parkway and onto a portion of a city park (Sadowski Park) that is adjacent to the southern boundary of Sadowski Parkway. Sadowski Parkway is a local asphalt paved street with concrete curbs. Sadowski Park is a waterfront park with an open lawn area, shade trees, a paved harbor walk, and a sandy beach along the Raritan River. The property to the east of the former MGP site includes Linden Street and a city park (Caledonia Park). The properties further to the west of both the former MGP site include St. Demetrios Greek Orthodox Church (the owner of the property at Block 3, Lot 11) and various residential properties along Wisteria Street.

2.2 Site History and Land Use

MGP operations began in 1872 and ceased in 1922. The following is a summary of the key dates in the operational history of the Site.

- 1872 - Perth Amboy Gas Light Company (PAGL) began MGP operations
- 1906 - PAGL purchased the western portion of the property
- 1922 - MGP operations ceased
- 1955 - Property transferred to ETG and used as a storage and operations facility
- 1964 - Property sold to the St. Demetrios Greek Orthodox Church
- 1965 - MGP structures/buildings demolished and removed
- 1978 - Construction of Church auditorium and parking lot completed
- 2017 - Start of RA to address MGP impacts to the former MGP Site
- 2017 - Church auditorium demolished and removed in conjunction with RA
- 2018 - Remediation of soil MGP impacts complete and restoration of the former MGP Site complete in September

2019 - An unrestricted use RAO-A was issued for soil associated with AOCs 1 through 9 on Block 3, Lot 11.

Prior to the start of the 2018 RA, the Site included a portion of the Church auditorium, an open landscaped area, and an asphalt parking lot. The Site is currently vacant, but is being considered for redevelopment by the property owner. The former MGP boundary extends south beyond the southern property boundary to include a portion of Sadowski Parkway and a portion of a Sadwoski Park. The Site boundary is shown on Drawing 2.

The Site and adjacent off-Site properties to the north and west are currently zoned for residential use (municipal Zoning Code R-60 for one-family dwellings or houses of worship). The adjacent off-Site property to the east, Caledonia Park, is zoned for recreational and conservation use, as is Sadowski Park. The results of the land use survey are shown on Drawing 5.

2.3 Site Topography

The topography of both Sites is relatively flat and slopes gently from north to south. The surface elevations on the Former MGP Site prior to excavation ranged from 12 to 23 feet above mean sea level (AMSL) (see Drawing 1) and were replicated in kind during site restoration.

2.4 Wetlands Inventory

There are no wetland areas on, or adjacent to, both Sites.

2.5 Surface Water and Ground Water

The Raritan River flows into Raritan Bay just south of the sites. The Raritan River is classified as SE1 (saline estuary) in the vicinity of the sites. Designated uses of SE1 waters include the following: shellfish harvesting in accordance with N.J.A.C. 7:12; maintenance, migration, and propagation of the natural and established biota; primary contact recreation; and, any other reasonable uses.

Water-level measurements collected at shallow overburden monitoring wells (Drawing 4) were used to determine the horizontal component of ground water flow at both sites. The main component of horizontal ground water flow is to the south/southeast, toward the confluence of the Raritan River and the Arthur Kill.

2.6 Geology and Hydrogeology

The central portion of the Former MGP Site was underlain by a medium-grained sand layer with trace gravel. This unit was 2 to 8 feet thick beneath the Former MGP Site. To the north, the Former MGP Site was underlain by a clay and silt layer that was up to 8 feet thick. To the south, the Former MGP Site was underlain by a 2-foot thick sand and silt layer. Portions of the Former MGP Site where excavation took place are now underlain by certified clean fill consisting of compacted quarry fines topped with approximately 6 inches of crushed stone. Beneath the upper units discussed above, there is a continuous layer of medium to coarse-grained sand and gravel. This unit is 8 to at least 36 feet thick. In the southern portion of the Former MGP Site, a medium-to-coarse-grained sand and silt unit was encountered beneath the sand and gravel unit. At the Sadowski Park Site, the native medium to coarse-grained sand and gravel is overlain by up to 17 feet of historic fill.

Both sites are located at the northern extent of the New Jersey Coastal Plain region at the edge of a terminal moraine composed of unstratified silts, sands, some clay, and gravel. Regional data indicate the thickness of the moraine sediments to be as much as 80 to 150 feet (Barksdale, et al. 1943). The moraine sediments are reportedly of low permeability and are not utilized as a water-supply source in the area (Barksdale, et al. 1943). Underlying the glacial deposits are Cretaceous-aged sedimentary deposits of the Farrington Sand Member of the Raritan Formation. The Farrington Sand consists primarily of fine-to-medium-grained sand in the upper portion and coarse-grained, arkosic sands in the lower portion. Clay lenses also occur throughout the formation. In the vicinity of Perth Amboy, the Farrington Sand Member strikes at a northeast-southwest direction and dips to the southeast at 45 to 60 feet per mile. This unit is approximately 45 feet thick (Barksdale, et al. 1943). The Passaic (formerly known as the Brunswick) Formation of the Triassic-aged Newark group underlies the Farrington Sand Member. This formation consists of a dull, red-brown, fine-grained siltstone/sandstone that dips to the northwest at 5 to 15 degrees. This Formation is not used as a primary source of water supply in the Perth Amboy area (Barksdale, et al. 1943).

Aquifer Characteristics

Both a falling and rising head test were conducted during the Remedial Investigation (RI) phase at five shallow and two deep overburden monitoring wells. The hydraulic conductivity values calculated from data collected in the overburden monitoring wells ranged from 47 (MW-3, now abandoned) to 1,463 (MW-1) feet per day. The average hydraulic conductivity value for the monitoring wells tested was 613 feet per day. As described above, the hydraulic conductivity may have changed in areas where excavation and backfilling took place below the water table.

2.7 Areas of Concern

A discussion of the Former MGP Site and Sadowski Park Site AOCs follows. AOC locations are presented on Drawing 2.

2.7.1 AOC 1 – Western Property Off-Site Impacts

AOC 1 consisted of impacted soil outside and to the west of the historical MGP footprint. Soil impacts were characterized by polynuclear aromatic hydrocarbons (PAH) and metals above the SRS based on the results of the 1995 RI and the second Pre-Design Soil Investigation (PDI). AOC 1 was remediated as part of the 2018 RA. An unrestricted use AOC Response Outcome Action (RAO-A) was issued for soils at AOC 1 on July 2, 2019.

2.7.2 AOC 2 – Two Former Gas Holders

AOC 2 consisted of impacted soils associated with two former gas holders and is located on the northern side of the Site. Impacted soil in this area was characterized by PAHs, metals, cyanide, and free product that was observed during the 1995 RI. AOC 2 was remediated as part of the 2018 RA. An unrestricted use RAO-A was issued for soils at AOC 2 on July 2, 2019.

2.7.3 AOC 3 – Former Meter House, Purifier House, Engine House, and Retort House

AOC 3 included four former MGP structures (retort house, engine house, purifier house, and meter house) in the northeastern portion of the Site along Linden Street. There were only small exceedances of PAHs noted on the northern side of this area during the 1995 RI and 2011 PDI. AOC 3 was remediated as part of the 2018 RA. An unrestricted use RAO-A was issued for soils at AOC 3 on July 2, 2019.

2.7.4 AOC 4 – Tar Well #1, Workshop, Coke Crusher, Engine Room, Tar Well #2, and Scales

AOC 4 included former MGP structures including a coke crusher, an engineer room, two tar wells, scales, a workshop, and an auto shop. Liquid tar was observed during field investigations – especially at the locations of the former tar wells. Soil at AOC 4 was characterized by volatile organic compounds (VOC) [benzene, toluene, ethylbenzene, and xylenes (BTEX) and styrene], PAHs, phenols, metals, and cyanide above the NJDEP SRS, as investigated during the 1995 RI, 2000 Phase II Supplemental RI, and the 2010 and 2011 PDIs. AOC 4 was remediated as part of the 2018 RA. An unrestricted use RAO-A was issued for soils at AOC 4 on July 2, 2019.

2.7.5 AOC 5 – Former Tar Shed, Scrap Storage, and Coal Shed

AOC 5 included former MGP structures including a tar shed, a scrap storage building, and a coal shed. Free product was observed during field investigations. Soil at AOC 5 was characterized by VOCs (BTEX and styrene), PAHs, phenols, metals, and cyanide above the NJDEP SRS, as investigated during the 1995 RI, 2000 Phase II Supplemental RI, and the 2010 to 2011 PDI. AOC 5 was remediated as part of the 2018 RA. An unrestricted use RAO-A was issued for soils at AOC 5 on July 2, 2019.

2.7.6 AOC 6 – Former 1,300 Gallon Unregulated Heating Oil UST

A magnetic anomaly was identified during a geophysical survey on 16 November 1998, indicating a target that was approximately 4 feet by 5 feet, located near the northeast corner of the former auditorium building, suspected to be a UST. The UST was uncovered and documented to be inactive and filled with water. No sheen or product was observed

in the UST; however, a petroleum odor was documented. It is not known if this UST was related to former MGP operations or was installed when the auditorium building was constructed in the 1970s. The UST was removed as part of the 2018 RA. An unrestricted use RAO-A was issued for soils at AOC 6 on July 2, 2019.

2.7.7 AOC 7 – Former 3,000 Gallon Unregulated Heating Oil UST

A second UST was identified based on the presence of a fill port and vent pipe located between the former scrap storage area and former coke crusher and engine room, adjacent to the eastern wall of the former Church auditorium. The Church confirmed the presence of an active 3,000-gallon heating oil UST in service to the auditorium building. This UST was not related to former MGP operations. The UST was removed as part of the 2018 RA. An unrestricted use RAO-A was issued for soils at AOC 7 on July 2, 2019.

2.7.8 AOC 8 – Former 500 Gallon Unregulated UST of Unknown Contents

A test pit advanced during the 1998 Phase II RI encountered a vessel just south of the former Retort House. At the time, investigators could not determine if the vessel was a UST or a process component for former MGP operations. There were no visible impacts to the surrounding soils, and the vessel was removed as part of the 2018 RA. An unrestricted use RAO-A was issued for soils at AOC 8 on July 2, 2019.

2.7.9 AOC 9 – Former 500 Gallon Unregulated UST of Unknown Contents

While preparing for sidewalk restoration activities on June 4, 2018, contractors uncovered a fourth UST on the eastern side of the Site beneath the sidewalk and Linden Street. The UST had a 500 gallons capacity and it is not known if the tank was related to former MGP operations. The UST was removed as part of the 2018 RA. An unrestricted use RAO-A was issued for soils at AOC 9 on July 2, 2019.

2.7.10 AOC 10 – Ground Water

The RI identified Site Ground Water as an AOC. A Classified Exception Area (CEA) was established for site ground water in 2009 based on historical sample data. Contaminants include PAHs, metals, and cyanide. The Former MGP Site impacted soil was considered the source material for contamination and has been removed (via excavation). Ground

water will be monitored for natural attenuation of Site contaminants as part of the proposed RA described herein.

2.7.11 AOC 1A – Western Property Off-Site Impacts in Sadowski Parkway

AOC 1A consists of impacted soil outside and to the west of the historical MGP footprint on the Sadowski Park Site. Soil impacts are characterized by polynuclear aromatic hydrocarbons (PAH) and metals above the SRS based on the results of the 1995 RI and the second Pre-Design Soil Investigation (PDI). AOC 1A was remediated as part of the 2018 RA.

2.7.12 AOC 4A – Eastern MGP Impacts

AOC 4A consists of the area beneath Sadowski Parkway that was excavated as part of the 2018 RA and an adjacent portion of Sadowski Park. While excavating soil with MGP residuals beneath Sadowski Parkway in March 2018, project personnel observed a layer of hard tar-like material approximately 3 and 3.5 feet bgs in the eastern portion of the excavation. The tar-like material appears to extend south into Sadowski Park. Some residual hard tarry material remains beneath Sadowski Parkway in AOC 4A from AOC 5A discussed below. AOC 4A will be remediated as described in this RAWP.

2.7.13 AOC 5A – Western MGP Impacts

AOC 5A consists of the area beneath Sadowski Parkway that was excavated as part of the 2018 RA and an adjacent portion of Sadowski Park. Project personnel identified a broken 6-inch ceramic pipe that appeared to be filled with tar-like material at approximately 6 feet bgs on the western side of the Sadowski Parkway excavation and above a sewer line running east to west through the middle of Sadowski Parkway. A portion of the ceramic pipe and surrounding impacted soil were removed during the 2018 RA and the portion of the pipe on the southern side of the street was cut and capped at the curb line. Impacted soil above and around the sewer line was excavated; however, some tar-like material remains below the sewer line. A geophysical survey was conducted to trace the ceramic pipe, which appears to extend approximately 25 feet south into Sadowski Park. AOC 5A will be remediated as described in this RAWP.

2.7.14 AOC 11A – Historic Fill

AOC 11A consists of historic fill across the Sadowski Park Site. Sadowski Parkway and Sadowski Park were created from a large filling operation that took place along the Raritan River. Based on historical aerial photos and Sanborn maps, this filling operation seems to have started in earnest in the 1930s, after the MGP site ceased operations. During the 2001 Supplemental Remedial Investigation, no visual or olfactory evidence of MGP-related or other contamination was noted in this area. PAHs were detected in excess of the SRS in fill material, which was placed to construct Sadowski Parkway and Sadowski Park along the current shoreline of the Raritan River. PAHs were not detected in excess of the SRS in samples collected from the native soil underlying the fill. The PAH contamination noted within the fill post-dates the MGP operations, and therefore cannot be attributable to MGP residues that require further delineation. The extent of potential MGP-related impacts is therefore restricted to a narrower depth interval between 16 to 17 feet bgs. Although the historic fill cannot be attributed to MGP operations, it is pervasive throughout the Sadowski Park Site and has similar contaminants as those commonly associated with MGP sites (PAHs and metals). Some historic fill material has been incidentally remediated through excavation activities in Sadowski Parkway and replaced with certified clean backfill material. Additional fill material will be remediated through proposed excavation activities in Sadowski Park; however, some historic fill material will remain in place on-Site with engineering and institutional controls.

3.0 PROPOSED REMEDIAL ACTION

3.1 Remedial Action Strategy

This RAWP presents the proposed remedial actions as recommended in the 2018 RAR and November 2018 Letter to the City of Perth Amboy Business Administrator:

- Excavation of a test pit in AOC 4A to determine the extent of tar-like material beneath Sadowski Park. It should be noted that the tar-like material is located close to the surface in an area filled in after MGP operations ceased. It is unclear if the material is related to the Former MGP Site. Part of the RAWP scope will be to determine if the material is related to the Former MGP site.
- Excavation of the remaining ceramic pipe and associated tar-like material in AOC 5A.

- Establish a notice in lieu of deed notice as an institutional control for the soil contamination around the sewer line associated with the ceramic pipe (AOCs 4A and 5A) beneath Sadowski Parkway.
- Ground water monitoring to determine the applicability of MNA.

Proposed excavation and test pit locations are shown on Drawing 3. This remedial action is intended to complete the requirements of N.J.A.C. 7:26E-5. The remedial action will be implemented in conjunction with the restoration of the Sadowski Park Site.

3.2 Permits

Local, county, and state permits/certifications required for the remediation activities will be obtained by ETG and/or the construction contractor for the project prior to the start of construction. The following permits and certifications are required to implement the remedial action as identified below.

State

- Waterfront Development Permit/Coastal General Permit 11 – NJDEP Land Use Regulation Program
- Tidelands License – NJDEP Bureau of Tidelands Management
- Green Acres Program approval for work in Sadowski Park

Municipal

- City of Perth Amboy Authorization – approval from Business Administrator's Office
- Street Closing/Street Opening Permits – City of Perth Amboy Engineering Department: A Permit for lane closures, no parking and traffic control requirements. Also a permit for excavation and restoration of roadways, curbs and sidewalks.
-

3.3 Remedial Action

The remedial activities proposed herein are described in detail in the following sections.

3.3.1 Public Notification

Public notification has been made for the sites in accordance with N.J.A.C. 7:26C-1.7. It was most recently updated in August 2019 in the form of a letter and fact sheet in both English and Spanish addressed to community residents and officials.

3.3.2 Field Mobilization

Prior to the start of field work, a construction entrance, access routes, and storage areas will be established at the Sadowski Park Site and maintained for the duration of the construction activities. Containerized water and sanitary facilities will be provided, if necessary.

Utility mark outs will be requested by calling the New Jersey One Call Service (1-800-272-1000) three to ten full business days prior to conducting intrusive activities to arrange for required utility clearances.

Clearing and grubbing of vegetation will be conducted as necessary to allow implementation of the construction. Although the footprint of the planned excavation does not trigger the need for a Soil Erosion and Sediment Control Plan (SESC) approval, soil erosion and sediment control techniques will be implemented prior to the start of construction.

Structures outside the work area (i.e., fencing, lighting, and other structures) will be protected by appropriate means (i.e., fluorescent flagging, etc.) to minimize damage during construction activities.

3.3.3 Excavation

Soil excavation will take place in the permitted areas as shown on Drawing 3. All visible MGP-impacted soil and materials will be removed from the excavations as practicable. A determination will be made based on field observations as to the endpoint of each excavation area. Some movement of existing ground cover may take place for re-grading purposes during the remedial action. Historic fill, characterized by brick, ash, cinders, and/or wood debris may be encountered during these activities. Historic fill is contaminated with PAHs and metals, and cannot be used elsewhere on the Site as clean

fill. All excavated material from the removal of the ceramic pipe or during excavation of test pits will be sent off-Site during the Remedial Action. Characterization and disposal of impacted soil will be conducted in accordance with all federal, state, and local requirements.

Langan expects that the shallow proposed excavation on the eastern side of the Sadowski Park Site will be completed without encountering ground water. Langan will attempt to remove the ceramic pipe and any associated impacted soil identified on the western side of the Site without encountering ground water. However, a limited capacity for pumping and storage of water from the excavation will be maintained on site if needed. In the field if we determine that the excavation needs to be deepened, possibly with excavation supports and dewatering, the excavation will be backfilled and arrangements made for the proper equipment to be mobilized to the Site.

All excavation areas will be backfilled with certified clean fill material in accordance with the NJDEP Fill Material Guidance for SRP Sites.

3.3.4 Post Excavation Sampling

Post-excavation grab samples will be collected at the bottom and along the sidewalls of each excavation area. At least one sample per 900 square feet of excavation bottom and 30 linear feet of sidewall will be collected in accordance with the TRSR. Samples will be analyzed on an expedited basis by an NJDEP-certified laboratory for BTEX, , PAHs, arsenic, lead, mercury, and cyanide. This list has been modified from the parameters required for soil sampling at MGP sites by Table 2-1 of the TRSR, based on previous investigations and post-excavation sampling conducted during the excavation of Block 3, Lot 11 at the former MGP site.

Post-excavation sample data will be compared to established data collected from the historic fill during the RI investigation phase. If contaminant concentrations are within those established for surrounding historic fill material, no further action will be required. If MGP contaminants are identified above historic fill concentrations, a determination will be made as to whether additional excavation or investigation is required.

3.3.5 Engineering Control

As described above, historic fill material encountered at the Sadowski Park Site is not associated with former MGP operations. Accordingly, MGP impacts associated with AOCs 1A, 4A, and 5A will be excavated to the extent practicable. Engineering controls in the form of a cap will be implemented if necessary for MGP impacts. However, a cap will not be implemented for AOC 11A – Historic Fill. The cap will consist of certified clean fill material used as backfill for the excavation, overlain by approximately 4 inches of clean top soil and planted grass in the park areas. For areas beneath the brick paver walkway or curb, the cap will consist of certified clean backfill overlain by clean sand and brick pavers. For areas beneath the Sadowski Parkway, the cap will consist of certified clean fill backfill overlain by dense grade aggregate (DGA), and asphalt paving.

3.3.6 Institutional Control

An institutional control in the form of a Deed Notice (or Notice in Lieu of Deed Notice as applicable for portions of Sadowski Parkway) will be used as a component of the remedial action for the Sadowski Park Site. The institutional control will ensure the engineering control is maintained, the long-term protection of public health and the environment, and the remedy is consistent with existing and future land use scenarios.

A Notice in Lieu of Deed Notice will be established for the portion of Sadowski Parkway where residual tar-like material was left in place beneath the sewer line (AOCs 4A and 5A) after completion of the remedial action for the entire Site. The notice will identify that residual tar-like material is remaining at the Sadowski Park Site and the existing roadway (Sadowski Parkway) will be maintained to prevent exposure to the underlying soil. The notice will be included in the RAR to be submitted following completion of the remedial action. A Remedial Action Permit application for soil will be submitted subsequent to submittal of the RAR.

The intention of the excavation RA in Sadowski Park is to remove all MGP-related impacts. However, if this cannot be completed, a Deed Notice will be established for the restricted area and recorded with the Middlesex County Clerk.

3.4 Site Restoration

Sadowski Park Site restoration will consist of backfilling excavated areas with certified clean fill and top soil to existing grade and seeding turf areas. Analytical data (as

applicable) and clean fill certifications will be provided for all fill sources in accordance with NJDEP's Alternative and Clean Fill Material Guidance for SRP Sites. Temporary facilities and soil erosion and sediment control measures will be removed at the completion of the remediation activities.

3.5 Decontamination and Residuals Management

3.5.1 Equipment Decontamination

Construction equipment will be cleaned and/or decontaminated as required to prevent cross-contamination or tracking of soil. Equipment decontamination will occur at designated areas determined by the construction activities.

3.5.2 Residuals Management

Equipment and materials used during the remedial action will be removed from both Sites as expeditiously as possible. At the conclusion of the remedial action, a general cleanup for both Sites will be performed. All residual materials will be disposed in accordance with applicable federal, state, and local requirements. All residuals will be transported in appropriately registered waste transport vehicles.

Debris (i.e., paper, plastic, refuse, personnel protective equipment, etc.) will be placed in plastic bags or dumpsters and disposed of as non-hazardous industrial waste. It is anticipated that debris will be transported to the local municipal landfill for disposal.

3.6 Remedial Action Overview

The proposed remedial action for the project area will be protective of public health and safety and the environment by preventing direct contact with Former MGP Site and Sadowski Park Site contaminants. The remedial action complies with applicable federal, state, and local rules and regulations and is comprised of sound measures that will not cause uncontrolled or unpermitted discharges. The remedial action employs readily available technologies applicable to the full range of contaminants, is easy to implement, can be completed within a reasonable time frame with little to no impact to the local community, and will result in beneficial use of the Former MGP Site and Sadowski Park Site.

3.7 Quality Assurance Project Plan

A Quality Assurance Project Plan (QAPP) has been prepared to provide quality assurance/quality control (QA/QC) measure guidelines for soil and ground water analytical data. The QAPP was prepared in accordance with N.J.A.C. 7:26E-2.2 and is provided in Appendix D. The purpose of the QAPP is to present a quality control plan and procedures to verify that the analytical data generated in support of the Remedial Action are technically sound and can be used with confidence in evaluating the conditions at the Site. Laboratories performing analyses will be NJDEP-certified for the specific analytical methods.

4.0 SCHEDULE

The proposed soil Remedial Action is anticipated to begin in the first quarter of 2020, following receipt of the required permits and in coordination with ETG. MNA activities for ground water are expected to take place through 2020. Remedial Action activities, including preparation of the RAR, receipt of remedial action permits, and issuance of the Response Action Outcome (RAO) are anticipated to be completed by the extended regulatory timeframe of May 6, 2021 per N.J.A.C. 7:26E-5.8.

5.0 REPORTING

At the conclusion of the remedial activities, an RAR will be prepared and submitted to the NJDEP in accordance with N.J.A.C. 7:26E-5.7. Documentation of the remedial actions proposed within this RAWP will be incorporated into the RAR. The documentation will include the following:

- A summary of the remedial activities, including documentation of any field changes or other deviations from this RAWP;
- Documentation of the source and quality of clean fill material;
- A description of the Site restoration activities;
- A summary of the actual remediation costs;
- An updated receptor evaluation;
- An updated case inventory document
- The recorded Notice in Lieu of Deed Notice; and
- The Soil Remedial Action Permit application.

6.0 REFERENCES

Barksdale, H.C., Johnson, M.E., Baker, R.C., Schaefer, E.J., and DeBuchananne, G.D. The Ground-Water Supplies of Middlesex County New Jersey. 1943.

Geraghty & Miller, Inc. Final Remedial Investigation Report, Perth Amboy Manufactured Gas Plant Site, Perth Amboy, New Jersey. 1996 October.

Langan Engineering and Environmental Services, Inc. Letter to City of Perth Amboy Business Administrator, Former MGP Site Perth Amboy, New Jersey. 7 November 2018.

Langan Engineering and Environmental Services, Inc. Phase III Supplemental Remedial Investigation Report, Former MGP Site Perth Amboy, New Jersey. 11 February 2002.

Langan Engineering and Environmental Services, Inc. Remedial Action Report, Former MGP Site Perth Amboy, New Jersey. June 2019.

Langan Engineering and Environmental Services, Inc. Remedial Action Selection Report and Remedial Action Work Plan, Perth Amboy Former MGP Site, Perth Amboy, New Jersey. September 2011.

New Jersey Administrative Code 7:26E. Technical Requirements for Site Remediation. New Jersey Department of Environmental Protection. May 7, 2012.

New Jersey Department of Environmental Protection. Field Sampling Procedures Manual. August 2005.

New Jersey Department of Environmental Protection, Fill Material Guidance for SRP Sites, April 2015.

\\langan.com\data\PAR\data5\1724501\Office Data\Reports\2019 RAWP\RAWP_Draft_2019_09_10.docx

DRAWINGS

A P P E N D I X A

QUALITY ASSURANCE PROJECT PLAN

REMEDIAL ACTION REPORT

for
PERTH AMBOY FORMER MGP SITE
BLOCK 3, Lot 11
Perth Amboy, New Jersey

NJDEP PI# G000005443
NJDEP Incident #: 17-08-18-1641-30
TMS #: UCL170001, UCL180001, & UCL 180002

Prepared For:
Elizabethtown Gas
520 Green Lane
Union, New Jersey 07083

Prepared By:
Langan Engineering and Environmental Services, Inc.
300 Kimball Drive
Parsippany, New Jersey, 07054
NJ Certificate of Authorization No: 24GA27996400



Brian A. Blum, CPG, LSRP
Senior Associate/Vice President

June 2019
1724501

LANGAN

REMEDIAL ACTION REPORT – BLOCK 3, LOT 11
PERTH AMBOY FORMER MGP SITE
PERTH AMBOY, NEW JERSEY

TABLE OF CONTENTS

Case Inventory Document
Receptor Evaluation Form
Authorization to Submit a Remedial Phase Report Through NJDEP Online

List of Acronyms and Abbreviations Acronyms-1

Section

EXECUTIVE SUMMARY ES-1

SECTION 1 INTRODUCTION..... 1-1

1.1 REPORT ORGANIZATION1-2

SECTION 2 BACKGROUND 2-1

2.1 SITE LOCATION.....2-1

2.2 ENVIRONMENTAL SETTING2-1

2.2.1 Site Description2-1

2.2.2 Topography.....2-1

2.2.3 Site History and Land Use2-2

2.2.4 Surface Water and Wetlands Inventory2-2

2.2.5 Regional Geologic Setting2-3

2.2.6 Site Geologic and Hydrogeologic Conditions.....2-3

2.3 AREAS OF CONCERN.....2-4

2.3.1 AOC 12-4

2.3.2 AOC 22-4

2.3.3 AOC 32-5

2.3.4 AOC 42-5

2.3.5 AOC 52-5

2.3.6 AOC 62-6

2.3.7 AOC 72-6

2.3.8 AOC 82-6

2.3.9 AOC 92-6

2.4 PREVIOUS SITE ACTIVITIES.....2-7

2.4.1 1995 Remedial Investigation.....2-7

**TABLE OF CONTENTS
(Continued)**

2.4.2	1998 Phase II Remedial Investigation	2-7
2.4.3	1999 Supplemental Remedial Investigation	2-7
2.4.4	1999 UST Investigation	2-8
2.4.5	2000 Phase II Supplemental Investigation	2-8
2.4.6	2001 Supplemental Remedial Investigation	2-8
2.4.7	2002 Soil Remediation of Caledonia Park	2-9
2.4.8	2007 PAHs Source Evaluation – Residential Properties	2-9
2.4.9	2007 Vapor Intrusion Investigation	2-9
2.4.10	2008 Baseline Ecological Evaluation	2-10
2.4.11	2009 Classification Exception Area	2-10
2.4.12	2010-2011 Soil Pre-Design Investigations	2-10
2.4.13	2018 UST Site Investigation Report	2-12
SECTION 3 REMEDIAL ACTION ACTIVITIES		3-1
3.1	REMEDIAL ACTION OVERVIEW	3-1
3.2	HEALTH AND SAFETY PLAN	3-3
3.3	SAFETY OF THE GENERAL PUBLIC	3-3
3.4	VIBRATION MONITORING	3-4
3.5	PUBLIC RELATIONS	3-4
3.6	PERMITTING	3-4
3.7	SITE PREPARATION	3-5
3.7.1	Clearing and Grubbing	3-5
3.7.2	Electrical Hookup	3-6
3.7.3	Pre-Construction Inspections	3-6
3.7.4	Soil Erosion and Sediment Control Measures	3-7
3.7.5	Building Demolition	3-7
3.7.6	In-Situ Waste Classification	3-7
3.7.7	Pre-Trenching and Excavation Support	3-8
3.7.8	Perimeter Air Monitoring	3-9
3.7.9	Dust and Odor Control	3-9
3.7.10	Temporary Enclosure	3-10
3.7.11	Water Treatment System	3-10
3.7.12	Survey of Existing Conditions	3-11
3.7.13	Monitoring Well Abandonment	3-11
3.7.14	Utility Clearance	3-11
3.7.15	Geophysical Survey	3-11
3.8	QUALITY ASSURANCE/QUALITY CONTROL	3-12
3.8.1	Decontamination Procedures	3-12

**TABLE OF CONTENTS
(Continued)**

3.8.2	Quality Assurance/Quality Control Measures	3-12
3.9	SOIL REMEDIATION ACTIVITIES	3-13
3.10	SITE-SPECIFIC IMPACT TO GROUND WATER SOIL REMEDIATION STANDARDS	3-15
3.11	UST CLOSURES (AOC 6, AOC 7, AOC 8, AND AOC 9)	3-16
3.11.1	AOC 6	3-16
3.11.2	AOC 7	3-17
3.11.3	AOC 8	3-19
3.11.4	AOC 9	3-20
3.12	SOIL EXCAVATION	3-21
3.12.1	Excavation Area 1	3-21
3.12.2	Excavation Area 2	3-22
3.12.3	Excavation Area 3	3-25
3.12.4	Excavation Area 4	3-27
3.12.5	Excavation Area 5	3-37
3.12.6	Excavation Area 6A	3-39
3.12.7	Excavation Area 6B	3-40
3.13	ATTAINMENT OF SRS WITH COMPLIANCE AVERAGING	3-42
3.14	SOIL DISPOSAL AND DEBRIS MANAGEMENT	3-48
3.15	EXCAVATION DEWATERING AND WATER TREATMENT	3-49
3.16	RESTORATION	3-50
SECTION 4 RECEPTOR EVALUATION		4-1
4.1	ON-SITE AND SURROUNDING PROPERTY USE	4-1
4.2	DESCRIPTION OF CONTAMINATION	4-1
4.3	GROUND WATER USE	4-2
4.4	VAPOR INTRUSION	4-2
4.5	ECOLOGICAL RECEPTORS	4-2
4.5.1	Identification of Environmentally Sensitive Natural Resources	4-3
4.5.2	Identification of COPECs	4-4
4.5.3	Identification of Migration Pathways	4-5
4.6	RECEPTOR EVALUATION RESULTS AND CONCLUSIONS	4-6
SECTION 5 CONCLUSIONS AND RECOMMENDATIONS		5-1
SECTION 6 REMEDIATION COST SUMMARY		6-1
SECTION 7 REFERENCES		7-1

**TABLE OF CONTENTS
(Continued)**

TABLES

Table 1	QA/QC Sample Data
Table 2	Post-Excavation Sample Data
Table 3	Sample Analytical and Preservation Methods
Table 4	Sampling Program Overview

DRAWINGS

Drawing 1	Site Location Map
Drawing 2	Area of Concern Site Plan
Drawing 3	Post-Restoration Topography
Drawing 4	Post-Excavation Sample Location Plan
Drawing 5	Temporary Enclosure Location Plan
Drawing 6	Remediation Plan
Drawing 7	Post-Excavation Sample Location Plan – Excavation Areas 1, 2, and 3
Drawing 8	Post-Excavation Sample Location Plan – Excavation Area 4
Drawing 9	Post-Excavation Sample Location Plan – Excavation Areas 5, 6A, and 6B
Drawing 10	As-Built Excavation Survey
Drawing 11	Scrap Storage Area
Drawing 12	Benzo(a)pyrene Compliance by Functional Area

APPENDICES

Appendix A	2011 RASR/RAWP
Appendix B	PAH Source Evaluation Report
Appendix C	2018 UST Site Investigation Report
Appendix D	Photo Log
Appendix E	Vibration Monitoring Logs and Reports
Appendix F	Permits
Appendix G	Disposal Documentation
Appendix H	Hazardous Materials Report

**TABLE OF CONTENTS
(Continued)**

Appendix I	Building Demolition Documentation
Appendix J	Waste Classification Data
Appendix K	Perimeter Air Monitoring Plan
Appendix L	Perimeter Air Monitoring Report
Appendix M	Temporary Enclosure Design Plan
Appendix N	VMS Design Plan
Appendix O	Air Monitoring Data and Reports
Appendix P	WTS Documentation
Appendix Q	Existing Conditions Survey
Appendix R	Well Abandonment Reports
Appendix S	Quality Assurance Project Plan
Appendix T	DOA/DQE Spreadsheets
Appendix U	Boring Logs
Appendix V	Compliance Averaging Documentation
Appendix W	WTS SMRs and Documentation
Appendix X	Backfill Documentation
Appendix Y	Compaction Testing Logs

LIST OF ACRONYMS AND ABBREVIATIONS

AMSL	Above Mean Sea Level
AOC	Area of Concern
APL	Aqua Pro-Tech Laboratories, Inc.
BEE	Baseline Ecological Evaluation
bgs	Below Ground Surface
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CEA	Classification Exception Area
COC	Chain of Custody
COPEC	Contaminant of Potential Ecological Concern
cy	Cubic Yards
DQA/DQE	Data Quality Assessment/Data Quality Evaluation
ECDI	East Coast Drilling, Inc.
EPH	Extractable Petroleum Hydrocarbons
ESNR	Environmentally Sensitive Natural Resources
ETG	Elizabethtown Gas Company
FCSD	Freehold Soil Conservation District
FSPM	Field Sampling Procedures Manual
GC/MS	Gas Chromatograph/Mass Spectrometry
GPR	Ground Penetrating Radar
GWQS	Ground Water Quality Standards
GWTT	Ground/Water Treatment & Technology, LLC
HASP	Health and Safety Plan
IGWSRS	Impact to Ground Water Soil Remediation Standard
IGWSSL	Impact to Ground Water Soil Screening Level
LSRP	Licensed Site Remediation Professional
MCUA	Middlesex County Utilities Authority
MDL	Method Detection Limit
mg/kg	Milligrams Per Kilogram
MGP	Manufactured Gas Plant
NIOSH	National Institute of Safety and Health
N.J.A.C.	New Jersey Administrative Code
NJDEP	New Jersey Department of Environmental Protection
OSHA	Occupational Safety and Health Administration
PAGL	Perth Amboy Gas Light Company

PAH	Polynuclear Aromatic Hydrocarbon
PAM	Perimeter Air Monitoring
PAMP	Perimeter Air Monitoring Plan
PCB	Polychlorinated Biphenyls
PDI	Pre-Design Investigation
PE	Post Excavation
PI	Program Interest
PID	Photoionization Detector
ppm	Parts Per Million
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
RA	Remedial Action
RAO-A	Response Action Outcome (AOC Only)
RAR	Remedial Action Report
RASR/RAWP	Remedial Action Selection Report/Remedial Action Work Plan
RAWP	Remedial Action Work Plan
RCRA	Resource Conservation and Recovery Act
RDCSRS	Residential Direct Contact Soil Remediation Standards
RE	Receptor Evaluation
RI	Remedial Investigation
RIR	Remedial Investigation Report
SESC	Soil Erosion and Sediment Control
sf	Square Feet
SI	Site Investigation
SIR	Site Investigation Report
SPLP	Synthetic Precipitation Leachate Procedure
SRI	Supplemental Remedial Investigation
SRS	Soil Remediation Standard
SVOC	Semi-Volatile Organic Compound
TAL	Target Analyte List
TCL	Target Compound List
TCLP	Toxicity Characteristic Leachate Procedure
TDA	Temporary Discharge Approval
TIC	Tentatively Identified Compound
TOC	Total Organic Carbon
TOX	Total Organic Halides

TPH	Total Petroleum Hydrocarbons
TRSR	Technical Requirements for Site Remediation
TWA	Treatment Works Approval
UCL	Upper Confidence Limit
USCS	Unified Soil Classification System
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VI	Vapor Intrusion
VMS	Vapor Management System
VOC	Volatile Organic Compound

EXECUTIVE SUMMARY

This Soil Remedial Action Report (RAR) was prepared by Langan Engineering and Environmental Services, Inc. (Langan) for Elizabethtown Gas Company (ETG), which is conducting remediation activities at the former Manufactured Gas Plant (MGP), located at Sadowski Parkway and Wisteria Street on Block 3, Lot 11 in the City of Perth Amboy, Middlesex County, New Jersey (hereinafter referred to as the "Site,"). A Site Location Map is provided as Drawing 1.

This RAR was prepared in accordance with the New Jersey Department of Environmental Protection (NJDEP) Technical Requirements for Site Remediation (TRSR) (New Jersey Administrative Code [N.J.A.C.] 7:26E). The Remedial Action (RA) for Block 3, Lot 11 began on 10 July 2017, and was completed in accordance with the 29 September 2011 Remedial Action Selection Report and Remedial Action Work Plan (RASR/RAWP) prepared by Langan to address six areas of concern (AOC). A copy of the RASR/RAWP is provided as Appendix A.

One underground storage tank (UST) was identified in the RASR/RAWP as AOC 6. However, three additional USTs were found during RA activities, and were designated as AOCs 7 through 9. All four USTs were registered and removed from the Site by an NJDEP-licensed UST contractor. A Site Investigation (SI) was conducted for all four tanks following removal. As documented in a 2018 Site Investigation Report (SIR), any impacts that may have been the result of a release from the tanks were over-excavated as part of the Site RA, and no contamination remains above the most stringent NJDEP Soil Remediation Standards (SRS). No further action is required for the tanks.

Excavation was chosen as the remedy for MGP-impacted soil associated with AOCs 1 through 5. To protect sensitive receptors in the surrounding residential community, ETG opted to complete the remediation of AOCs 2 through 5 underneath a temporary enclosure with dedicated air treatment equipment. AOC 1 was remediated outside of the temporary enclosure due to feasibility restrictions. Soil was removed from each AOC to comply with the most stringent of the NJDEP SRS, as confirmed by post-excavation sampling of the bottoms and sidewalls of each excavation area. In several locations, step-out sampling and over-excavation was required to remove former MGP structures and impacts that were located deeper than the planned excavation bottom, or where sidewall sampling indicated an exceedance of the SRS.

Benzo(a)pyrene was left in place above the NJDEP Residential Direct Contact SRS (RDCSRS) of 0.5 mg/kg and/or the Site-specific Impact to Ground Water SRS (IGWSRS) of 1 mg/kg at several locations across the Site. In these cases, compliance averaging using the arithmetic mean method or 95% upper confidence limit (UCL) method were used to demonstrate compliance with the RDCSRS and IGWSRS in accordance with the NJDEP Technical Guidance for the Attainment of Remediation Standards and Site-Specific Criteria (NJDEP, 2012).

Excavation areas were backfilled with certified clean fill material and topped with a layer of crushed stone. The Site is now construction-ready for the property owner, St. Demetrios Church, who plans to redevelop the Site. Post-excavation sample results from the final excavation areas indicate that Block 3, Lot 11 was remediated to unrestricted use standards and the RA is complete for AOCs 1 through 9 and no further action is required.

The RA for ground water at the Site (AOC 10) is ongoing and will be addressed under a separate RAR. In addition, off-Site impacts associated with the former MGP are being remediated under a separate NJDEP program interest (PI) number (792832) and will be addressed under a separate RAR. An unrestricted use AOC Response Action Outcome (RAO-A) will be issued for soil at AOCs 1 through 9.

SECTION 1

INTRODUCTION

This Soil Remedial Action Report (RAR) was prepared by Langan Engineering and Environmental Services, Inc. (Langan) for the Elizabethtown Gas Company (ETG), who has conducted remediation at the former Manufactured Gas Plant (MGP) located at Sadowski Parkway and Wisteria Street, on Block 3, Lot 11, in the City of Perth Amboy, Middlesex County, New Jersey (hereinafter referred to as the "Site,"). A Site Location Map is provided as Drawing 1.

This RAR is submitted in accordance with the New Jersey Department of Environmental Protection (NJDEP) Technical Requirements for Site Remediation (TRSR) (New Jersey Administrative Code [N.J.A.C.] 7:26E). The Remedial Action (RA) for the Site was conducted pursuant to the Remedial Action Selection Report/Remedial Action Work Plan (RASR/RAWP) to address six areas of concern (AOCs) (Langan September 2011). A copy of the RASR/RAWP is provided as Appendix A. A site plan showing AOCs is provided as Drawing 2.

This RAR documents the results of the RA that was conducted at the Site in July 2017 through September 2018. The purpose of the RA was to remediate MGP-impacted soil and underground storage tanks (UST) at the Site.

The NJDEP Program Interest (PI) number for the Site is G000005443. Brian A. Blum of Langan is the Licensed Site Remediation Professional (LSRP), License No. 573990, for the Site. The Site has an RA regulatory timeframe of May 6, 2019 that was extended to May 6, 2021 because of off-Site access constraints and to address groundwater.

The scope of the RA included the following:

- Community outreach and interaction with local municipal officials
- Geophysical survey using ground penetrating radar (GPR) to evaluate the presence of USTs and other subsurface anomalies
- Performing pre-existing conditions surveys and conduct vibration monitoring
- Sample collection of the contents of each UST (if possible) for fingerprint analysis to identify contents
- Emptying, removal, and proper disposal of all identified USTs and any contents
- Demolition of auditorium building

- Geotechnical ground improvements (e.g., sheet pile installation) in support of excavation activities
- Erection of Site security fencing, installing groundwater and air treatment systems, and erecting enclosures in support of the excavation activities
- Excavation, trucking, and off-Site disposal of MGP-impacted soil and related debris
- Post-excavation soil sampling from all excavations to evaluate the presence of contaminants above applicable NJDEP Soil Remediation Standards (SRS)
- Backfilling of excavation areas with certified clean fill material
- Site restoration (e.g., repaving disturbed sections of roadway, sidewalk, and repairs to a neighboring garage and fence)

Post-excavation sample results from the final excavation areas indicate that Block 3, Lot 11 was remediated to unrestricted use standards and the remediation is complete for soil. An unrestricted use AOC Response Action Outcome (RAO-A) will be issued to ETG for soil on Block 3, Lot 11. Additional RA is warranted for ground water and off-Site soil to the south of Block 3, Lot 11 in Sadowski Parkway and Sadowski Park. The off-Site soil is to be remediated under a separate PI number (792832). Ground water and off-Site soil impacts will be addressed under a separate RAR.

1.1 REPORT ORGANIZATION

This RAR includes the following sections:

Section 1	Introduction
Section 2	Background
Section 3	Remedial Action Activities
Section 4	Receptor Evaluation
Section 5	Conclusions and Recommendations
Section 6	Remediation Cost Summary
Section 7	References

Section 1 - Introduction. This section contains general information about this document submission, including regulatory background and report organization.

Section 2 – Background. This section provides information regarding the Site location and description, environmental setting, and previous environmental activities related to the historical operations.

Section 3 - Remedial Action Activities. This section presents the RA objectives, provides an overview of the RA tasks, and presents quality assurance/quality control (QA/QC) procedures.

Section 4 - Receptor Evaluation. This section provides an updated Receptor Evaluation (RE) required pursuant to N.J.A.C. 7:26E-1.12(e) with the submittal of this RAR. The updated RE addresses any changes to on-Site and surrounding property use, ground water use, vapor intrusion, and ecological receptors.

Section 5 – Conclusions and Recommendations. This section provides RA conclusions and recommendations based on the findings of the RA.

Section 6 – Remediation Construction Cost Summary. This section summarizes the costs to complete the remedial action.

Section 7 – References. This section lists the references and supporting documents used to complete the RAR.

SECTION 2 BACKGROUND

2.1 SITE LOCATION

The Site is located at the northeast corner of the intersection of Wisteria Street and Sadowski Parkway in Perth Amboy, New Jersey (see Drawing 1). The Site is situated in a residential area bounded by residential properties to the north, Linden Street to the east, Sadowski Parkway to the south, and Wisteria Street to the west.

2.2 ENVIRONMENTAL SETTING

2.2.1 Site Description

The Site encompasses approximately 1.1 acres. The majority of the Site, where excavation of MGP residuals has taken place, was left “construction ready” with a layer of crushed stone. The remaining portions of the property are paved with asphalt. While the Site is bound to the south by Sadowski Parkway, the historical MGP boundary extends across Sadowski Parkway and onto a portion of a city park (Sadowski Park) that is adjacent to the southern boundary of Sadowski Parkway. Sadowski Parkway is a local asphalt paved street with concrete curbs. Sadowski Park is a waterfront park with an open lawn area, shade trees, a paved harbor walk, and a sandy beach on the Raritan River. The Site is bounded to the north by five residential properties and an additional two residential properties that are not immediately adjacent to the Site, but are located within the same city block. The property to the east of the Site includes Linden Street and a city park (Caledonia Park). The properties further to the west of the Site include St. Demetrious Greek Orthodox Church (the owner of the property at Block 3, Lot 11) and various residential properties along Wisteria Street.

2.2.2 Topography

The topography of the Site is relatively flat and slopes gently from north to south. The surface elevations on the Site prior to excavation ranged from 12 to 23 feet above mean sea level (AMSL) and were replicated in kind during site restoration. General topography of the Site following restoration is depicted on Drawing 3.

2.2.3 Site History and Land Use

The MGP operations began in 1872 and ceased in 1922. The following is a summary of the key dates in the operational history of the Site.

- 1872 - Perth Amboy Gas Light Company (PAGL) began MGP operations
- 1906 - PAGL purchased the western portion of the property
- 1922 - MGP operations ceased
- 1955 - Property transferred to ETG and used as a storage and operations facility
- 1964 - Property sold to the St. Demetrious Greek Orthodox Church
- 1965 - MGP structures/buildings demolished and removed
- 1978 - Construction of Church auditorium and parking lot completed
- 2017 - Start of RA to address MGP impacts to the Site
- 2017 - Church auditorium demolished and removed in conjunction with RA
- 2018 - Remediation of soil MGP impacts complete and restoration of Site complete in September

Prior to the start of the RA, the Site included a portion of the Church auditorium, an open landscaped area, and an asphalt parking lot. The Site is currently vacant, but is being considered for redevelopment by the property owner. The former MGP boundary extends south beyond the southern property boundary to include a portion of Sadowski Parkway and a portion of a Sadowoski Park. The Site boundary is shown on Drawing 2.

The Site and adjacent off-Site properties to the north and west are currently zoned for residential use (municipal Zoning Code R-60 for one-family dwellings or houses of worship). The adjacent off-Site property to the east, Caledonia Park, is zoned for recreational and conservation use, as is Sadowski Park.

2.2.4 Surface Water and Wetlands Inventory

The Raritan River flows into Raritan Bay just south of the Site. There are no wetland areas on, or adjacent to, the Site. The Raritan River is classified as SE1 (saline estuary) in the vicinity of the Site. Designated uses of SE1 waters include the following: shellfish harvesting in accordance with N.J.A.C. 7:12; maintenance, migration, and propagation of the natural and established biota; primary contact recreation; and, any other reasonable uses.

2.2.5 Regional Geologic Setting

The Site is located at the northern extent of the New Jersey Coastal Plain region at the edge of a terminal moraine composed of unstratified silts, sands, some clay, and gravel. Regional data indicate the thickness of the moraine sediments to be as much as 80 to 150 feet (Barksdale, et al. 1943). The moraine sediments are reportedly of low permeability and are not utilized as a water-supply source in the area (Barksdale, et al. 1943). Underlying the glacial deposits are Cretaceous-aged sedimentary deposits of the Farrington Sand Member of the Raritan Formation. The Farrington Sand consists primarily of fine-to-medium-grained sand in the upper portion and coarse-grained, arkosic sands in the lower portion. Clay lenses also occur throughout the formation. In the vicinity of Perth Amboy, the Farrington Sand Member strikes at a northeast-southwest direction and dips to the southeast at 45 to 60 feet per mile. This unit is approximately 45 feet thick (Barksdale, et al. 1943). The Passaic (formerly known as the Brunswick) Formation of the Triassic-aged Newark group underlies the Farrington Sand Member. This formation consists of a dull, red-brown, fine-grained siltstone/sandstone that dips to the northwest at 5 to 15 degrees. This Formation is not used as a primary source of water supply in the Perth Amboy area (Barksdale, et al. 1943).

2.2.6 Site Geologic and Hydrogeologic Conditions

The central portion of the Site was underlain by a medium-grained sand layer with trace gravel. This unit was 2 to 8 feet thick beneath the Site. To the north, the Site was underlain by a clay and silt layer that was up to 8 feet thick. To the south, the Site was underlain by a 2-foot thick sand and silt layer. Portions of the site where excavation has taken place are now underlain by certified clean fill consisting of compacted quarry fines topped with approximately 6 inches of crushed stone. Beneath the upper units discussed above, there is a continuous layer of medium to coarse-grained sand and gravel. This unit is 8 to at least 36 feet thick. In the southern portion of the Site, a medium-to-coarse-grained sand and silt unit was encountered beneath the sand and gravel unit.

Ground Water Flow

Water-level measurements collected at shallow overburden monitoring wells were used to determine the horizontal component of ground water flow beneath the Site. The main component of horizontal ground water flow is to the south/southeast, toward the confluence of the Raritan River and the Arthur Kill. Depth to ground water across the Site ranges from approximately 19 feet below ground surface (bgs) at MW-1 in the northwestern corner of the

site to approximately 11 feet bgs at MW-5 in the southeastern corner of the site. This corresponds to elevations of approximately 2.3 to 2.0 feet AMSL, respectively. The average horizontal gradient across the central portion of the Site was 0.0004 feet/foot. Monitoring well locations are shown on Drawing 2.

Aquifer Characteristics

Both a falling and rising head test were conducted during the Remedial Investigation (RI) phase at five shallow and two deep overburden monitoring wells. The hydraulic conductivity values calculated from data collected in the overburden monitoring wells ranged from 47 (MW-3) to 1,463 (MW-1) feet per day. The average hydraulic conductivity value for the monitoring wells tested was 613 feet per day. As described above, the hydraulic conductivity may have changed in areas where excavation and backfilling took place below the water table.

2.3 AREAS OF CONCERN

A discussion of the Site soil AOCs follows. AOC locations are presented on Drawing 2. Soil boring locations are presented on Drawing 4.

2.3.1 AOC 1

AOC 1 consists of impacted soil outside and to the west of the historical MGP footprint. Soil impacts are characterized by polynuclear aromatic hydrocarbons (PAH) and metals above the SRS based on the results of the 1995 RI and the second Pre-Design Soil Investigation (PDI). AOC 1 corresponds to RA Excavation Areas 1 and 6B. The proposed excavation depth for Areas 1 and 6B as per the RASR/RAWP was 16 feet bgs and 13 feet bgs, respectively. Further refinement of the northern boundary of Area 6B was required at PE-20.

2.3.2 AOC 2

AOC 2 consists of impacted soils associated with two former gas holders and is located on the northern side of the Site. Impacted soil in this area was characterized by PAHs, metals, cyanide, and free product that was observed during the 1995 RI. AOC 2 corresponds to RA Excavation Area 2. The proposed excavation depth for Area 2 as per the RASR/RAWP was 18 feet bgs. Prior to the RA, further refinement of the excavation boundaries was required at PDI boring locations PX-2D and PX-2E on the southwestern side of Area 2.

2.3.3 AOC 3

AOC 3 included four former MGP structures (retort house, engine house, purifier house, and meter house) in the northeastern portion of the Site along Linden Street. There were only small exceedances of PAHs noted on the northern side of this area during the 1995 RI and 2011 PDI. In addition, there were no visual indications of impacted soils in borings up to 28 feet bgs and only slightly elevated photoionization detector (PID) readings [less than 1.0 part per million (ppm)]. AOC 3 corresponds to RA Excavation Area 3. Because these types of MGP structures are typically associated with MGP residuals, the proposed excavation depth for Excavation Area 3 as per the RASR/RAWP was 6 feet bgs.

Further refinement of the excavation boundaries was required at PDI boring locations PX-3A and PX-3B on the northern side of Area 3 and at PE-7 through PE-10 on the eastern side of Area 3.

2.3.4 AOC 4

AOC 4 included former MGP structures including a coke crusher, an engineer room, two tar wells, scales, a workshop, and an auto shop. Liquid tar was observed during field investigations – especially at the locations of the former tar wells. Soil at AOC 4 is characterized by volatile organic compounds (VOC) [benzene, toluene, ethylbenzene, and xylenes (BTEX) and styrene], PAHs, phenols, metals, and cyanide above the NJDEP SRS, as investigated during the 1995 RI, 2000 Phase II Supplemental RI, and the 2010 and 2011 PDIs. AOC 4 corresponds to the eastern side of RA Excavation Areas 4 and 5. The proposed excavation depth for Area 4 as per the RASR/RAWP was 10 feet bgs, with deeper excavation as needed for the tar wells. The proposed excavation depth for Area 5 as per the RASR/RAWP was 13 feet bgs.

During the RA, further refinement of the excavation boundaries was required at PE-12 on the eastern side of Area 4.

2.3.5 AOC 5

AOC 5 included former MGP structures including a tar shed, a scrap storage building, and a coal shed. Free product was observed during field investigations. Soil at AOC 5 is characterized by VOCs (BTEX and styrene), PAHs, phenols, metals, and cyanide above the NJDEP SRS, as investigated during the 1995 RI, 2000 Phase II Supplemental RI, and the 2010

to 2011 PDI. AOC 5 corresponds to the western side of Excavation Areas 4 and 5, and Excavation Area 6A. The proposed excavation depth for Area 4 and 6A as per the 2011 RASR/RAWP was 10 feet bgs and the proposed depth for Area 5 was 13 feet bgs.

During the RA, further refinement of the excavation boundaries was required at boring locations PE-23 and PE-26 on the western side of Area 4.

2.3.6 AOC 6

A magnetic anomaly was identified during a geophysical survey on 16 November 1998, indicating a target that was approximately 4 feet by 5 feet, located near the northeast corner of the former auditorium building, suspected to be a UST. The UST was uncovered and documented to be inactive and filled with water. No sheen or product was observed in the UST; however, a petroleum odor was documented. It is not known if this UST is related to former MGP operations or was installed when the auditorium building was constructed in the 1970s.

2.3.7 AOC 7

A second UST was identified based on the presence of a fill port and vent pipe located between the former scrap storage area and former coke crusher and engine room, adjacent to the eastern wall of the former Church auditorium. The Church confirmed the presence of an active 3,000-gallon heating oil UST in service to the auditorium building. This UST is not related to former MGP operations.

2.3.8 AOC 8

A test pit advanced during the 1998 Phase II RI encountered a vessel just south of the former Retort House. At the time, investigators could not determine if the vessel was a UST or a process component for former MGP operations. There were no visible impacts to the surrounding soils, and the removal of the vessel was postponed until the soil RA for the Site.

2.3.9 AOC 9

While preparing for sidewalk restoration activities on 4 June 2018, contractors uncovered a fourth UST on the eastern side of the Site beneath the sidewalk and Linden Street. The UST had a 500 gallons capacity and we do not know if the tank was related to former MGP operations.

2.4 PREVIOUS SITE ACTIVITIES

Several investigations and interim remedial activities were conducted at the Site and are summarized below. Soil and ground water data that were generated prior to 2009 were reviewed for compliance with the 2008 NJDEP SRS and the Ground Water Quality Standards (GWQS). Wherever possible, data were re-tabulated. In cases where the original analytical data reports are not available, previously tabulated data (mostly from figures) from older reports were used to support compliance determinations with respect to delineation, particularly for soils.

2.4.1 1995 Remedial Investigation

A 1995 RI completed by Geraghty and Miller, Inc. focused on the various former MGP structures and the “western property” adjacent to the Site. The results of soil sampling indicated contamination from VOCs (BTEX compounds plus styrene), various semi-volatile organic compounds (SVOC) (limited to PAHs and phenolic compounds), cyanide, and metals. Observations of free product (liquid tar or oil) were also noted at various locations. Analytical results of ground water samples collected from on-Site monitoring wells included metals and cyanide exceedances. A Remedial Investigation Report (RIR) was submitted in 1996 (Geraghty and Miller, 1996).

2.4.2 1998 Phase II Remedial Investigation

ETG retained ThermoRetec to conduct a Phase II RI in 1998. The scope of work included additional soil delineation within the Site and additional ground water investigation. A test pit was advanced south of the Retort House that uncovered an intact abandoned vessel which would later be designated as AOC 8. There were no visible impacts to the surrounding soils. The Phase II RI sampling results indicated the presence of PAHs above the SRS at locations within proposed soil excavation areas for the Church property in the RASR/RAWP.

Ground water monitoring conducted during the investigation included a 12-hour tidal effect monitoring event that indicated a tidal influence on all Site monitoring wells. Ground water samples contained metals and cyanide above the GWQS.

2.4.3 1999 Supplemental Remedial Investigation

ThermoRetec conducted a Supplemental RI (SRI) in January 1999. The scope of work included the collection of off-Site surface soil samples along Wisteria Street and Linden

Street. ThermoRetec also responded to NJDEP comments on the 1998 Phase II RIR. Sample results indicated the presence of PAHs above the SRS in surficial soil samples and established background levels of anthropogenic pollution in off-Site soil. The SRI Report was submitted in April 1999.

2.4.4 1999 UST Investigation

A geophysical survey conducted on 16 November 1998 indicated an anomaly located near the northeast corner of the auditorium building. ThermoRetec advanced a test pit at the location of the anomaly in September 1999 and uncovered a UST, which was subsequently designated AOC 6. This UST was either related to former MGP operations or was installed when the Church auditorium building was constructed in the 1970s. According to the ThermoRetec report dated 20 October 1999, the UST was inactive and filled with water. There was no sheen or product observed in the UST; however, a petroleum odor was documented. No organic vapor measurements above background were observed. No soil samples were collected. The closure of the UST was included in the scope of the RA for the Site.

2.4.5 2000 Phase II Supplemental Investigation

In January and February 2000, ThermoRetec conducted a Phase II Site Investigation (SI) to further delineate potential MGP-related impacts to surface and subsurface soils and to assess potential ground water impacts south of the former Site boundary. The Phase II SI also consisted of additional shallow soil sampling at off-Site locations on residential and municipal park properties on all four sides of the Site. The results of the Phase II SI were provided to the NJDEP in the Phase II Supplemental Investigation Report (SIR) dated 6 April 2000. Most of the sampling locations indicated the presence of PAHs greater than the SRS.

2.4.6 2001 Supplemental Remedial Investigation

Langan conducted a Phase III SRI at the Site in October 2001 to delineate soil impacts to the east of the Site along Linden Street and Caledonia Park, on the residential properties to the north, and to the south of the Site along Sadowski Parkway and Sadowski Park. Vertical and horizontal delineation of PAHs to the east of the Site was completed.

Review of the analytical results from the northern residential properties led to the conclusion that PAHs are present in fill material due to anthropogenic deposition including the burning of coal-fired boilers and burial of waste cinders, which was typical of regional disposal

practices in the early 1900s. There is no evidence of Site-related contamination (e.g., MGP residues, odors, or staining) in samples collected from these properties.

The results of soil sampling to the south of the Site (Sadowski Park) indicated no visual or olfactory evidence of MGP-related or other contamination. PAHs were detected in excess of the SRS in fill material, which was placed to construct Sadowski Parkway and Sadowski Park, along the current shoreline of the Raritan River. PAHs were not detected in excess of the SRS in samples collected from the native soil underlying the fill. The PAH contamination noted within the fill post-dates the MGP operations, and therefore cannot be attributable to MGP residues that require further delineation. The extent of potential MGP-related impacts is therefore restricted to a narrower depth interval between 16 to 17 feet bgs.

The results of ground water sampling revealed metals and cyanide above the GWQS. There were no organic compounds detected in any of the monitoring wells sampled. A Phase III Supplemental RI Report was submitted in February 2002.

2.4.7 2002 Soil Remediation of Caledonia Park

In 2002, Langan excavated PAH-contaminated soil in Caledonia Park, across Linden Street and to east of the Site. As part of a "PAH Source Evaluation", Langan concluded that the PAHs in the park were not the result of MGP operations (as acknowledged by NJDEP in a letter dated 7 October 2002 to ETG), but ETG decided to conduct the remediation to maintain good relations with the city of Perth Amboy. The excavation generated a total of 611 tons of soil removed from an area of approximately 6,800 square feet.

2.4.8 2007 PAHs Source Evaluation – Residential Properties

In 2007, Langan conducted a PAH Source Evaluation for the residential properties to the north of the Site. The evaluation documented that low levels of PAHs detected in shallow soil samples from these residential properties were of anthropogenic rather than MGP-related origin. A report was submitted on 13 March 2007 (see Appendix B) and approved by the NJDEP.

2.4.9 2007 Vapor Intrusion Investigation

Langan conducted a vapor intrusion (VI) investigation of the Church auditorium building in 2007. Due to the presence of MGP residual product beneath the Church auditorium building, one sub-slab soil gas sample was collected and analyzed for VOCs. A VI risk was not

identified. A Vapor Intrusion Sampling Report dated 13 November 2007 was submitted to the NJDEP and approved in an email dated 7 January 2010.

2.4.10 2008 Baseline Ecological Evaluation

A Baseline Ecological Evaluation (BEE) was completed in 2008 and concluded that, although there were contaminants of potential ecological concern (COPEC) at the Site, there are no viable pathways for these contaminants to impact nearby receptors (the Raritan River and Raritan Bay). Therefore, no ecological investigation was proposed. A BEE Report dated 27 February 2008 was submitted to the NJDEP and approved in an email dated 7 January 2010.

2.4.11 2009 Classification Exception Area

A Classification Exception Area (CEA) was established for the Site on 7 December 2009 to document the presence of PAHs (benzo(a)anthracene, benzo(a)pyrene, and benzo(b)fluoranthene), metals (copper, lead, and zinc), and cyanide in Site ground water impacting the Passaic Formation aquifer to a vertical depth of 20 feet. The CEA is based on previous ground water data.

2.4.12 2010-2011 Soil Pre-Design Investigations

In a letter dated 10 December 2009, the NJDEP required ETG to submit a Remedial Action Work Plan (RAWP) by 28 February 2010. The submission of the RAWP had been delayed due to ongoing negotiations with the property owner (the Church) over access to the Site. In addition, the promulgation of the 2008 SRS prompted the need for further delineation of Site soil to the new standards. Several PDIs were implemented for soil in 2010 and 2011. The results of the PDIs were submitted to the NJDEP in the RASR/RAWP and are summarized below.

Phase I Pre-Design Investigation

In November 2010, the first PDI was completed to determine the horizontal extent of soils impacted by either free product or contaminant concentrations in excess of the SRS. The borings were biased towards the following 1995 RI sampling locations:

- SB-10 Area in the vicinity of the Southern Tar Well in AOC 4
- SB/MW-4 Area in the vicinity of the Tar Shed in AOC 5
- SB-11 Area in the vicinity of the Tar Shed in AOC 5

- SB-17 Area on the southern portion of the Church property
- SB-2 Area in the vicinity of the Gas Holders in AOC 2

BTEX compounds, SVOCs, metals, and cyanide were detected in excess of the SRS in all five areas. Hard, friable tar and elevated PID readings were observed in the SB-10, SB/MW-4, SB-11, and SB-17 areas at depths of up to 8 feet. Liquid tar was observed in one boring near the Southern Tar Well in the SB-10 area. Elevated PID readings were observed in one boring in the SB-2 area. All areas were recommended for further investigation.

Phase II Pre-Design Soil Investigation

In late April/early May 2011, a Phase II PDI was completed to determine the boundary conditions of the on-Site contamination within the eastern portion of the Church property and to complete the delineation of some locations on the western Church property.

PAHs, mercury, and cyanide were detected in excess of the SRS in numerous borings. In addition, PAHs were detected in excess of the SRS at one location near the smaller, northern gas holder foundation, but were horizontally and vertically delineated. Beryllium was detected in concentrations above the default Impact to Ground Water Soil Screening Level (IGWSSL) at various locations.

Liquid tar was observed on the western Church property near the boundary with Sadowski Parkway. Hard tar and elevated PID readings were observed at 2 to 4 feet at one location (SB-10S) along the east wall of the Church auditorium building adjacent to the former Tar Shed in AOC 5.

Phase III Pre-Design Soil Investigation

In June 2011, a Phase III PDI was completed to refine the delineation at a few previous sampling locations and confirm the absence of any contamination further under the Church auditorium building.

The results of soil borings near the intersection of Wisteria Street and Sadowski Parkway in the southwestern portion of the Site indicated the presence of soft (pliable) tar and PAHs above the proposed SRS, requiring additional investigation into the street and further to the north on the Church property to the west of the auditorium.

The borings completed below the auditorium building foundation did not exhibit any visual or olfactory evidence of contamination and the samples collected from them contained no exceedances of the SRS.

2.4.13 2018 UST Site Investigation Report

An SI and closure was conducted for four USTs at the site in 2017 and 2018. The former USTs were associated with AOC 6, AOC 7, AOC 8, and AOC 9. UST1 and UST2 associated with AOC 6 and AOC 7, respectively, were identified prior to the commencement of RA activities. UST3 associated with AOC 8 was identified as a suspected UST prior to the RA, but was not confirmed as a UST until excavation activities associated with the RA commenced. UST4 was identified during RA-related excavation activities at the Site.

Prior to closure, the tanks were registered with the NJDEP in accordance with the Underground Storage Tanks Rule (N.J.A.C. 7:14B). In addition, Notice of Intent to Close was filed for the removal of each tank.

A soil investigation was conducted at these AOCs during the RA. Post-excavation samples collected for AOC 6 and AOC 9 indicate that no further investigation or action is required at these AOCs. Low-level exceedances of PAHs and metals observed in AOC 7 and AOC 8 post-excavation soil samples were consistent with those of MGP impacts being addressed by the RA. Exceedances of the applicable SRS in AOC 7 and AOC 8 post-excavation samples are attributed to MGP impacts associated with AOC 5 and AOC 4, respectively, and are not indicative of a release from either UST. Additionally, AOC 7 and AOC 8 tank footprints were over-excavated following the collection of post-excavation samples as part of RA excavation at the Site. As such, no further investigation or action is required for AOC 7 and AOC 8 and the SI is complete.

A ground water investigation was not triggered during the SI. An SIR was submitted to the NJDEP by the Site LSRP for the USTs in September 2018 and is presented in Appendix C.

SECTION 3

REMEDIAL ACTION ACTIVITIES

3.1 REMEDIAL ACTION OVERVIEW

The objective of the RA was to close out USTs, excavate MGP-impacted soil from Block 3, Lot 11, and bring the property into compliance with the most stringent of the NJDEP SRS. This RAR documents and describes the activities conducted to achieve this result.

The following contractors were used to implement the RA:

- Advanced Drilling of Hampton, New Jersey provided drilling services.
- Allsite Structure Rentals of Las Vegas, Nevada provided the temporary enclosure structure and assembly oversight.
- ANS Consultants of South Plainfield, New Jersey provided backfill compaction verification services.
- Aqua Pro-Tech Laboratories (APL) of Fairfield, New Jersey provided analytical laboratory services.
- Atlantic Green Valley Tree Service of Chatham, New Jersey provided tree removal services.
- B&B Drilling, Inc. of Netcong, New Jersey provided well abandonment services.
- Bayshore Recycling Corporation of Keasbey, New Jersey provided waste disposal services.
- Berto Construction of Rahway, New Jersey provided concrete and asphalt paving services.
- Clark Investigations and Security Co. of Woodside, Queens, New York provided overnight and weekend site security services.
- Creamer Environmental, Inc. (Creamer) of Cedar Grove, New Jersey provided environmental construction and management throughout the RA.
- East Coast Drilling, Inc. (ECDI) of Moorestown, New Jersey provided drilling services.
- EnviroPhysics, Inc. of Lawrenceville, New Jersey conducted geophysical surveys.
- ERM of Ewing, New Jersey provided perimeter air monitoring services.
- Excavating Materials & Equipment, Inc. of New Egypt, New Jersey provided certified clean top soil.
- FC Electric of Westwood, New Jersey provided electrician services.

- Federal Rent-a-Fence of West Berlin, New Jersey provided perimeter chain link fencing.
- Ground/Water Treatment & Technology, LLC (GWTT) of Wharton, New Jersey provided waste water pre-treatment design.
- H&G Public Affairs, LLC of Yardley, Pennsylvania provided public relations services.
- Integrated Geotechnical Solutions of Hainesport, New Jersey provided real time and 24-hour seismic vibration monitoring services and residential pre- and post-construction inspection services.
- Langan provided construction oversight, post-excavation soil sampling, step-out soil investigations, and LSRP services.
- Linde-Griffith Construction Co. of Newark, New Jersey provided excavation drilling services.
- Louis J. Weber & Associates, Inc. (Weber) of Sparta, New Jersey provided survey services.
- Middlesex County Utilities Authority (MCUA) of Sayreville, New Jersey provided ultimate waste water treatment.
- National Fence of Elizabeth, New Jersey installed wood stockade fencing.
- Ningariello and Son Masonry and Paving of Edison, New Jersey provided asphalt paving services.
- NorthStar Contracting Group, Inc. of East Hanover, New Jersey provided building demolition and indoor hazardous materials remediation services.
- Plattsmount Construction of Atlantic Highlands, New Jersey provided restoration and repair of a residential garage along the northern Site boundary.
- PSE&G of New Jersey provided power hookup and electrical service.
- Stavola Construction Materials of Oldwick, New Jersey provided certified clean backfill material.
- TestAmerica Laboratories, Inc. of Edison, New Jersey performed laboratory analyses.
- Utility Service Affiliates of Perth Amboy, New Jersey (USA-PA) provided waste water conveyance.
- Verizon of New Jersey provided telephone pole relocation services.
- Weldon Materials of Westfield, New Jersey provided certified clean backfill material.

The MGP soil remediation and UST closure work were performed under the supervision of Ed Zofchak, a NJ-licensed subsurface evaluator and Brian Blum, the Site LSRP. The RA activities were conducted between July 2017 and September 2018, and included the following activities:

- Demolish a 10,000 square foot (sf) one-story building. Segregate and remove indoor hazardous materials (including asbestos)
- Remove trees, telephone poles, and other above-ground site obstructions
- Expose four USTs (AOCs 6 through 9) and evaluate the condition of the tanks and potential visual impacts to surrounding soils
- Excavate and remove the four USTs for off-Site transportation and disposal
- Ground improvements (e.g., sheet piling) in support of remedial excavations
- Erect and relocate temporary enclosure over excavation areas
- Excavate MGP-impacted soil and debris from AOC 1 through AOC 5 for off-Site transportation and disposal
- Excavate and remove any remaining subsurface MGP structures and equipment
- Collect post-excavation soil samples from UST and MGP excavation footprints to confirm the completion of the RA to the strictest NJDEP SRS
- Collect soil samples for the development of Site-specific Impact to Ground Water Soil Remediation Standards (IGWSRS)
- Submit certification and closure documentation to the NJDEP to log the presence and removal of all USTs on Site
- Backfill all excavated areas with compacted certified clean fill material and finish to grade with approximately 6 inches of crushed stone

A photo log depicting various RA activities is presented in Appendix D.

3.2 HEALTH AND SAFETY PLAN

Creamer, the remediation contractor, prepared a Health and Safety Plan (HASP) for RA activities at the Site. While conducting construction observation activities at the Site, Langan personnel adhered to Creamer's HASP. However, Langan prepared a separate HASP for post-excavation sampling activities. The HASPs are based on safety standards as defined by the United States Environmental Protection Agency (USEPA), Occupational Safety and Health Administration (OSHA), National Institute of Occupational Safety and Health (NIOSH), and Langan's general health and safety program requirements.

3.3 SAFETY OF THE GENERAL PUBLIC

The excavation areas were encompassed by a security fence, provided by Federal Rent-a-Fence, which was maintained during all remedial activities. All above and below-ground utilities, adjacent structures, curbing, sidewalks, and public roadways were protected from

damage due to construction activities by appropriate means. A security guard, provided by Clark Investigations and Security Co., was stationed on-Site during non-work hours and weekends to ensure that no unauthorized personnel had access to the Site.

3.4 VIBRATION MONITORING

In order to protect adjacent properties, vibration monitoring was conducted at various locations by Integrated Geotechnical Solutions. Vibration monitoring equipment was stationed on-Site during all intrusive and demolition activities. Equipment was moved as needed to monitor work taking place at various locations of the Site. In addition, when percussive work, such as sheet driving, was taking place, personnel were stationed near the work area with portable vibration monitors in addition to the vibration monitoring stations. There were no measurements exceeding the specified limit in the construction specifications for vibrations that could potentially cause damage to these structures. Vibration monitoring logs and reports are presented in Appendix E.

3.5 PUBLIC RELATIONS

During the preparation for and course of the RA, ETG retained H&G Public Affairs, LLC for all public relations efforts with adjacent property owners and the City of Perth Amboy. H&G, along with Langan (including the project LSRP), communicated with the adjacent property owners and the City of Perth Amboy regarding any concerns, maintained and operated a Site information hotline, and acted as a point of contact for ETG.

3.6 PERMITTING

The following permits were required for the remediation activities described in this RAR:

- Air Pollution Control Preconstruction Permit and Certificate to Operate Construction of a New Source – PCP160001 – was issued on January 23, 2017 by the NJDEP Division of Air Quality for the construction and operation of air control equipment for excavation beneath a temporary enclosure. The permit also covered best management practices for excavation of impacted MGP material outside of the temporary enclosure.
- 5G3 – Construction Activity Stormwater General Permit – was issued on June 14, 2017 by the NJDEP Bureau of Nonpoint Pollution Control for the discharge of stormwater from an active construction site.

- Soil Erosion and Sediment Control (SESC) Plan Certification – 2017-0182 – was issued on May 25, 2017 by the Freehold Soil Conservation District (FSCD) for management of soil and sediment related to the site RA activities.
- Temporary Discharge Approval (TDA) – 005-16 – was issued on December 7, 2016 by the MCUA for the discharge of pre-treated ground water generated during construction dewatering activities to their treatment facility in Sayreville, New Jersey. USA-PA provided approval on September 20, 2016 for the use of their combined sewer system for conveyance of the ground water to the MCUA facility. The TDA was renewed once during the RA, on December 12, 2017.
- Treatment Works Approval (TWA) – 17-0146 – was issued on May 9, 2017 by the NJDEP Division of Water Quality for the construction of an on-Site water treatment and conveyance system to treat ground water generated during construction dewatering activities.
- UST Registration and Notice of Intent to Close was filed for each of the four USTs closed as part of the RA.
- Various Local Permits – were obtained as needed for activities such as UST inspections, construction of the temporary enclosure, temporary utility feeds, and sidewalk/street closing.

All permits were closed upon completion of the RA activities as per the issuing agency's rules and regulations. Copies of these permits are provided in Appendix F.

3.7 SITE PREPARATION

A discussion of the activities required to prepare the Site for the RA is provided below.

3.7.1 Clearing and Grubbing

Several mature trees were removed from the Site by Atlantic Green Valley Tree Service in preparation for excavation activities. The RA objective of remediating to unrestricted use standards at the Site made the removal of the trees necessary, as their root systems were moored in MGP-impacted soil. One additional tree was removed when it was determined that it was compromised due to an act of vandalism by an unknown party, which occurred prior to the RA. Branches from several additional trees were removed to facilitate power hookup for the RA.

Two light poles were removed from the central portion of the site prior to excavation. The poles were used for night lighting of the parking lot in the central portion of the Site prior to

the RA. The poles were properly disconnected from utility service prior to removal. Two utility poles were removed from the sidewalk on the eastern side of the site. Verizon removed telecommunications equipment from the poles before PSE&G disconnected electrical service and removed the poles.

Areas of grass, asphalt, and concrete were removed from the surface of the excavation areas prior to digging. These materials were collected and transported off-site to Bayshore for proper disposal. Disposal documentation for these materials is presented in Appendix G.

3.7.2 Electrical Hookup

The Church auditorium building, which was slated for demolition as part of the RA, contained the only electrical service to the Site, and could not be used for the duration of the RA. FC Electric constructed a 3-phase electrical service for on-Site infrastructure. PSE&G connected Site electrical equipment to the local grid.

3.7.3 Pre-Construction Inspections

Pre-construction inspections (i.e., pre-existing conditions surveys) were completed by Integrated Geotechnical Solutions for buildings within 60 feet of the work area to provide a baseline for evaluating any claims of damage that might arise from ground vibrations during the RA. Buildings at the following properties were inspected:

- 41-47 Wisteria Street – St. Demetrios Church
- 55 Wisteria Street – Residence
- 61 Wisteria Street – Residence
- 65 Wisteria Street – Residence
- 69 Wisteria Street - Residence
- 71 Linden Street – Residence
- 73 Linden Street – Residence
- 73 Wisteria Street – Residence
- 81 Lewis Street – Residence
- 93-95 Lewis Street - Residence

3.7.4 Soil Erosion and Sediment Control Measures

SESC measures were implemented in accordance with the SESC plan approved by the FSCD. SESC measures implemented at the site included silt fencing around the site perimeter, filter fabric in storm water catch basins, stabilized truck entrances with a crushed stone pad, and a decontamination station. SESC materials were inspected and repaired frequently, especially after inclement weather. FSCD personnel deemed the Site satisfactory based on Inspections performed both during and after the RA.

3.7.5 Building Demolition

The Site was occupied by a one-story church auditorium building occupying approximately 10,000 sf of gross floor area. The building was demolished prior to the RA because it could not be sufficiently or safely supported during removal of MGP-impacted soil beneath it in Excavation Areas 4, 6A, and 6B.

Langan conducted a hazardous materials inspection prior to demolition to facilitate proper hazardous materials handling and disposal during demolition activities. A copy of Langan's August 2016 report is presented in Appendix H.

NorthStar Contracting Group, Inc. provided building demolition and indoor hazardous materials remediation services. The following materials were removed from the Site in conjunction with the demolition activities:

- Recycled scrap metal (iron, aluminum, and copper) - 34 tons.
- Non-friable asbestos - 6.41 tons
- Demolition debris - 43 tons
- Concrete - 540 cubic yards

Documentation of demolition activities including disposal is presented in Appendix I.

3.7.6 In-Situ Waste Classification

Waste classification sampling was conducted by Langan prior to the RA to characterize the potential for hazardous waste at the site, and provide analytical data for the purpose of obtaining approvals for disposal of MGP-impacted soil from individual non-hazardous waste facilities. The sampling plan was developed to accommodate potential disposal at three

facilities: Bayshore Soil Management, LLC of Keasbey, New Jersey, Clean Earth of New Castle, Delaware, and Clean Earth of Morrisville, Pennsylvania.

Based on the estimated volume of soil to be excavated [approximately 25,530 cubic yards (cy)] a sampling plan was prepared that included 44 boring locations. A total of 58 composite samples were collected and analyzed for extractable petroleum hydrocarbons (EPH), Target Compound List (TCL) VOCs, Target Analyte List (TAL) metals, TCL SVOCs, polychlorinated biphenyls (PCBs), sulfur, toxicity characteristic leaching procedure (TCLP) VOCs, TCLP SVOCs, and TCLP metals. A total of 44 composite samples were collected and analyzed for ignitability, corrosivity, reactivity, hexavalent chromium, TCLP herbicides, TCLP pesticides, and moisture. A total of 118 grab samples were collected and analyzed for total petroleum hydrocarbons (TPH) and total organic halides (TOX). Advanced Drilling, a New Jersey licensed driller advanced all borings using direct push methods (i.e., by Geoprobe™). APL, an NJDEP licensed laboratory, performed the analyses.

The waste classification sampling data, laboratory deliverables, and analytical results summary table are provided in Appendix J. None of the results exceeded the limits for Resource Conservation and Recovery Act (RCRA) hazardous waste.

3.7.7 Pre-Trenching and Excavation Support

Pre-trenching was conducted by Creamer prior to driving sheeting for excavation support. Trenching was implemented approximately 4 to 6 feet bgs along sheeting boundaries to ensure that any obstructions were removed, ensuring a smoother sheet installation process.

Excavation support design was provided by a New Jersey licensed Professional Engineer. Excavations were performed by Creamer in accordance with 29 CFR 1926 Subpart P and applicable local, state, and federal regulations governing excavations and trenching. Due to the depths of most excavations, appropriate shoring was constructed around the perimeter of each area for both earth support purposes and to reduce the amount of dewatering required to complete the excavation. The larger excavation areas were supported by a steel perimeter sheet pile wall that was removed upon the completion of backfilling. Cross bracing and interior sheeting were also installed to further subdivide the large sheeted excavations into two or more smaller cells to properly support the overall excavation. Trench boxes or slide rail boxes were used for earth support in shallower and smaller excavations where sheet pile walls were not needed.

Health and safety procedures for personnel working in and around excavations were addressed in the site specific HASP prepared for the proposed remedial activities by the RA contractor.

3.7.8 Perimeter Air Monitoring

A perimeter air monitoring (PAM) program was implemented by ERM of Ewing, New Jersey during the RA at the Site to document the effectiveness of on-site emission control measures and for the protection of off-site receptors. A Perimeter Air Monitoring Plan (PAMP) was prepared by ERM prior to the start of the RA. The PAMP set forth the guidelines and requirements for the monitoring of the perimeter ambient air quality.

The perimeter air monitoring program was implemented continuously during work hours and throughout the duration of the RA whenever there was the potential for emissions as either organic vapors or as fugitive dusts. The PAMP consisted of four PAM stations that were positioned at both an upwind location and several downwind locations. The instrumentation included the capability for real-time measurements of both organic vapors and fugitive dusts. Whenever measurements exceeded the action levels set forth in the PAMP, the RA contractor was directed to take immediate corrective actions to suppress the source(s) of the emissions.

A copy of the PAMP is included in Appendix K and the final PAM Report is included in Appendix L.

3.7.9 Dust and Odor Control

Control of fugitive dusts outside of the temporary enclosure was conducted by water spraying, as necessary. In order to control odors, a combination of vapor suppression foam, tarps and clean fill were used to cover sources of MGP odors, specifically exposed soils and stockpiled materials awaiting transportation for off-site disposal.

Site personnel monitored the perimeter of the Site and the adjacent neighborhood for MGP odors. In the event that MGP odors were detected either on-Site or in the surrounding off-site areas, the remediation contractor took immediate corrective action to suppress odors. Preventative measures were implemented by spraying foam and/or odor neutralizers directly into the excavation, the excavator bucket loading trucks, soil beds in trucks, stockpiled soils and soils being rendered for moisture content prior to loading for off-site disposal. Stockpiles

were covered with tarps. Clean fill was also spread across the bottom of excavations to control odors when necessary. A total of 1,855 gallons of odor suppressing foam was used during the RA.

3.7.10 Temporary Enclosure

Due to the proximity of the Site to sensitive receptors such as residences, a church, and public recreation areas, a temporary enclosure was implemented for odor and dust control for much of the excavation. Allsite Structure Rentals provided the temporary enclosure as well as design and assembly oversight. The temporary enclosure was approximately 131 feet wide, 99 feet long, and 49 feet tall. The structure was constructed at the northern end of the Site and moved three times during the course of the RA as the excavation proceeded south. The design plan for the temporary enclosure is presented in Appendix M, and a location plan for the movement of the temporary enclosure is presented on Drawing 5.

A vapor management system (VMS) was designed by Langan and Creamer in accordance with the NJDEP Air Pollution Control Preconstruction Permit and Certificate to Operate Construction of a New Source (PCP160001). Negative air pressure was maintained across the temporary enclosure during work hours and vapors were treated by the VMS. Daily and periodic monitoring was conducted to ensure optimal vapor capture and treatment in accordance with the NJDEP air permit. The design plan for the VMS is presented in Appendix N. Air monitoring data and reports are provided in Appendix O.

3.7.11 Water Treatment System

An on-Site water treatment system was designed by GWTT for treatment of ground water generated through excavation dewatering activities. The system design was modified slightly by Creamer prior to being constructed at the Site. Ground water treated by the system was conveyed to MCUA via the City of Perth Amboy's combined sewer system. The water treatment system accessed the City's combined sewer via a permitted manhole connection in Wisteria Street to the west of the Site. Periodic sampling of treated ground water was conducted and self-monitoring reports were submitted to MCUA in accordance with the TDA. Water treatment system documentation is presented in Appendix P.

3.7.12 Survey of Existing Conditions

Prior to conducting any significant land disturbance (e.g., soil excavations) the RA Contractor retained a New Jersey licensed surveyor (Louis J. Weber & Associates) who conducted a topographical survey of the Site and portions of the adjacent City streets to establish the pre-construction conditions and boundary surveys. A copy of the Existing Conditions Survey is presented in Appendix Q.

3.7.13 Monitoring Well Abandonment

Seven monitoring wells that were located within excavation areas that required proper abandonment prior to the soil RA included:

- MW-2
- MW-2D
- MW-3
- MW-3D
- MW-4
- MW-5
- MW-6

All of these wells were properly abandoned by a driller (B & B Drilling, Inc.) licensed by NJDEP for well abandonment. Former monitoring well locations are shown on Drawing 2. Well abandonment reports were filed with NJDEP and copies provided in Appendix R.

3.7.14 Utility Clearance

Utility mark outs were arranged by contacting the "New Jersey One Call" service (1-800-272-1000) to identify utility owners at least 72 hours prior to conducting intrusive activities. The utility clearance was periodically updated as needed throughout the duration of the RA field event.

3.7.15 Geophysical Survey

In addition to supporting utility clearance, geophysical surveys were conducted by EnviroPhysics, Inc. as needed to confirm the locations of known USTs, identify subsurface

anomalies indicating the potential presence of a UST, and to clear locations for step-out soil borings.

3.8 QUALITY ASSURANCE/QUALITY CONTROL

QA/QC was implemented in accordance with the April 2014 NJDEP *Data Quality Assessment and Data Usability Evaluation Technical Guidance* to ensure that data were acquired according to established methods and procedures designed to obtain results that are objective, true, repeatable, and of known accuracy. The Quality Assurance Project Plan (QAPP) is provided in Appendix S. The following sections outline the field and laboratory QA/QC measures that were incorporated into the RA.

3.8.1 Decontamination Procedures

Personnel and equipment decontamination procedures were performed during the RA to minimize or eliminate the potential for exposure of personnel to contaminants, to minimize or eliminate cross-contamination of sampling equipment, and for the protection of the public.

Decontamination of all heavy equipment, such as drill rigs and excavators, that came in contact with subsurface soil was performed in a designated on-Site area and conducted in accordance with the procedures outlined in the Site-specific HASP prepared by Creamer. All sampling equipment that was reused was field-decontaminated between sample locations in accordance with the 2005 NJDEP FSPM.

Soil and related Site debris was power washed off trucks, rigs, and equipment prior to removal from the Site. Personnel utilized boot wash stations prior to leaving the exclusion zone.

3.8.2 Quality Assurance/Quality Control Measures

Field QA/QC was documented through the collection of field duplicate samples and field blanks in accordance with the NJDEP FSPM and the QAPP (Appendix S). The field QA/QC samples are summarized in Table 1.

Field duplicate analytical results are presented in Table 2 along with the original sample results. The results generally correlated well. Any discrepancies in duplicate sample concentrations are discussed with the data analysis in Sections 3.12 and 3.13 below.

Field blanks were typically collected at a rate of one per sample shipment for soil sampling that includes VOC analysis. There were no detections in any of the field blank samples associated with the RA, demonstrating that cross-contamination of soil samples is likely not occurring in the field.

Laboratory QA/QC samples (method blanks, laboratory duplicates, matrix spike samples, matrix spike duplicate samples, spike blanks, and instrument blanks) were prepared and analyzed by the laboratory in a manner and frequency that conform to the analytical methods used. Laboratory data were reviewed for usability in accordance with the April 2014 NJDEP *Data of Known Quality Protocols Technical Guidance* by a Langan data quality analyst to identify any potential issues. A review of laboratory nonconformance summaries indicated several recoveries outside of control limits; however, data have been qualified as necessary and the non-conformances are not expected to affect data quality or usability. Data Quality Assessment and Data Quality Evaluation (DQA/DQE) spreadsheets for the laboratory data are presented in Appendix T.

Sample integrity was maintained with the addition of appropriate chemical preservatives and by cooling the samples to 4 degrees Celsius immediately after collection and during transportation to the laboratory. Soil samples that were analyzed for VOCs were preserved through the use of Encore™ samplers. Other chemical additives necessary for sample preservation were added to the sample containers by the analytical laboratory prior to delivery to the Site. The QA/QC measures, analytical methodologies, sample preservation, and holding times are documented in Tables 1 and 3.

Chain-of-Custody (COC) was maintained throughout the sampling program. COC documentation accompanied all samples from the field to the laboratory. Each sample was assigned a unique name that was recorded in a field log book and on the COC form. Samples were logged by sample name, date and time collected, and location.

3.9 SOIL REMEDIATION ACTIVITIES

Excavation of MGP-impacted soil was planned in accordance with the Site Remediation Plan as shown on Drawing 6. Excavation was conducted in phases, with Excavation Areas 1 and 6B being completed outside of the temporary enclosure, and the remaining areas generally completed inside of the temporary enclosure. Work inside of the temporary enclosure proceeded from Excavation Areas 2 and 3, then south to Excavation Area 4, then Excavation Areas 5 and 6A.

Excavation and removal of UST1 and UST2 were conducted outside of the temporary enclosure and prior to MGP excavation activities. UST3 was uncovered and removed beneath the temporary enclosure, in conjunction with MGP excavation in Excavation Area 4. UST4 was uncovered and removed after MGP excavation was completed and the temporary enclosure was dismantled and removed.

Post-excavation soil samples were collected from excavated MGP areas at a frequency of one per 900 square feet of excavation bottom, and one per 30 feet of excavated sidewall, as per the NJDEP-approved RASR/RAWP. Post-excavation samples were biased towards locations where the greatest level of contamination was found in previous site investigations. In general, MGP post-excavation samples were collected by hand directly from excavation bottoms and sidewalls. However, when safety issues precluded personnel from entering the excavation, samples were collected directly from the excavator bucket. Where historical sample locations from previous investigations coincided with excavation sidewalls and bottoms, historical sample data were used in lieu of new post-excavations samples.

Post-excavation soil samples were collected from UST-related excavations in accordance with the UST Rules (N.J.A.C. 7:14B) and the April 12, 2012 *Technical Guidance for Investigation of Underground Storage Tank Systems*. Samples were biased towards locations with the greatest evidence of contamination based on field observations (e.g., staining, odor, and PID readings).

Soil borings were advanced using Geoprobe™ or mud-rotary drilling methods where needed to further refine the vertical and horizontal extents of the MGP excavation areas. Samples were collected continuously with 5-foot macrocore samplers. ECDI, under the direction of Langan, advanced the soil borings.

Soil samples were also collected for the development of Site-specific IGWSRS in accordance with the November 2013 *Development of Site-Specific Impact to Ground Water Soil Remediation Standards Using the Synthetic Precipitation Leaching Procedure, Version 3.0* and the November 2013 *Development of Impact to Ground Water Soil Remediation Standards Using the Soil-Water Partition Equation, Version 2.0*. IGWSRS samples were collected from various representative locations across the Site. Samples were collected by Langan in accordance with the NJDEP FSPM.

Soil samples were visually inspected, classified in accordance with the Unified Soil Classification System (USCS), and field-screened with a PID. Visual observations of potential contamination and PID field measurements were noted on the boring logs provided in Appendix U.

Soil samples were collected for laboratory analysis as summarized in Table 4. A summary of soil excavation activities and sample results for each Excavation Area is provided below. Post-excavation sample results are provided in Table 2 and on Drawings 7 through 9. Drawing 10 is an as-built survey of the excavation areas.

3.10 SITE-SPECIFIC IMPACT TO GROUND WATER SOIL REMEDIATION STANDARDS

Samples from both the fill and native soil layers were evaluated to develop one IGWSRS for each contaminant of concern for the Site. The Soil-Water Partition Equation was used to calculate Site-specific IGWSRS for five PAH compounds as summarized below. Total organic carbon (TOC) analysis was evaluated at three locations in the fill and three locations in the native soil layer. The organic carbon content of samples from the fill layer was significantly higher than from the native layer. Because MGP-related residuals exist in both strata, Langan calculated conservative IGWSRS using the lower average fraction of organic carbon content (0.0135) from the native soil samples. Site-specific IGWSRS calculated with this method are as follows:

- Benzo(a)anthracene: 5 mg/kg
- Benzo(a)pyrene: 1 mg/kg
- Benzo(b)fluoranthene: 17 mg/kg
- Dibenz(a,h)anthracene: 5 mg/kg
- Indeno(1,2,3-cd)pyrene: 47 mg/kg

The Synthetic Precipitation Leachate Procedure (SPLP) method was used to calculate Site-specific IGWSRS for mercury and lead. Total and SPLP mercury and lead were each evaluated in six samples collected from each of the fill and native soil layers. All of the sample leachate results were below the applicable leachate criterion, and were generally proportional to the total amount of mercury or lead reported regardless of which strata each sample was collected from. Therefore, Langan used the six samples collected each for SPLP mercury and SPLP lead to calculate one Site-specific IGWSRS for each compound. The Site-specific

IGWSRS for mercury (16 mg/kg) and lead (350 mg/kg) correspond to the highest total concentration, respectively, detected in the samples.

The spreadsheets and data for each calculated standard and the Alternative or New Remediation Standard and/or Screening Level Application Form were submitted with the 2018 UST Site Investigation Report (Appendix C). Discussions herein regarding exceedances of the most stringent SRS include the evaluation of these PAH and metals compounds against the Site-specific IGWSRS.

3.11 UST CLOSURES (AOC 6, AOC 7, AOC 8, AND AOC 9)

Four USTs were encountered, closed, and removed from the Site during the course of the RA. An SI of each UST was completed and documented in the 2018 UST Site Investigation Report (Appendix C). A discussion of the RA activities completed for each UST follows.

3.11.1 AOC 6

On 11 July 2017, EnviroPhysics performed a geophysical survey and confirmed the location of UST1, a 1,300-gallon UST with unknown contents consisting of mixed media soil and liquid. Langan submitted a UST questionnaire to register the tank with the NJDEP on 19 July 2017 and a Notice of Intent to Close on 24 July 2017. On 3 August 2017, Creamer exposed UST1 and Langan evaluated its condition and inspected the surrounding soils for the presence of contamination. Holes were observed in the UST walls; however, an examination of the surrounding soils did not reveal any evidence of a release. Langan collected one sample (UST No. 3-INTERIOR) from the contents of UST1 on 8 August 2017 for gas chromatography fingerprint analysis for characterization purposes. Analytical results indicated that the contents most closely resembled degraded heavy fuel oil (No. 2 fuel oil).

Creamer, under the direction of Langan, removed UST1 from the ground on 18 August 2017. Langan collected three post-excavation soil samples on 18 August 2017 in accordance with the NJDEP *Technical Guidance for Site Investigation of Soil, Remedial Investigation of Soil, and Remedial Action Verification Sampling for Soil* (March 2015) as follows:

- PX-WEST located on the UST excavation sidewall bottom of the western extent of the UST excavation
- PX-CENTER located in the center of the bottom of the UST excavation

- PX-EAST located on the UST excavation sidewall bottom of the eastern extent of the UST excavation

The post-excavation soil samples were analyzed for EPH in accordance with N.J.A.C. 7:26E Table 2-1 for No. 2 Fuel Oil and the NJDEP *Protocol for Addressing EPH* (9 August 2010). No ground water was encountered during the UST excavation.

Sample PX-EAST contained an EPH concentration of 50 mg/kg, which is below the Residential Direct Contact (RDC) SRS of 5,100 mg/kg. EPH was not detected in samples PX-WEST or PX-CENTER. All EPH analytical results were below the 1,000 mg/kg screening level, so no contingent analyses were performed.

UST1 was situated within an MGP-impacted area (AOC 5/Excavation Area 4) designated for excavation as part of the RA. Therefore, following the collection of post-excavation samples, Creamer continued to excavate horizontally and vertically beyond the extents of the UST excavation. Langan submitted an updated UST Facility Certification Questionnaire documenting the closure of UST1 on 13 September 2017. The RA is complete for AOC 6. No further action is required.

3.11.2 AOC 7

On 11 July 2017, EnviroPhysics performed a geophysical survey and confirmed the location of UST2, a 3,000-gallon heating oil UST. Langan submitted a UST questionnaire on 19 July 2017 to register the tank with the NJDEP and a Notice of Intent to Close was filed on 24 July 2017. On 3 August 2017, Creamer exposed UST2 and Langan evaluated the condition of the UST and surrounding soils for the presence of contamination. Creamer removed UST2 on 18 August 2017. Visible holes were observed in the UST walls; and a petroleum odor was noted in surrounding soils. Accordingly, Langan called the NJDEP Hotline on 18 August 2017 to provide notification of a potential release. Incident number 17-08-18-1641-30 was assigned to the case.

Langan collected four post-excavation soil samples on 18 August 2017 in accordance with the NJDEP *Technical Guidance for Site Investigation of Soil, Remedial Investigation of Soil, and Remedial Action Verification Sampling for Soil* (March 2015) as follows:

- PX-PIPE located on the UST excavation bottom in the vicinity of the fill and vent pipes

- PX-SOUTH located on the UST excavation sidewall bottom on the southern extent of the UST excavation
- PX-CNTR-EAST located on the UST excavation sidewall bottom of the eastern extent of the UST excavation
- PX-NORTH located on the UST excavation sidewall bottom of the northern extent of the UST excavation

TestAmerica analyzed post-excavation soil samples for EPH in accordance with N.J.A.C. 7:26E Table 2-1 for No. 2 Fuel Oil and the NJDEP *Protocol for Addressing EPH* (9 August 2010). Post-excavation sample PX-NORTH was also analyzed for contingent naphthalene and 2-methylnaphthalene in accordance with N.J.A.C. 7:26E Table 2-1 for No. 2 Fuel Oil. Contingent analysis is required for 25% of samples in which EPH is detected at concentrations greater than 1,000 milligrams per kilogram (mg/kg). No ground water was encountered during the UST excavation.

EPH was not detected in sample PX-SOUTH. Samples PX-PIPE and PX-CNTR-EAST contained EPH concentrations of 140 mg/kg and 82 mg/kg, respectively. EPH was detected in samples PX-NORTH and its duplicate (DUP-1) at concentrations of 2,600 mg/kg and 2,500 mg/kg, respectively. All EPH sample results are below the RDCSRS of 5,100 mg/kg.

Where contingent analysis was required when EPH was detected at concentrations greater than 1,000 mg/kg, benzo(a)pyrene was detected in samples PX-NORTH and DUP-1 in exceedance of the RDCSRS and IGWSRS at concentrations of 2.7 mg/kg and 2.9 mg/kg, respectively. Dibenz(a,h)anthracene was detected above the RDCSRS at concentrations of 0.60 mg/kg and 0.61 mg/kg, respectively.

UST2 was situated within an MGP-impacted area (AOC 5/Excavation Area 4) designated for excavation as part of the RA. The benzo(a)pyrene and dibenz(a,h)anthracene concentrations found in soil at AOC 7 are indicative of residual MGP impacts, and not a release from the UST. Therefore, following the collection of post-excavation samples, Creamer continued to excavate horizontally and vertically beyond the extents of the UST excavation. Langan submitted an updated UST Facility Certification Questionnaire documenting the closure of UST2 on 13 September 2017. A Confirmed Discharge Notification form was submitted to the NJDEP on 23 October 2017 to close-out the incident number. The RA is complete for AOC 7. No further action is required.

3.11.3 AOC 8

On 11 July 2017, EnviroPhysics performed a geophysical survey and confirmed the location of UST3, a 500 gallon UST of unknown contents, in the vicinity of the former auto shop along the eastern boundary of the Site. Creamer exposed the vessel and confirmed it as a UST. Creamer, under the direction of Langan, removed UST3 on 6 February 2018. Langan evaluated the condition of UST3 and inspected the surrounding soils for the presence of contamination. There was no evidence of a release.

Langan collected two post-excavation soil samples on 6 February 2018 in accordance with the NJDEP *Technical Guidance for Site Investigation of Soil, Remedial Investigation of Soil, and Remedial Action Verification Sampling for Soil* (March 2015) as follows:

- 162-UST-3(6.5-7.0) located on the UST excavation sidewall bottom on the western extent of the UST excavation
- 163-UST-3(6.5-7.0) located on the UST excavation sidewall bottom on the eastern extent of the UST excavation

The post-excavation soil samples were analyzed for EPH in accordance with N.J.A.C. 7:26E Table 2-1 for unknown petroleum hydrocarbons and the NJDEP *Protocol for Addressing EPH* (9 August 2010). Post-excavation sample 162-UST-3-(6.5-7.0) was also analyzed for VOCs and SVOCs plus a library search of Tentatively Identified Compounds (TIC), PCBs, and metals in accordance with N.J.A.C. 7:26E Table 2-1 for unknown petroleum hydrocarbons where contingent analysis is required to be run on 25 percent of samples where EPH is detected. No ground water was encountered during the UST excavation.

EPH was not detected in sample 163-UST-3. Sample 162-UST-3 contained EPH at a concentration of 66 mg/kg. Benzo(a)pyrene was detected in sample 162-UST-3 in exceedance of the IGWSRS and RDCSRS at a concentration of 1.1 mg/kg. Aluminum and manganese were also detected in sample 162-UST-3 above the IGWSRS at concentrations of 8,720 mg/kg and 384 mg/kg, respectively; however, both aluminum and manganese are naturally occurring and the IGW pathway need not be addressed.

UST3 was situated within an MGP-impacted area (AOC 4/Excavation Area 4) designated for excavation as part of the RA. The benzo(a)pyrene concentration found in soil at AOC 8 is indicative of residual MGP impacts, and not a release from the UST. Therefore, following the collection of post-excavation samples, Creamer continued to excavate horizontally and

vertically beyond the extents of the UST excavation. Langan submitted an updated UST Facility Certification Questionnaire documenting the closure of UST3 on 14 February 2018. A Notice of Intent to Close was inadvertently omitted prior to removing the tank, but was made on 3 July 2018 to close-out the registration. The RA is complete for AOC 8. No further action is required.

3.11.4 AOC 9

While preparing for sidewalk restoration activities on 4 June 2018, Creamer uncovered a fourth UST on the eastern side of the Site beneath the sidewalk and Linden Street. An updated UST questionnaire was submitted to the NJDEP on 5 June 2018 to register UST4, a 500 gallon UST of unknown contents that was designated as AOC 9. A Notice of Intent to Close was filed on 11 June 2018. There was no evidence of a release to the surrounding soils, and the closure of the UST was completed before the commencement of Site restoration activities in that area.

Creamer, under the direction of Langan, removed UST4 on 10 July 2018. Langan evaluated the condition of UST4 and inspected the surrounding soils for the presence of contamination. An examination of the tank and surrounding soils did not reveal any evidence of a release.

Langan collected two post-excavation soil samples on 10 July 2018 in accordance with the NJDEP *Technical Guidance for Site Investigation of Soil, Remedial Investigation of Soil, and Remedial Action Verification Sampling for Soil* (March 2015) as follows:

- 325-UST 4 (3.5-4) located on the UST excavation sidewall bottom on the western extent of the UST excavation
- 326-UST 4 (3.5-4) located on the UST excavation sidewall bottom on the eastern extent of the UST excavation

The post-excavation soil samples were analyzed for EPH in accordance with N.J.A.C. 7:26E Table 2-1 for unknown petroleum hydrocarbons and the NJDEP *Protocol for Addressing EPH* (9 August 2010). No ground water was encountered during the UST excavation. EPH was not detected in either sample, and no contingent analyses were run.

Langan submitted an updated UST Facility Certification Questionnaire documenting the closure of UST4 on 16 July 2018. The RA is complete for AOC 9. No further action is required.

3.12 SOIL EXCAVATION

MGP-impacted soil and debris was excavated from AOCs 1 through 5. To facilitate the excavation, the AOCs were split into a number of “Excavation Areas” based on delineated excavation depth, and logical placement of excavation supports. Each of these excavation areas is depicted on Drawing 6. The RA for each excavation area is described in more detail below.

3.12.1 Excavation Area 1

Excavation Area 1 was approximately 30 feet by 30 feet and comprised the northern portion of AOC 1. Area 1 was characterized by PAH exceedances of the SRS.

Point-by-point delineation was achieved at Excavation Area 1 by PDI samples collected in 2011. Samples collected in Area 1 contained exceedances of the SRS for aluminum and manganese; however, these metals are considered to be naturally-occurring and do not require remediation. Based on the PDI sample results, an area 30 feet wide by 30 feet long and 16 feet deep was excavated. No free product was encountered in the excavation. Approximately 665 cy of material was removed from Excavation Area 1 according to in-situ post-excavation survey data provided by Weber. Forty-seven loads of impacted soil weighing approximately 900 tons were trucked off-Site for disposal at Bayshore. Disposal documentation is provided in Appendix F.

PDI samples, which were analyzed for VOCs, PAHs, phenols, metals, and cyanide, were sufficient to be used as post-excavation samples, and no further samples were collected in Area 1. The following samples demonstrate completion of the remediation in Excavation Area 1 to unrestricted use standards:

Sample ID	Sample Depth (ft bgs)	Bottom or Sidewall Sample	Historical or Post- Excavation Sample
SB-1A	16–16.5	Bottom	Historical
SB-1B	12–12.5	Sidewall	Historical
SB-1C	12–12.5	Sidewall	Historical
SB-1D	12–12.5	Sidewall	Historical
SB-1E	12–12.5	Sidewall	Historical

No further action is required at Excavation Area 1.

3.12.2 Excavation Area 2

Excavation Area 2 corresponds to AOC 2 and was characterized by PAH, metals, and cyanide exceedances of the SRS as well as observances of free product. A slightly irregular area approximately 126 feet by 90 feet and 18 feet deep was proposed in the Remediation Plan.

Approximately 8,000 cy of soil and debris was removed from Excavation Area 2 according to in-situ post-excavation survey data provided by Weber. In addition to MGP-impacted soil, piping and debris from the northern gas holder was encountered and removed from the excavation. No debris was encountered from the southern gas holder. 488 loads of impacted soil and debris weighing approximately 13,000 tons was trucked off-Site for disposal.

Post excavation samples in Area 2 were analyzed for PAHs, cyanide, and metals (arsenic, lead, and mercury). Post-excavation samples PE-38 and PE-39 on the eastern sidewall of Excavation Area 2 were initially collected as Area 2 sidewall samples. However, they contained PAHs above the SRS. The area was over-excavated to the east into Excavation Area 3. Samples PE-45, PE-46, and PE-47 were collected to delineate PE-38 and PE-39 and serve as both Area 3 bottom/sidewall and Area 2 sidewall post-excavation samples.

Northern Temporary Enclosure Setback Area

Sheet piling was installed five feet south of the northern property boundary, leaving the northern-most part of Area 2 outside of the excavation area. This was done to allow room for the northern wall of the temporary enclosure, which could not be constructed beyond the northern property line due to obstructions on the adjacent residential property (71 Linden Street). A review of the existing data from the five-foot strip on the north of Excavation Area 2 combined with post-excavation samples collected from the northern excavated boundary of Area 2 indicated that the soil within the 5-foot setback area complies with the most stringent SRS, with one exception. Samples collected from boring PX-2G on the northwestern side of Excavation Area 2 contained beryllium (0.81 mg/kg) in excess of the default IGWSSL (0.7 mg/kg). However, as described in the NJDEP-approved RASR/RAWP, small concentrations of beryllium were found intermittently throughout the Site above the IGWSSL, but well below the Residential Direct Contact SRS (RDCSRS) of 16 mg/kg. However, this beryllium is not Site-related, is not expected to impact ground water, and does not require remediation. Beryllium has not been detected above the GWQS in site monitoring wells. Therefore, no further remedial action is required in the Excavation Area 2 setback.

Western Step-Out Excavation

PDI samples PX-2D and PX-2E collected from the southwestern side of Excavation Area 2 contained exceedances of benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and arsenic. A number of step-out borings were conducted to the west of PX-2D and PX-2E prior to the excavation of Area 2 to delineate. Samples were collected and analyzed for PAHs and metals. As a result, an irregular area approximately 42 feet by 47 feet and up to 8 feet deep was added to the southwestern side of Area 2 to address any additional contaminated soil.

Excavation Area 2 Delineation

The following samples are used to demonstrate completion of the remediation in Excavation Area 2:

Sample ID	Sample Depth (ft bgs)	Bottom or Sidewall Sample	Historical or Post- Excavation Sample
Area 2 – Northern 5 ft. Setback (not excavated)			
PX-2G	3-3.5	N/A	Historical
PX-2H	3-3.5	N/A	Historical
PX-2I	3-3.5	N/A	Historical
SB-2O	18-18.5	N/A	Historical
PE-1	5-5.5	N/A	Post-Excavation
PE-2	5-5.5	N/A	Post-Excavation
PE-3	5-5.5	N/A	Post-Excavation
PE-4	5-5.5	N/A	Post-Excavation
Area 2 – Main Excavation Area			
PX-2A	18-18.5	Bottom	Historical
PX-2B	18-18.5	Bottom	Historical
PX-2C	18-18.5	Bottom	Historical
SB-2B	16-16.5	Bottom	Historical
SB-2E	17.5-18	Bottom	Historical
SB-2J	17.5-18	Bottom	Historical
SB-2N	18-18.5	Bottom	Historical
SB-2P	18-18.5	Bottom	Historical
SB-2Q	18-18.5	Bottom	Historical
SB-5A	18-18.5	Bottom	Historical

Sample ID	Sample Depth (ft bgs)	Bottom or Sidewall Sample	Historical or Post- Excavation Sample
SB-5B	18-18.5	Bottom	Historical
SB-5C	18-18.5	Bottom	Historical
PE-40	18-18.5	Bottom	Post-Excavation
PX-2F	3-3.5	Sidewall	Historical
SB-2K	15.5-16	Sidewall	Historical
SB-2O	18-18.5	Sidewall	Historical
PE-1	5-5.5	Sidewall	Post-Excavation
PE-2	5-5.5	Sidewall	Post-Excavation
PE-3	5-5.5	Sidewall	Post-Excavation
PE-4	7-7.5	Sidewall	Post-Excavation
PE-28 (PX-2D)	8-8.5	Sidewall	Post-Excavation
PE-31 (PX-2E)	8-8.5	Sidewall	Post-Excavation
PE-32	10-10.5	Sidewall	Post-Excavation
PE-33	10-10.5	Sidewall	Post-Excavation
PE-37	7-7.5	Sidewall	Post-Excavation
PE-38	8-8.5	Sidewall	Post-Excavation
PE-39	8-8.5	Sidewall	Post-Excavation
PE-45	6-6.5, 8-8.5	Sidewall	Post-Excavation
PE-46	6-6.5, 8-8.5	Sidewall	Post-Excavation
PE-47	6-6.5, 8-8.5	Sidewall	Post-Excavation
PE-66	10-10.5	Sidewall	Post-Excavation
Area 2 – Western Step-Out Excavation Area			
PE-28 (PX-2D)	8-8.5	Sidewall	Post-Excavation
PE-31 (PX-2E)	8-8.5	Sidewall	Post-Excavation
PE-27	3.5-4	Sidewall	Post-Excavation
PE-29	8-8.5	Bottom	Post-Excavation
PE-30	3.5-4	Sidewall	Post-Excavation
PE-35	5-5.5	Bottom	Post-Excavation
PE-36	5-5.5	Bottom	Post-Excavation
PE-109	3.5-4	Sidewall	Post-Excavation
PE-110	3.5-4	Sidewall	Post-Excavation
PE-111	3.5-4	Sidewall	Post-Excavation

No further action is required at Excavation Area 2.

3.12.3 Excavation Area 3

Soil contamination in Excavation Area 3, which corresponds to AOC 3, was characterized by small exceedances of the SRS for PAHs on the northeast corner of the property at PDI boring location PX-3B. An area approximately 36 feet by 165 feet and 6 feet deep was proposed for excavation in the RASR/RAWP. Approximately 1,600 cy of material was removed from Area 3 according to in-situ post-excavation survey data provided by Weber. Approximately 2,500 tons of impacted soil and debris was trucked off-Site in 94 loads for disposal at Bayshore.

Northern Step-Out Excavation

As described for Area 2 above, sheet piling was installed five feet south of the northern property boundary, leaving the northern part of Area 3 outside of the excavation area. This was done to allow room for the northern wall of the temporary enclosure, which could not be constructed beyond the northern property line due to obstructions on the adjacent residential property (71 Linden Street).

PDI sample PX-3B collected from the northeastern corner of Excavation Area 3 contained exceedances of benzo(a)anthracene, benzo(a)pyrene, and dibenz(a,h)anthracene. A number of step-out borings were conducted prior to the excavation of Area 3 to delineate PX-3B. Samples were collected and analyzed for PAHs and metals. Samples were collected from boring PE-69, advanced in the same location as PX-3B, at 4, 6, 8, 10, and 12 feet bgs. No exceedances were noted at 4 feet bgs, the depth of the original sample collected at PX-3B. However, small exceedances of benzo(a)pyrene were detected at 6, 8, and 10 feet bgs. No exceedances were noted at PDI boring location PX-3A to the west, which was sampled at 4 to 4.5 feet bgs. Boring PE-67 was advanced at PX-3A, and samples were collected at 4 and 6 feet bgs. No exceedances of the SRS were noted. Samples collected at PE-44 to the east of PX-3B/PE-69 at 4, 6, and 8 feet bgs contained no exceedances of the SRS as well. A small exceedance of the RDCSRS for benzo(a)pyrene was detected at 4 to 4.5 feet bgs in PE-43, located north of PX-3B/PE-69 on the adjacent residential property. However, samples collected at 6 and 8 feet bgs were clean. The exceedance noted in the 4 to 4.5 feet bgs interval (0.74 mg/kg) is consistent with background concentrations of PAHs found in the area in shallow soils, as documented in the 2007 PAHs Source Evaluation Report described in Section 2.4.8. Therefore, point-by-point delineation was achieved for PX-3B/PE-69.

As a result of the additional investigation, an area approximately 10 feet by 30 feet and 10 feet deep was added to the northeastern side of Excavation Area 3 to remove additional

contaminated soil. This added excavation area extended across the northern property boundary and into the adjacent residential property.

Eastern Step-Out Excavation

During sheeting activities on the eastern side of Excavation Area 3, a subterranean brick wall was found along the inside of the property boundary, just beneath the ground surface. This brick wall was most likely a remnant of the former MGP structures (retort house, engine house, purifier house, and meter house) that occupied this portion of the Site. A decision was made to leave the brick wall intact and install sheeting just to the west of it. Excavation proceeded in Area 3 without incident. No free product or other visible evidence of contamination was noted in the excavated soil.

Post-excavation samples were collected from the bottom and along the northern and eastern sidewalls of Excavation Area 3 (the eastern and southern sides of Area 3 led into deeper Excavation Areas 2 and 4 and therefore, did not require sidewall samples). Samples were analyzed for PAHs, cyanide, and metals (arsenic, lead, and mercury).

Post-excavation samples PE-7, PE-8, PE-9, and PE-10 collected from the eastern sidewall of Area 3 contained one or more exceedances of benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, and/or naphthalene at depths of up to 6 feet bgs. Step-out borings PE-104, PE-105, PE-106, PE-107, and PE-108 placed just beyond the eastern property boundary contained no exceedances, and provided point-by-point delineation for the exceedances. As a result, an area approximately 10 feet by 160 feet and up to 6.5 feet deep was excavated across the eastern property boundary along the length of Excavation Area 3. The brick wall was removed as part of the excavation as was impacted soil outside of the original sheeted excavation area.

Excavation Area 3 Delineation

When excavation was completed at Area 3, an exceedance of benzo(a)pyrene (1.1 mg/kg) was left in place at PE-69 at a depth of 10 to 10.5 feet bgs. This exceedance was addressed through compliance averaging, which is discussed in Section 3.13 below. The following samples are used to demonstrate completion of the remediation in Excavation Area 3:

Sample ID	Sample Depth (ft bgs)	Bottom or Sidewall Sample	Historical or Post- Excavation Sample
Area 3 – Main Excavation Area			
PE-45	6-6.5	Bottom	Post-Excavation
PE-46	6-6.5	Bottom	Post-Excavation
PE-47	6-6.5	Bottom	Post-Excavation
PE-48	6-6.5	Bottom	Post-Excavation
PE-49	6-6.5	Bottom	Post-Excavation
PE-50	6-6.5	Bottom	Post-Excavation
PE-51	6-6.5	Bottom	Post-Excavation
PE-5	6-6.5	Bottom/Sidewall	Post-Excavation
PE-7	7.5-8	Bottom	Post-Excavation
PE-8	7.5-8	Bottom	Post-Excavation
PE-9	5.5-6	Bottom	Post-Excavation
PE-10	5.5-6	Bottom	Post-Excavation
Area 3 – Northern Step-Out Excavation			
PE-5	6-6.5	Sidewall	Post-Excavation
PE-67 (PX-3A)	4-4.5, 6-6.5	Sidewall	Post-Excavation
PE-69 (PX-3B)	12-12.5	Bottom	Post-Excavation
PE-43	4-4.5, 6-6.5, 8-8.5	Sidewall	Post-Excavation
PE-44	3.5-4, 5.5-6, 8-8.5	Sidewall	Post-Excavation
Area 3 – Eastern Step-Out Excavation			
PE-104	3.5-4	Sidewall	Post-Excavation
PE-105	3.5-4	Sidewall	Post-Excavation
PE-106	3.5-4, 5.5-6	Sidewall	Post-Excavation
PE-107	3.5-4, 5.5-6	Sidewall	Post-Excavation
PE-108	3.5-4, 5.5-6	Sidewall	Post-Excavation

No further action is required at Excavation Area 3.

3.12.4 Excavation Area 4

Excavation Area 4 consists of the majority of AOCs 4 and 5. Soil contamination in Area 4 was characterized by the presence of free product and SRS exceedances of BTEX compounds, styrene, PAHs, metals, and cyanide. An irregular area approximate 120 feet by 170 feet and 10 feet deep was proposed for excavation with the caveat that deeper excavations would be

needed for buried MGP features such as the tar wells. Excavation proceeded in Area 4 generally in a north to south direction. Approximately 9,500 cubic yards of impacted soil and debris was removed from Area 4 according to in-situ post-excavation survey data provided by Weber. Approximately 17,000 tons in 653 loads was transported off-Site for disposal at Bayshore.

Post-excavation samples were collected from the sidewalls and bottom of the excavation and analyzed for BTEX, styrene, PAHs, phenols, cyanide, and metals (arsenic, lead, and mercury).

Western Step-Out Excavations

Post-excavation samples along the western sidewall of Area 4 (PE-22 through PE-26) were advanced as borings prior to excavation. A sample collected from PE-23 at 5 to 5.5 feet bgs contained SRS exceedances of benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene. A duplicate sample collected from the same interval contained an exceedance of cyanide, but no PAHs. Further inspection of the duplicate raised questions about its origin, given that it didn't look like the sample from PE-23. In addition, there were no cyanide exceedances in any of the samples collected and submitted to the laboratory that day. To be conservative, the cyanide values for PE-23 (5 to 5.5 feet bgs) and the duplicate were averaged, which brought the concentration to below the SRS. The PAH exceedances at PE-23 are delineated by step-out borings PE-17 and PE-18 advanced to the west, which contained no exceedances of any PAH compounds. As a result of the exceedances at PE-23, a step-out excavation approximately 17 feet by 57 feet and 5.5 feet deep was completed on the western side of Area 4.

A sample collected from PE-26 at 3.5 to 4 feet bgs contained exceedances of benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene. The PAH exceedances at PE-26 are delineated by samples from step-out borings PE-27 and PE-34 advanced to the west. As a result of the exceedances at PE-26, a triangular-shaped step-out excavation approximately 36 feet by 63 feet and up to 8 feet deep was completed on the northwestern side of Area 4.

Northern Tar Well Excavation

Stained soil and free product were encountered at the location of a former tar well located in the northern portion of Excavation Area 4. It should be noted that the tar well was

encountered approximately 20 feet to the south of where it was expected based on RASR/RAWP drawings. Personnel excavated an area approximately 40 feet by 60 feet and up to 20 feet bgs to remove MGP-impacted material. The Northern Tar Well excavation is delineated horizontally by PE-81, PE-82, PE-83, and PE-84 collected at 17.5 to 18 feet bgs and PE-82 collected at 17 to 17.5 feet bgs. Horizontal delineation samples were collected at the depth interval exhibiting the greatest evidence of visual product saturation. The excavation was delineated vertically by PE-75 collected at 20 to 20.5 feet bgs.

Southern Tar Well Excavation

Stained soil and free product were encountered at the approximate location of a second former tar well (located to the south of the first tar well) in the central portion of Excavation Area 4. Personnel excavated an area approximately 60 feet by 60 feet and up to 17 feet deep to remove MGP-impacted material. The Southern Tar Well excavation is delineated horizontally by PE-76 and PE-80 collected at 16 to 16.5 feet bgs and PE-77 through PE-79 collected at 15 to 15.5 feet bgs. Horizontal delineation samples were collected at the depth interval exhibiting the greatest evidence of visual product saturation. Impacted soil within the excavation was delineated vertically by PE-57 with a sample collected at 16 to 16.5 feet bgs. PE-57 (16 to 16.5 feet bgs) contained cyanide (37.2 mg/kg) in excess of the IGWSRS (20 mg/kg); however, the sample was collected in the saturated zone, where IGWSRS are not applicable.

Historical Cyanide Exceedances

Cyanide exceedances in historical samples SB-10Q (73.7 mg/kg) and SB-10R (21 mg/kg) collected at 10 to 10.5 feet bgs were delineated vertically by borings PE-56 and PE-60, respectively. These borings were advanced prior to excavation in Area 4. Both vertical delineation samples were collected at 12 to 12.5 feet bgs. Personnel excavated an area approximately 30 feet by 65 feet and up to 14 feet deep to remove impacted material associated with both SB-10Q and SB-10R. Horizontal delineation for both locations is provided by SB-E4, PE-14, PE-15, PE-61, PE-62, PE-120, PE-121, PE-122, and PE-123. The excavation ran into the Southern Tar Well excavation, which provides delineation to the north.

PE-55 Fuel Oil Odor

An area of soil containing a strong odor of fuel oil was observed near the bottom of the excavation in the western central portion of Area 4. These observations corresponded to an area where removal of a No. 2 fuel oil UST (AOC 7) had previously been completed. An approximate 15 feet by 20 feet area of was excavated beyond the 10 feet target depth for Area 4, and a post-excavation bottom sample was collected at PE-55 from 15 to 15.5 feet bgs. Samples were collected from all four sidewalls at 14 to 14.5 feet bgs at PE-86 through PE-89. Due to the complication of potential fuel oil impacts at this location, post excavation samples were analyzed for EPH in addition to the Excavation Area 4 parameters. No exceedances of the SRS were detected in any of the samples.

PE-63 Exceedance

Post-excavation bottom sample PE-63 collected on the southwestern side of Area 4 contained an exceedance of benzo(a)pyrene (1.7 mg/kg) at 10 to 10.5 feet bgs, and exceedances of benzo(a)pyrene and dibenz(a,h)anthracene (2.4 mg/kg and 0.69 mg/kg, respectively) at 13 to 13.5 feet bgs. Vertical delineation at PE-63 was achieved with a sample collected from 15 to 15.5 feet bgs. Personnel excavated an area approximately 18 feet by 30 feet and up to 18 feet deep around PE-63. Horizontal delineation is provided by PE-124 through PE-127 collected at 13.5 to 14 feet bgs.

Historical Benzo(a)pyrene Exceedances

A benzo(a)pyrene exceedance (1.27 mg/kg and 1.81 mg/kg in the duplicate) at historical boring location SB-E6 at 12 to 12.5 feet bgs, located on the eastern property boundary, was vertically delineated at 14 to 14.5 feet bgs. The location was horizontally delineated by PX-4A, a PDI boring advanced to the east of the property boundary. Further horizontal delineation was provided by historical borings SB-E5, SB-E6, SB-10H, and SB-10P. The benzo(a)pyrene exceedance at SB-E6 was left in place after excavation using compliance averaging.

A benzo(a)pyrene exceedance (0.97 mg/kg) at historical boring location SB-10V at 12 to 12.5 feet bgs, located on the northeastern side of Area 4, was vertically delineated at 16 to 16.5 feet bgs. The benzo(a)pyrene concentration reported in a duplicate sample collected from the same interval at SB-10V was non-detect. The location was horizontally delineated by

historical boring locations SB-10U, SB-10V-1, SB-10V-2, and SB-10V-3. The benzo(a)pyrene exceedance at SB-10V was left in place after excavation using compliance averaging.

Compliance averaging using the 95% UCL method was used to demonstrate compliance with the SRS, and is discussed in Section 3.13 below.

Scrap Storage Basement Excavation

A masonry structure was encountered near the planned bottom of the excavation on the western side of Area 4. The structure appeared to be a basement constructed of brick and concrete in an area identified on the Site Plan as "Scrap Storage". The basement appeared to have been filled in with soil. Some tarry material was encountered in and around the masonry structure. The tarry material was over-excavated to a depth of approximately 16 feet bgs. Post-excavation sample PE-58 was collected at 16 to 16.5 feet bgs; however, additional excavation was required to vertically delineate PE-58 at 18 to 18.5 feet bgs. The basement structure was bisected by sheeting running west to east, so only masonry and impacted soil were removed on the northern side of the sheeting at the time. The area was backfilled with certified clean fill material. Sample locations in the Scrap Storage Basement area are presented on Drawing 11.

In April 2018, while the above excavation was occurring inside of the temporary enclosure at Position 3, at the direction of Langan, ECDI mobilized a Geoprobe to install soil borings immediately outside of the temporary enclosure to the north and east to determine the extent of the impacted soil/tarry material. Borings WB-1 through WB-6 were placed on the western side of the excavation approximately 5 feet outside of the temporary enclosure and approximately 15 feet outside of the western sheeting line. WB-7 was placed approximately 5 feet beyond the line of initial borings. Borings were advanced to approximately 26 feet bgs, and there was no visual or olfactory evidence of contamination. "Running sands" in this area made collection of samples at discrete 6-inch intervals at the required depths challenging. However, samples were collected at WB-6 at 18 and 25 feet bgs and analyzed for BTEX, styrene, PAHs, phenols, metals, and cyanide. No exceedances of the SRS were detected in the samples.

Borings NB-1 through NB-4 were advanced approximately 5 feet outside of the northern wall of the temporary enclosure and approximately 10 feet outside of the northern sheeting line. Boring NB-5 was placed approximately 5 feet beyond the line of initial borings. Borings were

advanced to approximately 26 feet bgs, and there was no visual or olfactory evidence of contamination. Samples were collected from NB-4 at 18 and 25 feet bgs. No exceedances of the SRS were detected in the samples.

The excavation of the basement continued on the southern side of the sheeting with the move of the temporary enclosure from Position 3 to Position 4. The masonry structure on the southern side of the basement was uncovered and was found to be filled with impacted soil and water. A sheen on the water and a heavy petroleum odor was encountered in the basement. The water was pumped to the WTS. Masonry and impacted material could not be fully removed due to the safety constraints of the excavation support system, and tarry soil and free product were left in the bottom of the excavation.

In May 2018, additional soil borings were advanced inside of the scrap storage area to delineate the extent of the tarry material left at the bottom of Area 4 and design a deeper excavation support system to remediate the remaining portion of it. Borings PE-136 through PE-140 and PE-142, PE-143, and PE-150 were advanced in the area. PE-136 contained tarry material at approximately 18 to 20 feet bgs. A clean sample (and duplicate) was obtained at 21 to 21.5 feet bgs. PE-137 and PE-138 advanced approximately 2 feet to the northeast and southwest of PE-136, respectively, contained evidence of contamination in the same approximate depth interval. Clean samples were obtained from PE-140 at 21 feet bgs (west of PE-136), PE-142 at 19.5 feet bgs (east of PE-136), and PE-143 at 17 feet bgs (south of PE-136). Boring PE-140 was advanced outside of the sheeting line, where the ground surface was several feet higher than inside the sheeting line. Therefore, the clean interval sampled in PE-140 corresponds in depth to those found in PE-142 and PE-143.

Excavation proceeded in the remaining areas beneath temporary enclosure Position 4. Once backfilling was complete, and the temporary enclosure and sheeting was removed from the site, an approximately 20 feet by 20 feet sheeted area was advanced to excavate the remaining deep tarry material in the scrap storage area. The excavation area was designed with PE-136 at its approximate center. The area encompassed clean boring locations NB-4, PE-140, PE-142, and PE-143 to the north, west, east, and south, respectively. The sheeted area also encompassed the location of PE-58, where a clean excavation was achieved on the northern side of the scrap storage basement. The excavation was designed to a depth of approximately 21 feet bgs, where a clean vertical delineation sample was found at PE-136, corresponding to an elevation of approximately -3 feet relative to the NAD (1983).

Tarry material was encountered, as expected in the vicinity of PE-136 at approximately 18 to 20 feet bgs in the excavation. The material appeared to be centered in this location, and the edges of the excavation appeared clean to the north, south, and west. However, tarry material was found in the pleats of the eastern sheeting wall down to approximately 18 feet bgs.

ECDI mobilized with a Geoprobe in July 2018 under Langan oversight to delineate tarry material outside of the eastern sheeting line. PE-151 through PE-160 were advanced in a line approximately 7 feet outside of the eastern and northern sheeting line. No product was observed in any of the borings. Borings PE-161 through PE-163 were advanced approximately 4 feet from the eastern sheeting line, across from the location where product was found. No product was found in PE-161 or PE-163; however, product was found in PE-162 at up to 18 feet bgs. A sample was collected at PE-153 from 17.5 to 18 feet bgs. No exceedances of the SRS were detected. Thus, the delineated area containing product was approximately 50 square feet, and was bounded by PE-153 and PE-163 to the south, PE-153 and PE-154 to the east, PE-154 and PE-161 to the north, and the already excavated 20 feet by 20 feet area to the west.

The amount of shoring and bracing required in the excavation due to the depth necessary to successfully remediate all of the tarry material meant that a sheeted excavation area of approximately 20 feet by 20 feet was the smallest that could be feasibly supported. Excavating an area of this size for the estimated 50 square feet of remaining tarry material would capture a lot of excess clean material. Therefore, ETG opted instead to use a 53-inch solid stem auger to excavate the remaining material (i.e., "excavation drilling"). Linde-Griffith advanced a series of nine overlapping boreholes covering the trapezoidal delineated area. The diameter and depth of the boreholes precluded proper soil compaction from the surface, so boreholes were tremie-grouted, within a nominal 53-inch diameter temporarily installed steel surface casing, from the bottom with a 50 pounds per square inch (psi) flowable fill. Each filled borehole was allowed to cure for at least 24 hours before an overlapping borehole was placed next to it. Each borehole was cleared to a surveyed depth of approximately 24 feet bgs, or an elevation of -4 feet NAD. The following observations were made for each boring:

Boring	Date	Observations
B1	8/16/18	2 small blobs of tar noted at 17 feet bgs.
B2	8/20/18	Tarry material was observed at 16.5 to 17.5 feet bgs.
B3	8/23/18	Tar observed at 17 feet bgs.
B4	8/17/18	Tar observed at 17 feet bgs.
B5	8/22/18	No tar observed.
B6	8/15/18	Tar observed at 17 feet bgs.
B7	8/21/18	Tar observed.
B8	8/24/18	No tar observed.
B9	8/20/18	No tar observed.

The observations of tar were made at the surface by Langan personnel who observed soil rise up to the land surface on the auger flights. As such, any reference to depth in the above table is approximate. In addition, it was difficult to tell which "side" of the borehole the tar was located.

Due to the tar observed in B7, two additional borings were advanced to the north of B7 and B9. Observations from these borings are as follows:

Boring	Date	Observations
B10	8/22/18	Small amount of tar observed.
B11	8/23/18	No tar observed.

The small amount of tar noted in B1 is most likely from the northern side of the borehole, closer to the center of the auger area where impacts appear greatest. This is supported by the fact that no tar was observed in PE-163 or B5, and B1 extends beyond the southern edge of where tar was observed inside the sheeting line on the western side of B1. Observations of tarry material in B2, B3, and B6 occurred as expected. No tar observed in B5 or B8 and a clean delineation sample in PE-163 on the southeastern edge of the auger area provide delineation on the southern and southeastern sides of the auger area. Observations of tar in B4 and B7 indicated that the tarry material was possibly not fully delineated to the north. Boring B10 contained a small amount of tar, which most likely came from the side overlapping with B7. B11 contained no tar, supporting the conclusion that all tarry material was excavated from the area. A sample was collected from B11 from approximately 18 feet bgs. No exceedances were noted. Due to the nature of the drilling process, B11 had to be collected from the auger flight, meaning that the recorded depth of the sample was approximate, and

some mixing may have occurred. However, due to the results of the sample collected from B11 combined with the additional delineation samples described above, Langan concluded that the area of deep tarry material encountered in the scrap storage basement was adequately delineated and remediated to the SRS.

Area 4 Delineation

The following samples are used to demonstrate completion of the remediation in Excavation Area 4:

Sample ID	Sample Depth (ft bgs)	Bottom or Sidewall Sample	Historical or Post- Excavation Sample
Area 4 – Main Excavation Area			
SB-10B	10-10.5	Bottom	Historical
SB-10C	10-10.5	Bottom	Historical
SB-10E	10-10.5	Bottom	Historical
SB-10H	10-10.5	Bottom	Historical
SB-10M	10-10.5	Bottom	Historical
SB-10P	10-10.5	Bottom	Historical
SB-10V	12-12.5, 16-16.5	Bottom	Historical
SB-11B	10-10.5	Bottom	Historical
SB-11I	10-10.5	Bottom	Historical
SB-11J	10-10.5	Bottom	Historical
SB-11K	10-10.5	Bottom/Sidewall	Historical
SB-E6	12-12.5, 14-14.5	Bottom	Historical
PE-12	7.5-8	Sidewall	Post-Excavation
PE-13	7.5-8	Sidewall	Post-Excavation
PE-14	7.5-8	Sidewall	Post-Excavation
PE-15	6-6.5	Sidewall	Post-Excavation
PE-52	10-10.5	Bottom	Post-Excavation
PE-53	10-10.5	Bottom	Post-Excavation
PE-54	10-10.5	Bottom	Post-Excavation
PE-61	10-10.5	Bottom	Post-Excavation
PE-62	10-10.5	Bottom	Post-Excavation
PE-68	6-6.5	Sidewall	Post-Excavation

Sample ID	Sample Depth (ft bgs)	Bottom or Sidewall Sample	Historical or Post- Excavation Sample
Western Step-Out Excavation			
PE-17	5-5.5	Sidewall	Post-Excavation
PE-18	5-5.5	Sidewall	Post-Excavation
PE-22	5-5.5	Sidewall	Post-Excavation
PE-23	5-5.5	Bottom	Post-Excavation
PE-24	5-5.5	Sidewall	Post-Excavation
PE-25	3.5-4	Bottom	Post-Excavation
PE-26	5-5.5	Bottom	Post-Excavation
PE-27	3.5-4	Sidewall	Post-Excavation
PE-34	3.5-4	Sidewall	Post-Excavation
Northern Tar Well Excavation			
PE-75	20-20.5	Bottom	Post-Excavation
PE-81	17.5-18	Sidewall	Post-Excavation
PE-82	17-17.5	Sidewall	Post-Excavation
PE-83	17.5-18	Sidewall	Post-Excavation
PE-84	17.5-18	Sidewall	Post-Excavation
Southern Tar Well Excavation			
PE-57/SB-10A	16-16.5	Bottom	Post-Excavation
PE-76	16-16.5	Sidewall	Post-Excavation
PE-77	15-15.5	Sidewall	Post-Excavation
PE-78	15-15.5	Sidewall	Post-Excavation
PE-79	15-15.5	Sidewall	Post-Excavation
PE-80	16-16.5	Sidewall	Post-Excavation
PE-120	16-16.5	Sidewall	Post-Excavation
PE-121	15-15.5	Sidewall	Post-Excavation
PE-122	15-15.5	Sidewall	Post-Excavation
PE-123	15-15.5	Sidewall	Post-Excavation
Historical Cyanide Exceedances			
PE-56/SB-10R	12-12.5	Bottom	Post-Excavation
PE-60/SB-10Q	12-12.5	Bottom	Post-Excavation
PE-55 Fuel Oil Odor			
PE-55	15-15.5	Bottom	Post-Excavation
PE-86	14-14.5	Sidewall	Post-Excavation

Sample ID	Sample Depth (ft bgs)	Bottom or Sidewall Sample	Historical or Post- Excavation Sample
PE-87	14-14.5	Sidewall	Post-Excavation
PE-88	14-14.5	Sidewall	Post-Excavation
PE-89	14-14.5	Sidewall	Post-Excavation
PE-63 Exceedance			
PE-63	15-15.5	Bottom	Post-Excavation
PE-124	13.5-14	Sidewall	Post-Excavation
PE-125	13.5-14	Sidewall	Post-Excavation
PE-126	13.5-14	Sidewall	Post-Excavation
PE-127	13.5-14	Sidewall	Post-Excavation
Scrap Storage Basement Excavation			
B11	18	Sidewall	Post-Excavation
PE-58	18-18.5	Bottom/Sidewall	Post-Excavation
PE-136	21-21.5	Bottom	Post-Excavation
PE-140	21-22	Sidewall	Post-Excavation
PE-142	19.5-20	Sidewall	Post-Excavation
PE-143	17-18	Sidewall	Post-Excavation
PE-153	17.5-18	Sidewall	Post-Excavation
NB-4	18-20	Sidewall	Post-Excavation
WB-6	18-20	Sidewall	Post-Excavation

No further action is required in Excavation Area 4.

3.12.5 Excavation Area 5

Soil contamination in Area 5, consisting of southern portions of AOCs 4 and 5, was characterized by SRS exceedances of PAHs, and cyanide. An area approximately 40 feet by 80 feet and 13 feet deep was proposed for excavation. Excavation in Area 5 was completed beneath the temporary enclosure. Approximately 1,400 cy of material was excavated from Area 5 according to post-excavation survey data provided by Weber. Approximately 1,800 tons of material was trucked in 62 loads for off-Site disposal at Bayshore.

Post-excavation samples were collected from the sidewalls and bottom of the excavation and analyzed for benzene, PAHs, phenols, cyanide, and metals (arsenic, lead, and mercury). Post-

excavation sidewall samples were only collected from the eastern side of the excavation, as the northern, southern, and western sides coincided with other excavation areas.

Tar Pipe Excavation

A section of 6-inch diameter ceramic pipe was found on the western side of Area 5, near the bottom of the excavation. The pipe appeared to contain some tarry material, and some visually-impacted soil was found beneath it. An approximately 30 feet by 35 feet area was excavated to a depth of up to 17 feet bgs to remove the impacted soil. Vertical delineation was provided at the bottom of the excavation by sample PE-115. Sidewall samples were collected to the west at PE-116 (14 to 14.5 feet bgs), to the south at PE-117 (14 to 14.5 feet bgs), to the east at PE-118 (14 to 14.5 feet bgs), and to the north at PE-119 (14 to 14.5 feet bgs). Samples collected at PE-117 and PE-118 contained no exceedances of the SRS. However, samples collected from PE-116 and PE-119 contained exceedances of benzo(a)pyrene. These areas were further excavated and resampled. Delineation was achieved at PE-119 at 16 feet bgs. However, no data were available for a delineation sample at PE-116, indicating that the sample was somehow lost, or was inadvertently not collected. However, the reported benzo(a)pyrene concentration for the sample collected at 14 to 14.5 feet bgs (0.62 mg/kg) was only slightly above the RDCSRS (0.5 mg/kg) and below the IGWSRS (1 mg/kg). Given that soil at this location was over-excavated, it is likely that all soil containing benzo(a)pyrene above the RDCSRS was remediated. Vertical delineation and delineation to the north, south, and east of the tar pipe excavation area are provided by samples PE-115, PE-117, PE-118, and PE-119. Horizontal delineation for PE-116 is provided to the north at locations SB-11C and SB-11D, where samples collected at 10 to 10.5 feet bgs were visually clean and contained no exceedances of benzo(a)pyrene. This interval is shallower than the depth of the final sample collected from PE-116; however, it is the same approximate depth as the initial observations of the tar pipe and impacted soil, indicating that the impacts did not reach this far north, and are thus adequately delineated. To be conservative, a compliance averaging model was applied for the functional areas containing PE-116 with the benzo(a)pyrene exceedance included. The compliance averaging results are discussed in Section 3.13.

Area 5 Delineation

The following samples are used to demonstrate completion of the remediation in Excavation Area 5:

Sample ID	Sample Depth (ft bgs)	Bottom or Sidewall Sample	Historical or Post- Excavation Sample
Area 5 – Main Excavation Area			
SB-17C	12-12.5	Bottom	Historical
SB-E1	8-8.5	Sidewall	Historical
SB-E2	8-8.5	Sidewall	Historical
PE-64	13-13.5	Bottom	Post-Excavation
PE-65	13-13.5	Bottom	Post-Excavation
PE-72	13-13.5	Bottom	Post-Excavation
Area 5 – Tar Pipe Excavation			
PE-115	17-17.5	Bottom	Post-Excavation
PE-116	14-14.5	Sidewall	Post-Excavation
PE-117	14-14.5	Sidewall	Post-Excavation
PE-118	14-14.5	Sidewall	Post-Excavation
PE-119	16-16.5	Sidewall	Post-Excavation

3.12.6 Excavation Area 6A

Soil contamination in Area 6A was characterized by evidence of free product and SRS exceedances of BTEX, phenols, PAHs, metals, and cyanide. Excavation Area 6A corresponds to the southern portion of AOC 5. An area approximately 38 feet by 40 feet and 10 feet deep was proposed for excavation. Excavation in Area 6A was completed beneath the temporary enclosure. Approximately 750 cubic yards of material was excavated from Area 6A according to in-situ post-excavation survey data provided by Weber. Approximately 1,540 tons of material was trucked off-Site in 55 loads for disposal at Bayshore.

Excavation Area 6A was excavated to the southern property boundary, and is surrounded to the west by Area 6B, to the north by Area 4, and to the east by Area 5. Therefore, no post-excavation sidewall samples were required. Four historical samples collected in Area 6 during previous investigations were used as post-excavation bottom samples.

The following samples are used to demonstrate completion of the remediation in Excavation Area 6A:

Sample ID	Sample Depth (ft bgs)	Bottom or Sidewall Sample	Historical or Post- Excavation Sample
SB-11A	10-10.5	Bottom	Historical
SB-11C	10-10.5	Bottom	Historical
SB-11D	10-10.5	Bottom	Historical
SB/MW-4d	10-10.5	Bottom	Historical

No further action is required in Excavation Area 6A.

3.12.7 Excavation Area 6B

Soil contamination in Area 6B was characterized by SRS exceedances of PAHs, metals, and cyanide. Area 6B corresponds to the southern portion of AOC 1. An area approximately 40 feet by 90 feet and 13 feet deep was proposed for excavation. Excavation in Area 6B was completed outside of the temporary enclosure. Approximately 1,840 cubic yards of material was excavated from Area 6B according to post-excavation survey data provided by Weber. Approximately 3,840 tons of material was trucked in 164 loads for off-Site disposal at Bayshore.

Post-excavation samples were collected from Area 6B and analyzed for benzene, PAHs, cyanide, and metals (arsenic, lead, and mercury). Area 6B was excavated on the west and south to the property boundary, and it is bordered on the east by Excavation Area 6A. Therefore, sidewall samples were only collected from the northern sidewall. The proposed excavation footprint of approximately 3,520 sf required four bottom samples to meet a one sample per 900 sf frequency in accordance with the RASR/RAWP. Historic sample data from borings SB/MW-I, SB/MW-J, SB/MW-4L, and SB/MW-4M contained no exceedances of the SRS at the proposed bottom of the excavation. However, these samples were biased towards the outer edges of the excavation area. Therefore, to be protective, Langan collected two additional bottom post-excavation samples towards the middle of the excavation footprint (PE-73 and PE-74).

Northern Step-Out Excavation

Three sidewall samples (PE-19, PE-20, and PE-21) were collected from borings along the northern sidewall of Area 6B to meet the one sample per 30 linear feet frequency approved in the RASR/RAWP. Langan sampled these three sidewall locations in September 2017 prior

to excavation. PE-19 and PE-21 contained no exceedances of the SRS. However, PE-20 contained an exceedance of the RDCSRS and IGWSRS for benzo(a)pyrene at 4 to 4.5 ft bgs (1.65 mg/kg). Vertical delineation for benzo(a)pyrene was achieved at PE-20 with a deeper sample collected at 6 to 6.5 ft bgs. Horizontal delineation was achieved at PE-16, which was advanced to the northeast.

Final remediation plans for Area 6B included the use of slide-rail boxes to support the excavation. The slide-rail boxes were approximately 22 feet wide by 27 feet long. Starting at the southwest property boundary, they were placed in a grid pattern two boxes (from north to south) wide and four boxes (from east to west) long. The dimensions and placement of the slide-rail boxes resulted in a widening of the original excavation area by approximately 3 feet to the north. Due to the increased excavation footprint, Langan added an additional bottom sample location (PE-71). Bottom samples PE-71, PE-73, and PE-74 were collected from the bottom of the open excavation as work progressed across the area. PE-73 and PE-74 contained no exceedances of the SRS. However, PE-71 contained an exceedance of the SRS for benzo(a)pyrene (1.1 mg/kg). Vertical delineation of benzo(a)pyrene at PE-71 was achieved with a sample at 15 to 15.5 ft bgs, which contained no exceedances of the SRS. Horizontal delineation was provided at PE-70.

Due to the placement and dimensions of the slide-rail boxes, the northwestern and northeastern portions of the delineated area were over-excavated. The concentration of benzo(a)pyrene observed at PE-71 (13 to 13.5 ft bgs) was left in place after excavation. A compliance averaging method was used to demonstrate the completion of the remediation to the SRS and is discussed in Section 3.13 below.

Area 6B – Delineation

The following samples are used to demonstrate completion of the remediation in Excavation Area 6B:

Sample ID	Sample Depth (ft bgs)	Bottom or Sidewall Sample	Historical or Post- Excavation Sample
SB/M-4M	12-12.5	Bottom	Historical
SB/MW-4I	12-12.5	Bottom	Historical
SB/MW-4J	12-12.5	Bottom	Historical
SB/MW-4K	12-12.5	Bottom	Historical

Sample ID	Sample Depth (ft bgs)	Bottom or Sidewall Sample	Historical or Post- Excavation Sample
PE-70	13-13.5	Bottom	Post-Excavation
PE-71	15-15.5	Bottom	Post-Excavation
PE-73	13-13.5	Bottom	Post-Excavation
PE-74	13-13.5	Bottom	Post-Excavation
SB-11E	10-10.5	Sidewall	Historical
PE-19	4-4.5	Sidewall	Post-Excavation
PE-20	6-6.5	Bottom/Sidewall	Post-Excavation
PE-21	4-4.5	Sidewall	Post-Excavation

3.13 ATTAINMENT OF SRS WITH COMPLIANCE AVERAGING

Site-related contaminants were remediated to the most stringent SRS at the site with the exception of benzo(a)pyrene. Benzo(a)pyrene was left in place above the RDCSRS and/or IGWSRS (0.5 mg/kg and 1 mg/kg, respectively) at the following locations:

Location	Sample Depth (ft bgs)	Excavation Area	Benzo(a)pyrene Concentration (mg/kg)	RDCSRS (mg/kg)	IGWSRS (mg/kg)
PE-69	10-10.5	3	1.1	0.5	1
SB-E6	12-12.5	4	1.81	0.5	1
SB-10V	12-12.5	4	0.97	0.5	1
PE-116	14-14.5	5	0.62	0.5	1
PE-71	13-13.5	6B	1.1	0.5	1

Langan applied an attainment strategy for the above exceedances in accordance with NJDEP's September 24, 2012 *Technical Guidance for the Attainment of Remediation Standards and Site-Specific Criteria*. Functional areas were chosen for the site as per Appendix A of the Guidance for use in compliance averaging using either the 95% UCL or arithmetic mean methods. The placement of each functional area is shown on Drawing 12, and is discussed in detail below. For purposes of compliance averaging, if data were available for a duplicate sample at any location, the greater of the two soil concentration values was used in the analysis to be conservative. Input and output for compliance averaging analysis is presented in Appendix V.

Compliance averaging is not required for the following functional areas and exposure pathways because no contaminants remain above the SRS.

- Excavation Area 2-1 – Impact to Ground Water Pathway
- Excavation Area 2-2 – Impact to Ground Water Pathway
- Excavation Area 3-2 – Impact to Ground Water Pathway
- Excavation Area 4-2 – Impact to Ground Water Pathway

Excavation Area 2 and 3 – Inhalation, Ingestion, and Dermal Pathways

The optimal size of a functional area for the ingestion and dermal pathways is 0.25 acres. However, the last functional area can be increased to 1.5 times this area (or 0.375 acres). The optimal size of a functional area for the inhalation pathway is 0.5 acres. Because Excavation Area 3 is small, a portion of it was combined with Excavation Area 2 to create an approximately square functional area of 0.35 acres, which was evaluated for the inhalation, ingestion, and dermal pathways.

One benzo(a)pyrene exceedance (PE-69 at 10 to 10.5 feet bgs) is located in this functional area, so only subsurface data (greater than 2 feet bgs) were evaluated for compliance averaging. As described above in Section 3.12.3, benzo(a)pyrene observed at PE-69 is horizontally and vertically delineated.

Forty-one samples were evaluated in this functional area using the 95% UCL attainment method. All of the samples represent post-excavation conditions in Excavation Areas 2 and 3. Several historical samples (SB-2B, SB-2E, SB-2J, and SB-2K) were used to demonstrate the post-excavation completion of the remediation even though they were collected at a depth that was slightly shallower than the final excavation depth. However, these samples were not used in the 95% UCL calculation to avoid biasing the analysis with excess non-detect values. In addition, post-excavation samples from several locations used for point-by-point delineation (PE-43, PE-44, PE-105, PE-106, PE-107, and PE-108) were not used in the 95% UCL analysis because they lie just outside of the property boundary, and are not included in the functional area.

USEPA's ProUCL software (Version 5.1) was used for the 95% UCL analysis. The 95% UCL for benzo(a)pyrene in this functional area is 0.165 mg/kg, which is below the RDCSRS (0.5

mg/kg). Attainment was therefore achieved within this functional area, and no further action is required.

Excavation Area 3-1 – Impact to Ground Water Pathway

A benzo(a)pyrene concentration of 1.1 mg/kg was detected in a duplicate sample collected from the 10 to 10.5 feet bgs interval at PE-69. The concentration reported for the initial soil sample collected from that interval was 0.78 mg/kg, which is less than the site-specific IGWSRS of 1 mg/kg. Averaging the sample with its duplicate provides a value of 0.95 mg/kg, which is below the IGWSRS. In addition, the 1.1 mg/kg concentration in the duplicate sample complies with the standard when it is rounded to the same number of significant digits as the standard. Therefore, the IGWSRS was not exceeded at this location and compliance averaging was not required for this pathway.

Excavation Area 4 – Inhalation Pathway

The optimal size of a functional area for the inhalation pathway is 0.5 acre. Because Excavation Areas 5 and 6A are small, a portion of each was combined with Excavation Area 4 to create a functional area of 0.5 acres. The functional area is rectangular, but the length is less than four times the width, and therefore, conforms to the Guidance.

One post-excavation and two historical RDCSRS exceedances of benzo(a)pyrene remain in place after excavation in this functional area:

- SB-E6 (12 to 12.5 feet bgs) – 1.81 mg/kg
- SB-10V (12 to 12.5 feet bgs) - 0.97 mg/kg
- PE-116 (14 to 14.5 feet bgs) – 0.62 mg/kg

As described in Section 3.12.4 and 3.12.5 above, these exceedances are horizontally and vertically delineated. All of the exceedances are below 2 feet bgs, so the functional area was only evaluated at the subsurface level.

Seventy-three samples were evaluated in this functional area using the 95% UCL attainment method. All of the samples represent post-excavation conditions within the functional area. Historical samples SB-10B, SB-10E and SB-10Q (all collected at 10 to 10.5 feet bgs) were used to demonstrate the completion of the remediation, but were over-excavated with the southern tar well excavation. Historical sample SB-17C was used to demonstrate the post-

excavation completion of the remediation, but was collected at a slightly shallower depth than the final excavation (12. to 12.5 feet bgs). Post excavation sample PE-140 was used to demonstrate the completion of the remediation, but it was over-excavated in the field. The data from these samples were not used in the 95% UCL calculation to avoid using excess non-detect values.

The 95% UCL for benzo(a)pyrene in this functional area is 0.165 mg/kg, which is below the RDCSRS (0.5 mg/kg). Attainment was therefore achieved within this functional area, and no further action is required.

Areas 3 and 4 – Ingestion and Dermal Pathways

The optimal size of a functional area for the ingestion and dermal pathways is 0.25 acre. Because Excavation Area 3 is small, a portion of it was combined with Excavation Area 4 to create an approximately square functional area of 0.25 acres.

Two historical benzo(a)pyrene exceedances (at SB-10V and SB-E6 collected at 12 to 12.5 feet bgs) remain in this functional area after excavation, so only subsurface data (greater than 2 feet bgs) were evaluated for compliance averaging. As described above in Section 3.12.4, benzo(a)pyrene observed at SB-10V and SB-E6 were vertically and horizontally delineated.

Twenty-nine samples were evaluated in this functional area using the 95% UCL attainment method. All of the samples represent post-excavation conditions within the functional area.

Historical sample SB-10B (collected in Area 4 at 10 to 10.5 feet bgs) was used to demonstrate completion of the remediation, but was later excavated as part of the deeper Southern Tar Well excavation. As a result, it was not included in the 95% UCL calculation.

The 95% UCL for benzo(a)pyrene in this functional area is 0.173 mg/kg, which is below the RDCSRS (0.5 mg/kg). Attainment was therefore achieved within this functional area, and no further action is required.

Excavation Area 4 – Ingestion and Dermal Pathways

The optimal size of a functional area for the ingestion and dermal pathways is 0.25 acre. However, a functional area is allowed to be 1.5 times greater in size. Because Excavation

Areas 5 and 6A are small, they were combined with a portion of Excavation Area 4 to create an approximately square functional area of 0.32 acres.

One benzo(a)pyrene exceedance at post-excavation sample PE-116 (collected at 14 to 14.5 feet bgs) remains in this functional area after excavation. Only subsurface data were evaluated. Forty-five samples were evaluated in this functional area using the 95% UCL attainment method. All of the samples represent post-excavation conditions.

Several samples were used to demonstrate the completion of the remediation either as a sidewall or bottom sample, but were ultimately over-excavated due to other “hot spot” excavation areas such as the tar well or scrap storage excavation areas. As a result, they were not included in the 95% UCL calculation. These samples include:

- SB-10E (10 to 10.5 feet bgs)
- SB-17C (12 to 12.5 feet bgs)
- PE-23 (5 to 5.5 feet bgs)
- PE-22 (5 to 5.5 feet bgs)
- PE-58 (16 to 16.5, 17 to 17.5, and 18 to 18.5 feet bgs)
- PE-142 (19.5 to 20 feet bgs)
- PE-140 (21 to 22 feet bgs)

The 95% UCL for benzo(a)pyrene in this functional area is 0.0866 mg/kg, which is below the RDCSRS (0.5 mg/kg). Attainment was therefore achieved within this functional area, and no further action is required.

Excavation Area 4-1 – Impact to Ground Water Pathway

The optimal size of a functional area for the IGW pathway is 100 feet along the length of the AOC in the direction of ground water flow. This functional area is 100 feet long and encompasses the northern portion of Excavation Area 4.

One benzo(a)pyrene exceedance (1.81 mg/kg) from historical sample SB-E6 (collected at 12 to 12.5 feet bgs) remains in this functional area after excavation. The exceedance is more than 2 feet above the water table, so only “surficial” samples are evaluated in this functional area.

Twenty samples were evaluated in this functional area using the 95% UCL method. The 95% UCL for benzo(a)pyrene in this functional area is 0.537 mg/kg, which is below the site-specific IGWSRS (1 mg/kg). Attainment was therefore achieved within this functional area, and no further action is required.

Excavation Area 6B – Inhalation, Ingestion, Dermal, and Impact to Ground Water Pathways

Excavation Area 6B is small, but can't be combined with any other AOC/excavation area in a configuration that complies with the guidance. Therefore, the functional area is approximately 30 feet long in the direction of ground water flow, and 0.08 acre.

The proposed excavation footprint of approximately 3,520 sf required four bottom samples to meet a one sample per 900 sf frequency in accordance with the RAWP. Historic sample data from borings SB/MW-I, SB/MW-J, SB/MW-4L, and SB/MW-4M contained no exceedances of the SRS at the proposed bottom of the excavation. However, these samples were biased towards the outer edges of the excavation area. Langan collected two additional bottom post-excavation samples towards the middle of the excavation footprint (PE-73 and PE-74).

Sidewall samples were not collected along the western and southern sidewalls of the excavation, because the excavation proceeded to the property boundary, and an unrestricted use option was not being pursued outside of the boundary. Sidewall samples were not required on the eastern side of the excavation because it connects with Area 6A and no sidewall remained between the two areas. Three sidewall samples (PE-19, PE-20, and PE-21) were collected along the northern sidewall of Area 6B to meet the one sample per 30 linear feet frequency approved in the RAWP. Langan sampled these three sidewall locations in September 2017 prior to excavation. PE-19 and PE-21 contained no exceedances of the SRS. However, PE-20 contained an exceedance of the RDCSRS and IGWSRS for benzo(a)pyrene at 4 to 4.5 ft bgs (1.65 mg/kg). Vertical delineation for benzo(a)pyrene was achieved at PE-20 with a deeper sample collected at 6 to 6.5 ft bgs. Horizontal delineation was achieved at PE-16, which was advanced to the northeast.

Final remediation plans for Area 6B included the use of slide-rail boxes to support the excavation. The slide-rail boxes were approximately 22 feet wide by 27 feet long. Starting at the southwest property boundary, they were placed in a grid pattern two boxes (from north to south) wide and four boxes (from east to west) long. The dimensions and placement of

the slide-rail boxes resulted in a widening of the original excavation area by approximately 3 feet to the north. Due to the increased excavation footprint, Langan added an additional bottom sample location (PE-71). Bottom samples PE-71, PE-73, and PE-74 were collected from the bottom of the open excavation as work progressed across the area. PE-73 and PE-74 contained no exceedances of the SRS. However, PE-71 contained an exceedance of the SRS for benzo(a)pyrene (1.1 mg/kg). Vertical delineation of benzo(a)pyrene at PE-71 was achieved with a sample at 15 to 15.5 ft bgs, which contained no exceedances of the SRS. Horizontal delineation was provided at PE-70.

The inhalation and ingestion/dermal functional areas were evaluated at the subsurface level, because there were no exceedances at the surface. Ten samples were evaluated using the 95% UCL method. The 95% UCL of this functional area is 0.372 mg/kg, which is below the RDCSRS (0.5 mg/kg).

The only benzo(a)pyrene exceedance remaining in Area 6B after excavation is at PE-71 (13 to 13.5 feet bgs) at a concentration of 1.1 mg/kg. When rounded to the same number of significant digits as the site-specific IGWSRS for benzo(a)pyrene (1 mg/kg), it does not exceed the standard. In addition, this sample was collected just at or below the water table, where the IGWSRS do not apply.

Attainment was therefore achieved for the inhalation, ingestion, dermal, and IGW pathways in this functional area and no further action is required.

3.14 SOIL DISPOSAL AND DEBRIS MANAGEMENT

All excavated materials were trucked off-Site and disposed of at Bayshore. Bayshore holds permits in accordance with municipal, state, and federal regulations. Excavated soils were loaded directly on trucks when possible. Stockpiling of excavated material, when necessary, was limited to excavation areas within the temporary enclosure, and was performed in compliance with the NJDEP air permit.

Off-Site disposal and recycling were conducted separately for wood, concrete, asphalt, and scrap metal. As warranted, debris was decontaminated in preparation for off-site disposal and recycling. Underground piping was drained, fluids collected, and the piping removed. Subsurface piping to remain in place was cut at the excavation limits and sealed. Piping and debris were cleaned with a pressure washer to remove contaminated soils. Cleaned piping and debris were visually inspected and sorted for transportation to off-site disposal and

recycling facilities. Where decontamination was not feasible, or not effective, the materials were broken into smaller, manageable pieces and disposed with the contaminated soil at the approved off-site facility. Disposal documentation is presented in Appendix F.

3.15 EXCAVATION DEWATERING AND WATER TREATMENT

The excavation supports that were installed in most Excavation Areas consisted of interlocking sheet piles. The interlocking sheets served to limit the lateral flow of ground water into the excavation once the depth went past the top of the water table.

Dewatering was performed to manage ground water as applicable to conduct the excavation of soils and conduct visual inspection as the materials were excavated. Removal of this water was required to obtain a visual endpoint to confirm the removal of impacted soils prior to post-excavation sampling. Where needed, dewatering sumps were installed in the excavation area to remove any necessary water.

A sump was dug to an appropriate depth and lined with geotextile fabric. A six-inch slotted PVC screen was then installed to the bottom of the sump, and packed to the surface with gravel. A 3-inch submersible pump was lowered to the bottom of the screen with associated piping to route water to the WTS as described in Section 3.7.11.

The WTS, with a capacity of approximately 80,000 gallons, consisted of four settling tanks, an oil/water separator, sand filter, 10-micron bag filter, an organoclay tank, granular activated carbon, and an anion tank. All piping consisted of Schedule 40 PVC. A flow meter certified by USA-PA was used to track flow and demonstrate compliance with permitted flow restrictions.

Compliance with USA-PA and MCUA permit requirements were tracked with monthly Self-Monitoring Reports as presented in Appendix W. Throughout the period of operation, there was only one exceedance of the TDA requirements as described below.

In accordance with the TDA, a sample was collected from the WTS on 2 May 2018. The laboratory reported a 4,4'-DDE concentration of 0.0227 ug/L in the sample. Because the TDA requires concentrations of pesticides and PCBs to be below the minimum detection limit, ETG immediately initiated an investigation to determine the source of the 4,4'-DDE.

4,4'-DDE was not detected in previous treated water samples collected under the TDA. In addition, ground water samples were collected from site monitoring wells in May 2016 prior to the construction of the WTS to establish baseline ground water concentrations of MCUA-regulated compounds as part of the TDA application process. The analytical results for 4,4'-DDE were "non-detect" in all of the site monitoring wells sampled, with method detection limits (MDL) of 0.0040 ug/L. In addition, 4,4'-DDE is not a Site contaminant of concern, and excavation activities would not be expected to contribute pesticides to local ground water. Also, the use of 4,4'-DDE was banned in 1972 and there are no records of it having been historically applied at the Site or in the surrounding area. Therefore, a source could not be determined.

APL, the laboratory who performed the analysis, reviewed the data to determine if there was any evidence of interference. In an 8 June 2018 letter, APL stated that the analytical method used (EPA 608) can be prone to false positive results. Unfortunately, due to the low concentration, the laboratory wasn't able to confirm the result using gas chromatograph/mass spectrometry (GC/MS).

Based on the information obtained during the investigation, it is likely that the detection of 4,4'-DDE was a false positive result. However, in the interest of preserving the integrity of MCUA's treatment system, Creamer replaced the 10-micron filter in the WTS with a 1-micron filter and re-treated all water remaining in the system. An additional sample was then collected on 14 June 2018. The results were non-detect for all pesticide and PCB compounds. As an added precaution, the 1-micron filter was used for the remaining duration of the RA. No further exceedances were noted. MCUA agreed with ETG's assessment and waived any penalties. Correspondence between ETG and MCUA is presented in Appendix W.

Over the course of operation, approximately 400,000 gallons of water was dewatered from the excavation, treated at the WTS, and discharged to MCUA via the Perth Amboy combined sewer system.

3.16 RESTORATION

Excavation Areas were primarily backfilled with certified clean fill from Stavola Construction Materials and Weldon Materials. The backfill consisted of quarry fines from a virgin source. Approximately 40,000 tons of quarry fines were backfilled at the Site. Backfill was compacted in one-foot lifts to 95% of the maximum dry density of the material. Creamer conducted field

compaction tests and ANS Consultants conducted nuclear densometer testing of the compacted material. Documentation of backfill material is presented in Appendix X and compaction testing results are presented in Appendix Y.

The final six inches of backfilled depth was comprised of crushed stone from Weldon Materials. The crushed stone surface was acceptable to the property owner, St. Demetrios Church, as they have plans to redevelop the Site. Approximately 2,000 tons of stone was placed at the Site and vibration-compacted in place. Fill documentation for the crushed stone is presented in Appendix X.

Sidewalks along Sadowski Parkway, Wisteria Street, and Linden Street that were damaged or removed were replaced according to the City of Perth Amboy's specifications. This included the installation of new driveway aprons and handicapped-accessible curbs. Berto Construction provided concrete paving.

Portions of the residential property at 71 Linden Street, which borders the Site to the north, were damaged as a result of the remediation. An old masonry garage, which had documented damage prior to the remediation, sustained additional damage due to sheet driving and excavation activities within a few feet of the structure. Plattsmount Construction shored the walls of the building during Site remediation activities and then repaired the walls and replaced the floor slab once remediation was complete. In addition, a wooden fence that ran along the northern Site boundary between the two properties was removed to facilitate the remediation, and a portion of the residence's driveway was excavated to facilitate remediation. The fence and the driveway were replaced once remediation was complete by National Fence and Ningariello and Son Masonry and Paving, respectively. Top soil was replaced and grass replanted in a strip between the fence and the driveway. The top soil is certified clean fill sourced from Excavating Materials and Equipment, Inc. Clean fill documentation for the restoration materials is presented in Appendix X.

All equipment and materials were removed from the Site, and electrical hookup was closed-out by PSE&G. The perimeter security fence was left in-place at the request of the property owner.

SECTION 4

RECEPTOR EVALUATION

4.1 ON-SITE AND SURROUNDING PROPERTY USE

The Site is currently zoned for residential use (municipal Zoning Code R-60 for one-family dwellings or houses of worship).

Land use within 200 feet of the Site is primarily residential to the north and west and recreational to the south and east. The adjacent off-Site properties to the north and west are also zoned for residential use (municipal Zoning Code R-60 for one-family dwellings or houses of worship). The adjacent off-Site properties to the east and south are zoned for recreational and conservation use.

Sensitive property uses include residential properties (including residences and houses of worship), recreation, and conservation areas. The St. Demetrios Greek Orthodox Church is a house of worship to the west of the Site. There are additional residential properties to the west and north of the Site. Caledonia Park is to the east of the Site across Linden Street and Sadowski Park is adjacent to the Site to the south. South of Sadowski Park is beachfront property of the Raritan River. Both parks and the beach property are zoned for recreational and conservation use.

The locations of sensitive properties within 200 feet of the Site are depicted on Drawing RE-1 provided with the RE form at the front of this report. There are no public schools or registered childcare centers within 200 feet of the Site.

4.2 DESCRIPTION OF CONTAMINATION

Soil contamination at the Site has been fully remediated to the most stringent of the NJDEP SRS. Ground water at the Site was impacted above the GWQS by VOCs, SVOCs, cyanide, and metals. No free product was observed in Site ground water. Monitoring wells will be installed and sampled to further evaluate ground water impacts at the Site now that the soil remediation is complete.

4.3 GROUND WATER USE

Ground water contamination is known to exist at the Site as discussed above in Section 2.4.11.

An updated well search was conducted in accordance with N.J.A.C. 7:26E-1.14 utilizing the NJDEP DataMiner XY Well Search for Site Remediation Program Receptor Evaluation, and included a review of all well records for domestic and monitoring wells within one half mile of the extent of ground water contamination and for irrigation, industrial, public supply, and other wells with water allocation permits within one mile of the extent of ground water contamination. A review of public supply wells on the NJDEP NJ-GeoWeb was performed and no public supply wells were identified within one mile of the Site. The Site is not located within a Tier 1 or Tier 2 wellhead protection area.

The updated well search identified no new wells within a one-mile radius from the extent of ground water contamination since the previous well search update. The well search summary table and drawing are presented with the RE form at the front of this document.

4.4 VAPOR INTRUSION

The RE requirements at N.J.A.C. 7:26E-1.15 indicate that a VI investigation is required if certain conditions exist. A VI evaluation was previously triggered due to free product observed within 100 feet of the Church auditorium. In 2007, Langan conducted a VI investigation of the Church auditorium building and determined that there were no VOCs present beneath the building that pose a VI risk. Ground water data will be monitored following the soil remediation to confirm that ground water VI screening levels are not exceeded at the Site. The Church auditorium was demolished as part of Site RA activities and there are no other buildings on the Site. Additionally, no free product remains at the Site.

4.5 ECOLOGICAL RECEPTORS

A BEE was conducted in 2008 to identify potential ecological concerns at the Site. The BEE consisted of an evaluation of ecological conditions on and immediately adjacent to the Site and a review of the available surface soil and ground water analytical data collected during

previous investigation activities at the Site. The BEE was conducted to determine the co-occurrence of the following conditions:

1. The presence of any environmentally sensitive natural resources (ESNRs) on, adjacent to, or beneath the Site
2. The presence of COPECs
3. Potential constituent migration pathways to an ESNR.

The BEE established that, although there were COPECs identified at the Site, there are no viable pathways for these contaminants to impact the nearby receptors (the Raritan River and Raritan Bay). Therefore, no ecological investigation was proposed. A report on the BEE dated 27 February 2008 was submitted to the NJDEP and approved by the NJDEP in an email dated 7 January 2010.

4.5.1 Identification of Environmentally Sensitive Natural Resources

The NJDEP has defined ESNRs as including, but not limited to, receptors such as surface water bodies, wetlands, and threatened and endangered species habitat. The evaluation of ESNRs was based on the visual inspection and database information from regulatory agencies.

Surface Water Bodies

According to the NJDEP NJ-GeoWeb, the closest mapped surface water bodies to the Site are the Raritan River and Raritan Bay, located to the south and southeast of the Site beyond Sadowski Parkway and Sadowski Park. The portion of the Raritan River in the vicinity of the Site is classified as an SE1 water body. Due to the proximity to the Site, the Raritan River and Raritan Bay are considered an ESNR.

Wetlands

Wetlands have not been identified on or immediately adjacent to the Site. Because wetlands are not located on or adjacent to the Site, wetlands are not considered an ESNR.

Wildlife

During previous investigation activities and Site RA activities from July 2017 through July 2018, threatened or endangered species were not observed, nor was any wildlife noted on the Site or adjacent properties. On the beach property located within 200 feet from the southern portion of the Site, a jellyfish and small crab were observed during low tide.

Langan also reviewed the NJDEP NJ-GeoWeb and Landscape Project databases for potential natural resources on the Site. The Site and adjacent properties were not found to include any threatened or endangered species or habitats. The beach located within 200 feet from the southern portion of the Site is listed as a state threatened species (*Pandion haliaetus* – common name: osprey) habitat; however, no osprey were observed during the BEE Site inspection or subsequent Site visits.

While the nearby beach is considered suitable habitat for threatened species (osprey), said species has not been observed by Langan. As such, wildlife is not considered an ESNR.

Vegetation

According to the NJDEP NJ-GeoWeb and Landscape Project databases, there are no records of rare plant species or natural communities on or adjacent to the Site. Because the Site does not contain rare plant species or natural communities, vegetation is not considered an ESNR.

4.5.2 Identification of COPECs

COPECs are constituents that either exhibit the ability to bioaccumulate or biomagnify, or that exceed applicable ecological screening criteria. Bioaccumulation describes the process by which a chemical is passed directly into an organism by the consumption of food or water (USEPA, 1997). Biomagnification describes the process by which chemical concentrations increase in an organism as a result of a food chain (USEPA, 1997). Sample analytical results, specifically for surface soil and ground water, were compared to screening levels that are conservative and act as risk thresholds (i.e., below these values, no risks are likely to occur). The results were compared to ecological screening criteria. COPECs previously identified in the Site surface soils and ground water based on available analytical results are limited to PAHs and metals.

Surface Soil COPECs

For surface soil samples, the 0 to 3.5-foot below grade interval was evaluated due to the presence of biological activity in the 0 to 6-inch soil layer and burrowing animals within the 0 to 3.5-foot soil layer. Soil data from the 0 to 3.5-foot interval data set was screened against the NJDEP document, "Toxicology Benchmarks for Screening Contaminants of Potential Concern Effects on Terrestrial Plants; 1997 Revision" (Will and Suter, 1997), the Preliminary Remediation Goals for Ecological Endpoints for Soils (Suter, et al, 1997), the USEPA Region 4 Ecological Risk Assessment Bulletins – Supplement to RAGS (2001), and the USEPA Region 5 RCRA Corrective Action Ecological Screening Levels (2003). COPECs identified in the Site surface soils based on available analytical results are limited to PAHs (anthracene, benzo(a)anthracene, benzo(a)pyrene, fluoranthene, naphthalene, phenanthrene, and pyrene), metals (arsenic, total chromium, copper, lead, mercury, selenium, and zinc) and cyanide. Even though much of the shallow soil at the Site was excavated, concentrations of these contaminants may remain in soil above Ecological Screening Criteria, as the most stringent soil Ecological Screening Criteria is below the most stringent SRS for all of these compounds except benzo(a)anthracene. All compounds detected above their respective ecological screening criteria, within soils, are considered COPECs.

Ground Water COPECs

Based on the Raritan River classification of SE1 waters and its close proximity to the Site, the shallow ground water data were compared to the NJDEP Surface Water, SE criteria, as well as the National Oceanic and Atmospheric Administration Screening Groundwater Maximum Contamination Levels, and the USEPA Ambient Water Quality Criteria to evaluate potential impacts. The results indicated that pyrene, total chromium, copper, mercury, lead, zinc, and cyanide exceeded the Surface Water SE criteria. All compounds detected above their respective ecological screening criteria are considered COPECs.

4.5.3 Identification of Migration Pathways

Potential migration pathways of soil and ground water COPECs include direct contact of soil to wildlife, overland flow, and ground water to surface water.

Direct Contact

Direct contact of COPECs by ecological receptors, such as burrowing animals, is likely. Direct contact by ingestion or inhalation of soil contaminants by wildlife could potentially occur; however, based on the lack of wildlife observed on the Site, direct contact is not considered a potential migration pathway.

Overland Flow

As previously mentioned, much of the shallow soil on Site has been excavated and replaced with clean fill and stone, which would eliminate overland flow as a potential migration pathway. Due to the placement of vegetation and impervious surfaces, overland flow at the Site is not likely to transport impacted surface soil. Therefore, overland flow is not considered a potential migration pathway.

Ground Water to Surface Water

PAHs and metals in soil and ground water have the potential to migrate to the Raritan River and Raritan Bay; however, much of the source in soil has been eliminated by the completed soil RA. Ground water to surface water was considered as a potential migration pathway; however, no Site contaminants are found in excess of the GWQS in down gradient monitoring well (MW-8) with the exception of arsenic and lead. Given that arsenic and lead are not detected in any on-Site monitoring wells, their presence in MW-8 is likely not due to former MGP operations. Ground water will be re-evaluated now that the on-Site soil RA has been completed; however, ground water to surface water is not currently a pathway for contaminants to ESNRs.

4.6 RECEPTOR EVALUATION RESULTS AND CONCLUSIONS

The RE identified sensitive land use receptors, including residential properties (residences and the Church) and recreational and conservation properties (Sadowski and Caledonia Park), within 200 feet of the Site. No new ground water receptors were identified within one-half mile of the Site on the western side of the Raritan River. No VI receptors were identified based on available ground water data.

The ecological evaluation revealed there is a co-occurrence of ESNRs (Raritan River and Raritan Bay) and COPECs, but no significant migration pathways. Additionally, the BEE

concluded that there is a minimal ecological impact as observed through ground water monitoring. This conclusion was based on the time that has lapsed since the MGP ceased operations in 1965, the presence of metal industries and refining operations in the surrounding areas, the lack of a continuous source of contamination, and the improbability of the COPECs migrating via ground water to the Raritan River and Raritan Bay sediments and surface water based on the lack of visual evidence (i.e., stressed vegetation, seeps, or sheens). COPECs will be re-evaluated following ground water monitoring and the off-Site soils RA, and findings will be documented in a separate RAR.

SECTION 5

CONCLUSIONS AND RECOMMENDATIONS

The RASR/RAWP identified six soil AOCs (AOC 1 through AOC 6). Three additional AOCs (AOC 7, AOC 8, and AOC 9) were designated during ongoing RA excavation activities and documented in this RAR. This RAR addresses all soil AOCs at the Site:

- AOC 1: Western Property (Excavation Areas 1 and 6B)
- AOC 2: Two Gas Holders (Excavation Area 2)
- AOC 3: Meter House, Purifier House, Engine House, and Retort House (Excavation Area 3)
- AOC 4: Northern Tar Well, Workshop, Coke Crusher, Engine Room, Southern Tar Well, and Scales (Excavation Areas 4 and 5)
- AOC 5: Tar Shed, Scrap Storage, and Coal Shed (Excavation Areas 4, 5, and 6A)
- AOC 6: 1,300-Gallon No. 2 Heating Oil UST
- AOC 7: 3,000-Gallon No. 2 Heating Oil UST
- AOC 8: 500-Gallon UST of Unknown Contents
- AOC 9: 500-Gallon UST of Unknown Contents

A soil investigation was conducted at UST AOCs 6, 7, 8, and 9 during the RA. Post-excavation samples collected for AOC 6 and AOC 9 indicated that no further investigation or action is required at these AOCs. Low-level exceedances of PAHs and metals observed in AOC 7 and AOC 8 post-excavation soil samples are consistent with those of MGP impacts being addressed by the RA. Exceedances of the applicable SRS in AOC 7 and AOC 8 post-excavation samples are attributed to MGP impacts associated with AOC 5 and AOC 4, respectively, and are not indicative of a release from either UST. Additionally, AOC 7 and AOC 8 tank footprints were over-excavated following the collection of post-excavation samples as part of the soil RA excavation at the Site. Post-excavation samples collected in Areas 4 and 5 confirm the completion of the remediation for the PAH compounds detected in these tank excavations. The four USTs encountered at the Site have been properly closed-out according to all state and local standards. As such, no further investigation or action is required for AOC-7 and AOC-8.

MGP-impacted soil in AOCs 1 through 5 was excavated and disposed of at a licensed off-Site facility. The soil RA was organized into seven excavation areas, and post-excavation samples were collected to demonstrate the completion of the remediation in each area:

- Excavation Area 1: Remediation proceeded to the excavation limits proposed in the RAWP. No further excavation was required.
- Excavation Area 2: In addition to the excavation limits proposed in the RAWP, an additional step-out excavation was required on the western side of Area 2. Post-excavation sampling demonstrated the completion of the step-out excavation to the most stringent SRS. No further action is required.
- Excavation Area 3: In addition to the excavation limits proposed in the RAWP, additional step-out excavations were required to the north and east. In these cases, excavation proceeded across the property boundary. However, benzo(a)pyrene left in place at one location required compliance averaging using the 95% UCL method to demonstrate compliance with the inhalation, ingestion, and dermal pathways. No further action is required.
- Excavation Area 4: In addition to the excavation limits proposed in the RAWP, additional step-out excavations were required to the east and west based on post-excavation sidewall samples. In the case of the eastern step-out, excavation proceeded across the property boundary. The western step-out proceeded to the more stringent of the RDCSRS or IGWSRS. In addition, excavation proceeded deeper than the overall excavation bottom of 10 feet bgs in certain areas based on post-excavation bottom samples and/or the presence of free product. Deeper excavations were required to remediate two tar wells, a scrap storage area, locations of historical cyanide and benzo(a)pyrene exceedances, and two additional locations where post-excavation bottom samples indicated an exceedance of benzo(a)pyrene. Post-excavation samples at the final limits of the Excavation Area demonstrate completion of the deeper excavations. However, benzo(a)pyrene left in place at two locations required compliance averaging using the 95% UCL method to demonstrate the completeness of the remediation with respect to the inhalation, ingestion, dermal, and IGW pathways. No further action is required.
- Excavation Area 5: In addition to the excavation limits proposed in the RAWP, a process pipe filled with tar required deeper excavation on the western side of Area 5. Post-excavation sampling demonstrated the completeness of the remediation. However, benzo(a)pyrene left in place at one location required compliance averaging using the 95% UCL method to demonstrate completeness of the remediation with respect to the inhalation, ingestion, and dermal pathways. No further action is required.
- Excavation Area 6A: Remediation proceeded to the excavation limits proposed in the RAWP. No further action is required.

- Excavation Area 6B: In addition to the excavation limits proposed in the RAWP, additional step-out excavation was required to the north. Post-excavation samples demonstrated the completeness of the step-out excavation. However, benzo(a)pyrene left in place at one location required compliance averaging using the arithmetic mean method to demonstrate compliance with the inhalation, ingestion, and dermal pathways.

A summary of excavated soil by area is as follows:

Excavation Area	AOC(s)	Approximate Dimensions (ft x ft)	Excavation Depth (ft)	Excavation Volume (cubic yards)	Disposal Weight (tons)
1	1	30 x 30	16	665	900
2	2	126 x 90	18	8,000	13,000
3	3	36 x 165	6 – 8	1,600	2,500
4	4 & 5	120 x 170	10 – 24	9,500	17,000
5	4 & 5	40 x 80	13 – 16	1,400	1,800
6A	5	38 x 40	10	750	1,540
6B	1	40 x 90	13	1,840	3,840

ETG has demonstrated compliance to the most stringent NJDEP SRS. Therefore, an unrestricted use RAO-A will be issued by the LSRP for the on-Site soil remediation (AOCs 1 through 9).

Additional off-Site soil remediation is required south of the property boundary (Block 3, Lot 11) in Sadowski Parkway and Sadowski Park. This remediation will be addressed under a separate RAR and PI number (792832).

A CEA was established for ground water at the Site in 2009. Now that the source material has been removed from soil, a separate ground water RA will be completed and addressed under a separate RAR.

SECTION 6
REMEDIATION COST SUMMARY

Remediation costs included the following:

Remediation Construction	\$9,000,000
Construction Oversight	\$700,000
Permitting and Permit Compliance	\$370,000
Post-Excavation Sampling and Step-Out Investigations	\$170,000
Waste Classification Sampling	\$110,000
Bid Specification and Procurement	\$70,000
Public Relations	\$56,000
Remedial Action Report	\$40,000
Perimeter Air Monitoring	\$240,000
Total	\$10,756,000

SECTION 7
REFERENCES

- Barksdale, H.C., Johnson, M.E., Baker, R.C., Schaefer, E.J., and DeBucharanne, G.D. *The Ground-Water Supplies of Middlesex County New Jersey*. 1943.
- Efroymsen, R.A., Will, M.E., Suter, G.W., and Wooten, A.C. *Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Terrestrial Plants: 1997 Revision*. U.S. Department of Energy Office of Environmental Management. November 1997.
- Efroymsen, R.A., Suter, G.W., Sample, B.E., and Jones, D.S. *Preliminary Remediation Goals for Ecological Endpoints*. U.S. Department of Energy Office of Environmental Management. August 1997.
- Geraghty & Miller, Inc. *Final Remedial Investigation Report, Perth Amboy Manufactured Gas Plant Site, Perth Amboy, New Jersey*. 1996 October.
- Langan Engineering and Environmental Services, Inc. *Baseline Ecological Evaluation Report, Perth Amboy Former MGP Site, Portion of Block 3, Lot 11, Perth Amboy, New Jersey*. 27 February 2008.
- Langan Engineering and Environmental Services, Inc. *Phase III Supplemental Remedial Investigation Report, Former MGP Site Perth Amboy, New Jersey*. 11 February 2002.
- Langan Engineering and Environmental Services, Inc. *Polynuclear Aromatic Hydrocarbon Compounds Source Evaluation Report*. March 2007.
- Langan Engineering and Environmental Services, Inc. *Remedial Action Selection Report and Remedial Action Work Plan, Perth Amboy Former MGP Site, Perth Amboy, New Jersey*. September 2011.
- Langan Engineering and Environmental Services, Inc. *Underground Storage Tank Site Investigation Report*. September 2018.
- Langan Engineering and Environmental Services, Inc. *Vapor Intrusion Sampling Report, St. Demetrios Greek Orthodox Church Auditorium, Perth Amboy, New Jersey*. 13 November 2007.

New Jersey Administrative Code 7:14B. *Underground Storage Tank Rules*. Amended 6 August 2018.

New Jersey Administrative Code 7:26E. *Technical Guidance for Site Investigation of Soil, Remedial Investigation of Soil, and Remedial Action Verification Sampling for Soil*. Amended 6 August 2018.

New Jersey Department of Environmental Protection. *Data of Known Quality Protocols Technical Guidance, Version 1.0*. April 2014.

New Jersey Department of Environmental Protection. *Data Quality Assessment and Data Usability Evaluation Technical Guidance, Version 1.0*. April 2014.

New Jersey Department of Environmental Protection. *Development of Impact to Ground Water Soil Remediation Standards Using the Soil-Water Partition Equation, Version 2.0*. November 2013.

New Jersey Department of Environmental Protection. *Development of Site-Specific Impact to Ground Water Soil Remediation Standards Using the Synthetic Precipitation Leaching Procedure, Version 3.0*. November 2013.

New Jersey Department of Environmental Protection. *Field Sampling Procedures Manual*. August 2005.

New Jersey Department of Environmental Protection. *NJ-GeoWeb 3.0*. 15 May 2018.

New Jersey Department of Environmental Protection. *Protocol For Addressing Extractable Petroleum Hydrocarbons, Version 5.0*. 9 August 2010.

New Jersey Department of Environmental Protection. *Technical Guidance for Investigation of Underground Storage Tank Systems*. 12 April 2012.

New Jersey Department of Environmental Protection. *Technical Guidance for the Attainment of Remediation Standards and Site-Specific Criteria (Volume 1.0)*. 24 September 2012.

New Jersey Department of Environmental Protection. *Technical Requirements for Site Remediation*. 7 May 2012.

Remediation Technologies, Inc. *Phase II Remedial Investigation Report, Perth Amboy Former MGP Site*. 11 June 1998.

ThermoRetec Consulting Corporation. *Phase II Supplemental Investigation Report, Perth Amboy Former MGP Site, NUI Elizabeth Gas*. 6 April 2000.

ThermoRetec Consulting Corporation. *Supplemental Remedial Investigation Report, Perth Amboy Former MGP Site, Perth Amboy, New Jersey*. 30 April 1999.

ThermoRetec Consulting Corporation. *UST Investigation Report, Perth Amboy Former MGP Site*. 20 October 1999.

United State Environmental Protection Agency Region 5. *Corrective Action Ecological Screening Levels*. 2003.

United States Environmental Protection Agency Environmental Response Team. *Ecological Risk Assessment Guidance for Supoerfund: Process for Designing and Conducting Ecological Risk Assessments*. EPA 540-R-97-006. June 1997.

United States Environmental Protection Agency Region 4. *Ecological Risk Assessment Bulletins*. 2001.

\\angan.com\data\PAR\data5\1724501\Office Data\Reports\2018 Remedial Action Report - Church\Church Property RAR 03-13-2019.docx

T A B L E S

DRAWINGS

MFR-3 For each of the same three MGP sites, provide all correspondence between the Company and the NJDEP concerning submissions for the site, reply comments, and other major items which have a material impact on remediation activities and associated costs incurred by the Company. The correspondence should span the twelve months of the most recent RAC period.

During this RAC period, the remediation at these sites was under the oversight of LSRPs pursuant to SRRA. No correspondence between the Company and NJDEP having material impacts on the sites occurred.

MFR-4 **For each of the same three MGP sites, provide expense documentation for any contractor or supplier whose invoices for the RAC period exceed \$250,000 in aggregate. The expense documentation should include descriptions of services rendered, applicable invoices, and any tracking of invoiced charges vs. budgets. The expense detail need not include expense reports or time sheets, but it should include supporting documentation for any subcontractor and third party expenses totaling \$100,000 or more for the period.**

Please see attachment MFR-1.1 for the list of vendor costs by site. Attachment MFR-4.1 contains a detailed list of invoices for one contractor, GEI Consultants (GEI) for Erie Street, that met the \$250,000 criteria detailed above.

Summaries for the subcontractors employed by GEI used to determine which subcontractors met the \$100,000 threshold described above are attached in Attachment MFR-4.2. GEI Consultants had no subcontractors exceeding the \$100,000 threshold based on timing of payment to subcontractors.

The Company considers the requested invoices confidential and proprietary. Such information is competitively sensitive in that it would provide potential vendors with information that is normally not made available in negotiations. The requested information will be provided to parties executing an appropriate confidentiality agreement.

Elizabethtown Gas Company
Vendors With Invoices Exceeding \$250,000
July 2019 - May 2020
GEI - Erie St

SLC-2
MFR-4.1
Page 1 of 1

Site Name	Vendor	GL Status	Invoice No.	RAC Total	Account Date Approved	Acct	DeptID
Erie St	GEI Consultants Inc	Posted	3054655	9,464.34	Jul-19	166063	S452
Erie St	GEI Consultants Inc	Posted	3054657	202.72	Jul-19	166063	S452
Erie St	GEI Consultants Inc	Posted	3054658	63,120.29	Jul-19	166063	S452
Erie St	GEI Consultants Inc	Posted	3054660	22,840.49	Jul-19	166063	S452
Erie St	GEI Consultants Inc	Posted	3055253	100.00	Jul-19	166063	S452
Erie St	GEI Consultants Inc	Posted	3055642	7,322.42	Jul-19	166063	S452
Erie St	GEI Consultants Inc	Posted	3055644	164.20	Jul-19	166063	S452
Erie St	GEI Consultants Inc	Posted	3055647	6,353.01	Jul-19	166063	S452
Erie St	GEI Consultants Inc	Posted	3055750	25,343.21	Jul-19	166063	S452
Erie St	GEI Consultants Inc.	Posted	3058646	69,933.59	Oct-19	166063	0452
Erie St	GEI Consultants Inc.	Posted	3057231	35.30	Nov-19	166063	0452
Erie St	GEI Consultants Inc.	Posted	3057232	34,636.76	Nov-19	166063	0452
Erie St	GEI Consultants Inc.	Posted	3060195	933.70	Nov-19	166063	0452
Erie St	GEI Consultants Inc.	Posted	3060200	11,097.11	Nov-19	166063	0452
Erie St	GEI Consultants Inc.	Posted	3060692	183.95	Nov-19	166063	0452
Erie St	GEI Consultants Inc.	Posted	3061438	468.29	Nov-19	166063	0452
Erie St	GEI Consultants Inc.	Posted	3061439	30,009.37	Nov-19	166063	0452
Erie St	GEI Consultants Inc.	Posted	3061440	3,676.04	Nov-19	166063	0452
Erie St	GEI Consultants, Inc.	Posted	3050207	14,117.50	Dec-19	166063	0452
Erie St	GEI Consultants, Inc.	Posted	3050209	2,925.50	Dec-19	166063	0452
Erie St	GEI Consultants, Inc.	Posted	3050210	39,486.25	Dec-19	166063	0452
Erie St	GEI Consultants, Inc.	Posted	3050214	9,354.91	Dec-19	166063	0452
Erie St	GEI Consultants, Inc.	Posted	3057229	13,292.68	Dec-19	166063	0452
Erie St	GEI Consultants, Inc.	Posted	3057235	9,783.30	Dec-19	166063	0452
Erie St	GEI Consultants, Inc.	Posted	3058640	5,979.80	Dec-19	166063	0452
Erie St	GEI Consultants, Inc.	Posted	3058645	46,510.35	Dec-19	166063	0452
Erie St	GEI Consultants, Inc.	Posted	3060201	26,406.45	Dec-19	166063	0452
Erie St	GEI Consultants, Inc.	Posted	3060202	20,985.45	Dec-19	166063	0452
Erie St	GEI Consultants, Inc.	Posted	3062422	13,470.86	Dec-19	166063	0452
Erie St	GEI Consultants, Inc.	Posted	3063018	131.25	Dec-19	166063	0452
Erie St	GEI Consultants, Inc.	Posted	3063021	1,202.00	Dec-19	166063	0452
Erie St	GEI Consultants, Inc.	Posted	3063501	54,033.42	Dec-19	166063	0452
Erie St	GEI Consultants, Inc.	Posted	3064694	2,490.74	Feb-20	166063	0452
Erie St	GEI Consultants, Inc.	Posted	3064890	35,594.46	Feb-20	166063	0452
Erie St	GEI Consultants, Inc.	Posted	3058643	706.88	Mar-20	166063	0452
Erie St	GEI Consultants, Inc.	Posted	3067225	49,640.24	Mar-20	166063	0452
Erie St	GEI Consultants, Inc.	Posted	3068765	64,832.75	Mar-20	166063	0452
Erie St	GEI Consultants, Inc.	Posted	3068764	1,103.71	Apr-20	166063	0452
Erie St	GEI Consultants, Inc.	Posted	3070131	367.90	Apr-20	166063	0452
Erie St	GEI Consultants, Inc.	Posted	3070132	122,642.74	Apr-20	166063	0452
Erie St	Gei Consultants Inc	Posted	3071117	306.59	May-20	166063	0452
Erie St	Gei Consultants Inc	Posted	3071118	120,937.63	May-20	166063	0452
Erie St	GEI Consultants, Inc.	Posted	3072122	2,943.23	Jun-20	166063	0452
Erie St	GEI Consultants, Inc.	Posted	3072123	154,169.66	Jun-20	166063	0452
Total \$				1,099,301.04			

GEI Consultants, Inc.

Erie St MGP Site, Elizabeth NJ

Subcontractor and Vendor Expenses July 1, 2019 through June 26, 2020 - Without billing markups

Subcontractor or Vendor Name	07 2019	08 2019	09 2019	10 2019	11 2019	12 2019	01 2020	02 2020	03 2020	04 2020	05 2020	06 2020	Total
ENRC												19,536.15	19,536.15
Conrail ⁽¹⁾					4,000.00							4,250.00	8,250.00
United Site Services Northeast		387.53	387.53	387.53	387.53	775.06	387.53	387.53	387.53	387.53	419.10		4,294.40
US Environmental Rental Corp.	301.87	4,095.87											4,397.74
State of New Jersey ⁽¹⁾							70.00		2,000.00		4,000.00		6,070.00
UPS	8.42	8.42	12.12	20.57	24.59	11.38	33.94	25.38	15.37		23.75		183.94
TTI	2,604.00												2,604.00
INTEGRATED ANALYTICAL LABORATORIES		195.00	18,690.00		125.00								19,010.00
JOINT MEETING OF ESSEX & UNION COUNTIES ⁽¹⁾			250.00										250.00
PINE ENVIRONMENTAL SERVICES, INC.											2,139.21		2,139.21
SUMMIT DRILLING CO., INC		40,267.69											40,267.69
U.S. ENVIRONMENTAL RENTAL CORP					367.33								367.33
VARGO ASSOCIATES								242.50	4,800.00				5,042.50
WILLIAMS SCOTSMAN, INC.	558.07	558.07	558.07	647.46	647.46	647.46	692.78	647.46	647.46	620.81	630.12		6,855.22
Grand Total	3,472.36	45,512.58	19,897.72	1,055.56	5,551.91	1,433.90	1,184.25	1,302.87	7,850.36	1,008.34	7,212.18	23,786.15	119,268.18

(1) Expenses for access requests and permit applications

MFR-5 For each of the same three MGP sites, provide a narrative description and organization chart for that site, showing the vendors and project control structure for the remediation effort. The response should show what entities supervise all significant contractors and subcontractors and which Company personnel are involved in site and remediation supervision and control.

Erie Street

The main engineering consultant utilized for the remedial investigation work at the site is GEI Consultants. GEI was contracted directly with South Jersey Industries (SJI). GEI reports directly to Steven Cook, SJI/ETG Environmental Specialist, Lead. Steven Cook has day to day responsibility for management of ongoing remediation efforts. Steven Cook reports directly to Ken Sheppard, Manager, Environmental. Ken Sheppard reported to Donna Schempp, VP Environmental for SJI and subsequently to Dave Robbins, President of SJI Utilities, Inc.

GZA Geo Environmental provides consulting services regarding the selection of remedial action for the site. GZA reports directly to Ken Sheppard.

Waste disposal is performed by Veolia ES. Veolia was contracted to SJI and reports directly to Steven Cook who reported through the SJI organization as described above.

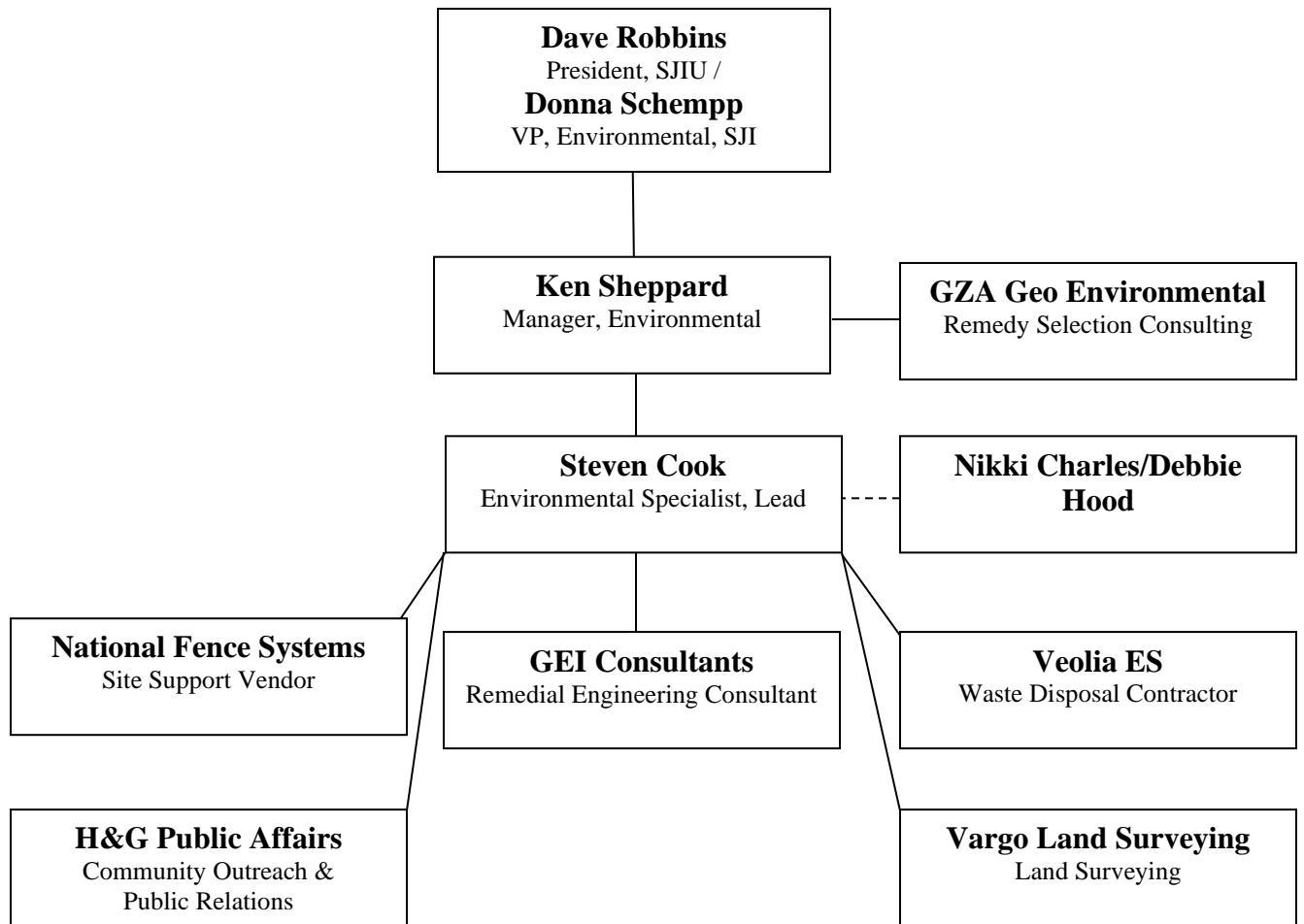
H&G Public Affairs, LLC provides community outreach and public relations services regarding the site. H&G is contracted to SJI and reports directly to Steven Cook who reported through the SJI organization as described above.

National Fence Systems, City of Elizabeth (taxes) and PSE&G (electric bill) are site support vendor, municipal government and public utility, respectively.

Vargo Land Surveying provides land surveying services in support of MGP remediation.

Nikki Charles and Debbie Hood of SJI provided accounts payable services.

Erie Street



South Street

The main engineering consultant utilized for the remedial investigation work at the site is Langan Engineering and Environmental Services (Langan). Langan was contracted with South Jersey Industries (SJI). Steven Cook has day to day responsibility for management of ongoing remediation efforts. Langan reports directly to Steven Cook, SJI/ETG Environmental Specialist, Lead. Steven Cook reported directly to Ken Sheppard, Manager, Environmental. Ken Sheppard reported to Donna Schempp, VP Environmental for SJI and subsequently to Dave Robbins, President of SJI Utilities, Inc.

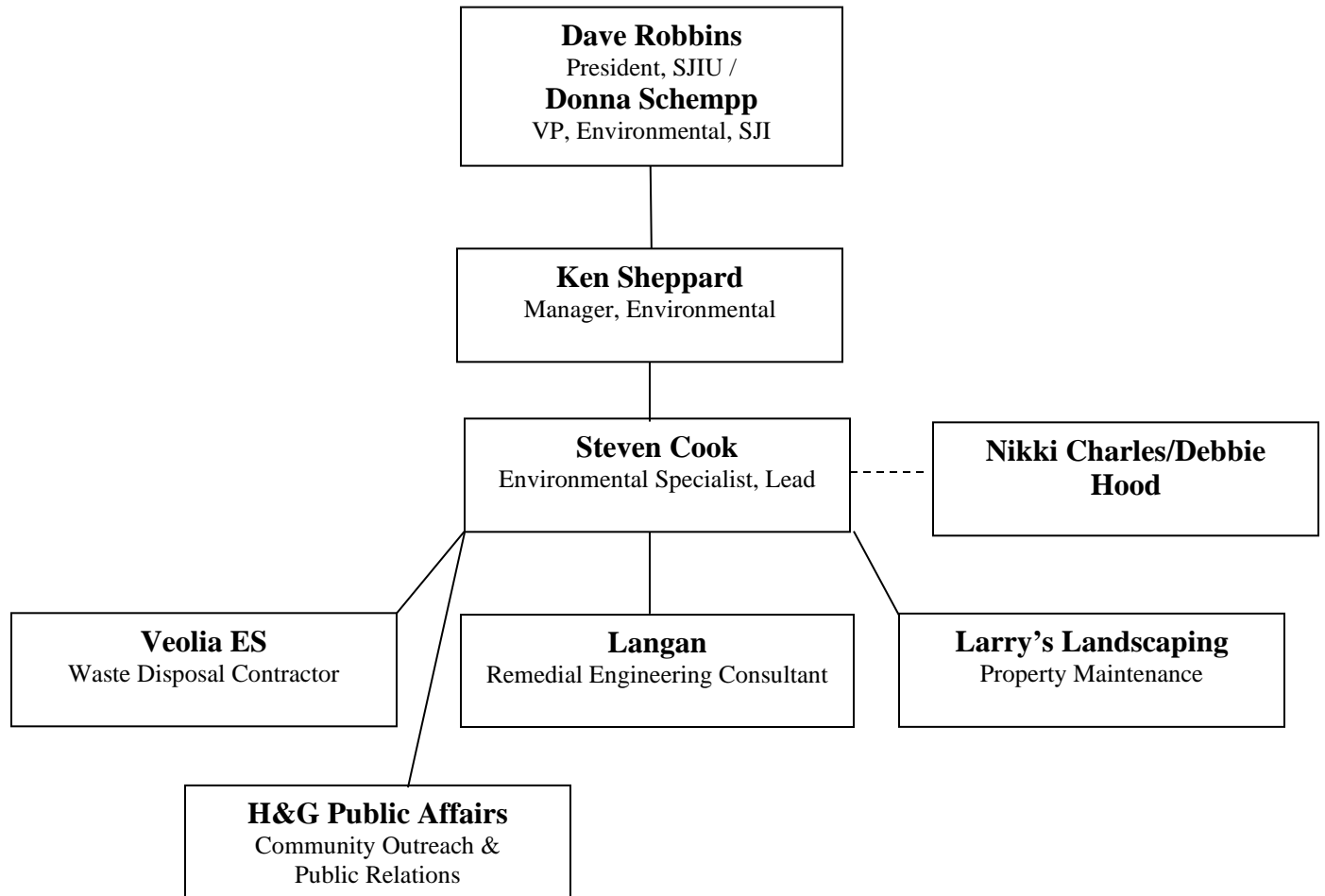
Waste disposal is performed by Veolia ES. Veolia was contracted directly to SJI as described above and reports directly to Steven Cook who reported through the SJI organization as described above.

H&G Public Affairs, LLC provides community outreach and public relations services regarding the site. H&G is contracted to SJI and reports directly to Steven Cook who reported through the SJI organization as described above.

Larry's Landscaping provides property maintenance services at the site. Larry's Landscaping is contracted to SJI and reports directly to Steven Cook who reports through the ES organization as described above.

Nikki Charles and Debbie Hood of SJI provided accounts payable services.

South Street



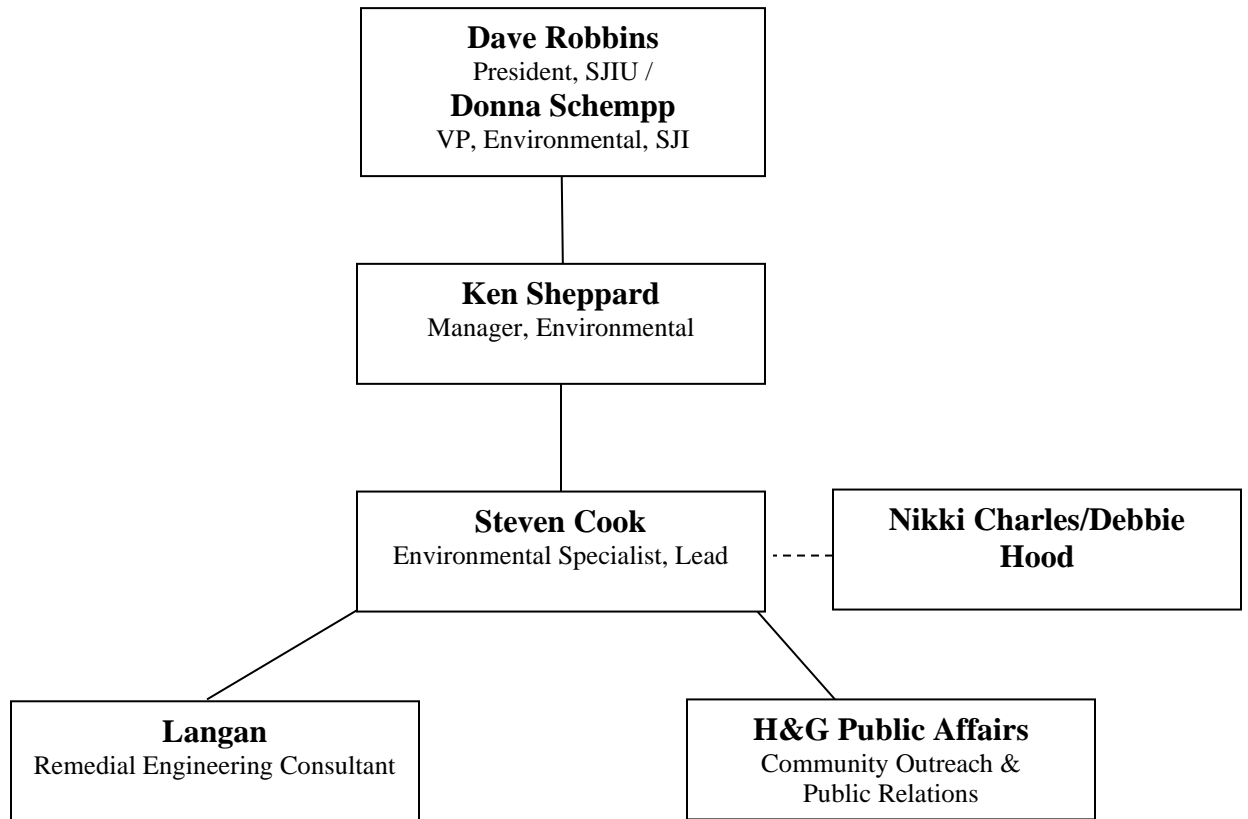
Perth Amboy

The main engineering consultant utilized for the remedial investigation work at the site is Langan Engineering and Environmental Services (Langan). Langan was contracted with South Jersey Industries (SJI). Steven Cook has day to day responsibility for management of ongoing remediation efforts. Langan reports directly to Steven Cook, SJI/ETG Environmental Specialist, Lead. Steven Cook reported directly to Ken Sheppard, Manager, Environmental. Ken Sheppard reported to Donna Schempp, VP Environmental for SJI and subsequently to Dave Robbins, President of SJI Utilities, Inc.

H&G Public Affairs, LLC provides community outreach and public relations services regarding the site. H&G was contracted SJI and reports directly to Steven Cook who reported through the SJI organization as described above.

Nikki Charles and Debbie Hood of SJI provided accounts payable services.

Perth Amboy



MFR-6 **Provide a detailed narrative describing Company activities and any reimbursements related to insurance claims or potentially responsible parties' liabilities for all of the Company's MGP sites. The narrative, with supporting documentation, should cover the prior RAC period. In addition, the Company should provide a listing of all insurance reimbursements received from each insurance company through the end of the year covered by the filing, but need not disclose any insurance company's identity.**

During the RAC period July 2019 - June 2020, the Company continued its ongoing efforts to keep its insurers periodically informed regarding the status of the MGP sites, pursue claims against insolvent insurers and seek negotiated resolutions with solvent insurers of coverage for the MGP sites.

During the July 2019 - June 2020 RAC period, the Company received multiple settlements that are reflected in the calculation of the RAC rate shown on Schedule TK-1.

MFR-7 Provide copies of any RAC audit reports or related materials prepared by the Board's Audit Staff, FERC, or the Company's internal or external auditors during the previous twelve months. To the degree applicable, please also provide any materials prepared in response to the audits or in compliance with any audit findings.

There have been no RAC audit reports or related materials prepared by the Board's Audit Staff or FERC during the previous twelve months that the Company is aware of. Per the Board's Order dated November 30, 2011 in Docket No. GA10110840, the Company's Internal Audit group conducted an audit of the RAC periods July 1, 2016 through June 30, 2019.

The Company considers the requested information confidential and proprietary. A copy of the audit report dated December 20, 2019 will be provided to parties executing an appropriate confidentiality agreement as confidential attachment MFR-7.1.

MFR-8 **Provide a narrative concerning all material events, whether related to NJDEP mandates or not, which could have an impact on the Company's ultimate MGP remediation liability, with claimed confidential information provided pursuant to a confidentiality agreement. The narrative should encompass all sites, whether or not active remediation efforts on the site are under way.**

NJDEP Ecological investigation requirements may result in additional remedial investigation activities regarding the adjacent Elizabeth River.

Additional MGP impacts were identified adjacent to the Erie Street MGP which may require third party property access and additional remedial investigation/remedial action.

MFR-10 Provide the Company's bid evaluation studies, reports, workpapers or other material related to the two largest MGP remediation contracts awarded during the previous RAC period. The response should include the criteria utilized for bid evaluation and the comparisons between the terms and conditions offered by the competitive bidders.

No MGP remediation contracts were awarded during the previous RAC period.

MFR-11 Provide documentation relating to the two largest supplemental contract amendments authorized by the Company during their previous RAC period. The response should provide the contractor's request for supplemental funding, the reasons cited for the request, and the Company's evaluation and action taken concerning the request.

Per the Board Order in Docket No. GR13090839, the Company agrees that as part of its response to MFR-11 the Company will provide affirmative support that unit prices were maintained from the original master agreement for change orders or supplemental contracts that were not subject to competitive bidding or otherwise explain any unit price variations.

The Company considers this information confidential and proprietary. Such information is competitively sensitive in that it would provide potential vendors with information that is normally not made available in negotiations. The requested information will be provided to parties executing an appropriate confidentiality agreement as confidential attachments MFR-11.1 and MFR-11.2.

Confidential attachments MFR-11.1 and MFR-11.2 contain documentation regarding the two largest supplemental contract amendments authorized by the Company during the previous RAC period, including the contractor's request for supplemental funding and the reason for the request.

The Company evaluates all requests for additional funding based on whether the reason for the requested funding was known or should have been known at the time of bidding and contract award. The Company also evaluates requests for additional funding on proposed costs compared to unit costs, if available, reasonableness of the requested costs and whether the need for the requested additional funding was a result of the contractor's action or inaction.

Based on the Company's evaluation, the Company ultimately approved the attached requests for additional funding.

MFR-12 Provide documentation relating to any instances during the previous RAC period where the Company sought to modify, change, or eliminate the NJDEP site remediation requirements for any of its MGP sites. The response should provide copies of any such Company requests, the NJDEP responses, and the ultimate outcome concerning the requests.

There were no instances during the previous RAC year where the Company sought to modify, change or eliminate NJDEP site remediation requirements for any of its MGP sites.

MFR-14 The Company currently provides a schedule that summarizes the expenditures incurred by major cost category by site on a quarterly basis. These data will be reported with its annual filing.

Please see attachment MFR-14.1 for schedules that summarize the expenditures incurred by major cost category by site on a quarterly basis.

**Elizabethtown Gas Company
Manufactured Gas Plant Remediation Program**

**Summary Statement of Site Expenses
Quarterly Report
July 2019 through June 2020**

Line No.	Description	Consulting/ Remediation	Legal	NJDEP Oversight	Natural Resource Damages (NRD)	Other	(1) Total Remediation Expenses	(2) NRD Deferral 100%	(3) Ins. Lit./ Third Party Deferral 50%	(4) Recovery of Prior Deferred Expenses	(5) Third Party Recoveries	Amortizable Recoverable Expenses This Quarter	Year To Date Recoverable Expenses
1	Elizabeth (Erie Street)	\$157,756					\$157,756					\$157,756	\$157,756
2	Elizabeth (South Street)	\$144,903					\$144,903					\$144,903	\$144,903
3	Rahway						\$0					\$0	\$0
4	Perth Amboy	\$37,456					\$37,456					\$37,456	\$37,456
5	Flemington						\$0					\$0	\$0
6	Newton	\$440					\$440					\$440	\$440
7	Renora (Erie Street)						\$0					\$0	\$0
8	Internal					\$20,893	\$20,893					\$20,893	\$20,893
9	Misc.	\$44,923					\$44,923					\$44,923	\$44,923
10	Insurance Litigation/ Third Party Claims						\$0					\$0	\$0
11		\$385,478	\$0	\$0	\$0	\$20,893	\$406,371	\$0	\$0	\$0	\$0	\$406,371	\$406,371

Notes:

- 1 Line 10 - Pursuit of Third Party Claims at 100% of expenses incurred, 50% of which is deferred pending a Third Party recovery.
- 2 100% of Natural Resource Damages deferred pending BPU resolution.
- 3 50% of the expenses incurred in the pursuit of Insurance and/or Third Party Claims.
- 4 Allowable recovery of the deferred expenses incurred in pursuit of Insurance and/or Third Party recoveries.
- 5 Credit of 100% of amounts received from Third Parties.

**Elizabethtown Gas Company
Manufactured Gas Plant Remediation Program**

**Summary Statement of Site Expenses
Quarterly Report
July 2019 through June 2020**

Line No.	Description	Consulting/ Remediation	Legal	NJDEP Oversight	Natural Resource Damages (NRD)	Other	(1) Total Remediation Expenses	(2) NRD Deferral 100%	(3) Ins. Lit./ Third Party Deferral 50%	(4) Recovery of Prior Deferred Expenses	(5) Third Party Recoveries	Amortizable Recoverable Expenses This Quarter	Year To Date Recoverable Expenses
1	Elizabeth (Erie Street)	\$412,543					\$412,543					\$412,543	\$570,299
2	Elizabeth (South Street)	\$4,981					\$4,981					\$4,981	\$149,884
3	Rahway						\$0					\$0	\$0
4	Perth Amboy	\$17,600					\$17,600					\$17,600	\$55,056
5	Flemington						\$0					\$0	\$0
6	Newton	\$3,895					\$3,895					\$3,895	\$4,335
7	Renora (Erie Street)						\$0					\$0	\$0
8	Internal					\$14,896	\$14,896					\$14,896	\$35,789
9	Misc.	\$103,492					\$103,492					\$103,492	\$148,415
10	Insurance Litigation/ Third Party Claims						\$0				(\$7,838)	(\$7,838)	(\$7,838)
11		\$542,511	\$0	\$0	\$0	\$14,896	\$557,407	\$0	\$0	\$0	(\$7,838)	\$549,569	\$955,940

Notes:

- Line 10 - Pursuit of Third Party Claims at 100% of expenses incurred, 50% of which is deferred pending a Third Party recovery.
- 100% of Natural Resource Damages deferred pending BPU resolution.
- 50% of the expenses incurred in the pursuit of Insurance and/or Third Party Claims.
- Allowable recovery of the deferred expenses incurred in pursuit of Insurance and/or Third Party recoveries.
- Credit of 100% of amounts received from Third Parties.

**Elizabethtown Gas Company
Manufactured Gas Plant Remediation Program**

**Summary Statement of Site Expenses
Quarterly Report
July 2019 through June 2020**

Line No.	Description	Consulting/ Remediation	Legal	NJDEP Oversight	Natural Resource Damages (NRD)	Other	(1) Total Remediation Expenses	(2) NRD Deferral 100%	(3) Ins. Lit./ Third Party Deferral 50%	(4) Recovery of Prior Deferred Expenses	(5) Third Party Recoveries	Amortizable Recoverable Expenses This Quarter	Year To Date Recoverable Expenses
1	Elizabeth (Erie Street)	\$157,220					\$157,220					\$157,220	\$727,519
2	Elizabeth (South Street)	\$2,138					\$2,138					\$2,138	\$152,022
3	Rahway						\$0					\$0	\$0
4	Perth Amboy	\$11,200					\$11,200					\$11,200	\$66,256
5	Flemington						\$0					\$0	\$0
6	Newton						\$0					\$0	\$4,335
7	Renora (Erie Street)						\$0					\$0	\$0
8	Internal					\$13,497	\$13,497					\$13,497	\$49,286
9	Misc.	\$37,809					\$37,809					\$37,809	\$186,224
10	Insurance Litigation/ Third Party Claims		\$413,380				\$413,380		(\$206,690)	\$205,059	(\$6,807,500)	(\$6,395,751)	(\$6,403,589)
11		\$208,367	\$413,380	\$0	\$0	\$13,497	\$635,244	\$0	(\$206,690)	\$205,059	(\$6,807,500)	(\$6,173,887)	(\$5,217,947)

Notes:

- 1 Line 10 - Pursuit of Third Party Claims at 100% of expenses incurred, 50% of which is deferred pending a Third Party recovery.
- 2 100% of Natural Resource Damages deferred pending BPU resolution.
- 3 50% of the expenses incurred in the pursuit of Insurance and/or Third Party Claims.
- 4 Allowable recovery of the deferred expenses incurred in pursuit of Insurance and/or Third Party recoveries.
- 5 Credit of 100% of amounts received from Third Parties.

**Elizabethtown Gas Company
Manufactured Gas Plant Remediation Program**

**Summary Statement of Site Expenses
Quarterly Report
July 2019 through June 2020**

Line No.	Description	Consulting/ Remediation	Legal	NJDEP Oversight	Natural Resource Damages (NRD)	Other	(1) Total Remediation Expenses	(2) NRD Deferral 100%	(3) Ins. Lit./ Third Party Deferral 50%	(4) Recovery of Prior Deferred Expenses	(5) Third Party Recoveries	Amortizable Recoverable Expenses This Quarter	Year To Date Recoverable Expenses
1	Elizabeth (Erie Street)	\$429,529					\$429,529					\$429,529	\$1,157,048
2	Elizabeth (South Street)	\$1,627					\$1,627					\$1,627	\$153,649
3	Rahway						\$0					\$0	\$0
4	Perth Amboy	\$92,053					\$92,053					\$92,053	\$158,309
5	Flemington						\$0					\$0	\$0
6	Newton	\$42,455					\$42,455					\$42,455	\$46,790
7	Renora (Erie Street)						\$0					\$0	\$0
8	Internal					\$14,094	\$14,094					\$14,094	\$63,380
9	Misc.	\$74,880				\$266	\$75,146					\$75,146	\$261,370
10	Insurance Litigation/ Third Party Claims		\$26,381				\$26,381		(\$13,191)			\$13,191	(\$6,390,399)
11		\$640,544	\$26,381	\$0	\$0	\$14,360	\$681,285	\$0	(\$13,191)	\$0	\$0	\$668,095	(\$4,549,853)

Notes:

- 1 Line 10 - Pursuit of Third Party Claims at 100% of expenses incurred, 50% of which is deferred pending a Third Party recovery.
- 2 100% of Natural Resource Damages deferred pending BPU resolution.
- 3 50% of the expenses incurred in the pursuit of Insurance and/or Third Party Claims.
- 4 Allowable recovery of the deferred expenses incurred in pursuit of Insurance and/or Third Party recoveries.
- 5 Credit of 100% of amounts received from Third Parties.

Elizabethtown Gas Company
Manufactured Gas Plant Remediation Program

Summary Statement of Site Expenses
Annual Report
July 1, 2019 through June 30, 2020

Line No.	Description	Consulting/ Remediation	Legal	NJDEP Oversight	Natural Resource Damages (NRD)	Other	(1) Total Remediation Expenses	(2) NRD Deferral 100%	(3) Ins. Lit/ Third Party Deferral 50%	(4) Recovery of Prior Deferred Expenses	(5) Third Party Recoveries	Net Remediation Cost This Period
1	Elizabeth (Erie Street)	\$1,157,048					\$1,157,048					\$1,157,048
2	Elizabeth (South Street)	\$153,649					\$153,649					\$153,649
3	Rahway						\$0					\$0
4	Perth Amboy	\$158,309					\$158,309					\$158,309
5	Flemington						\$0					\$0
6	Newton	\$46,790					\$46,790					\$46,790
7	Renora (Erie Street)						\$0					\$0
8	Internal					\$63,380	\$63,380					\$63,380
9	Misc.	\$261,104				\$266	\$261,370					\$261,370
10	Insurance Litigation/ Third Party Claims		\$439,761				\$439,761		(\$219,881)	\$205,059	(\$6,815,338)	(\$6,390,399)
11		\$1,776,900	\$439,761	\$0	\$0	\$63,646	\$2,280,307	\$0	(\$219,881)	\$205,059	(\$6,815,338)	(\$4,549,853)

Notes:

- 1 Line 10 - Pursuit of Third Party Claims at 100% of expenses incurred, 50% of which is deferred pending a Third Party recovery.
- 2 100% of Natural Resource Damages deferred pending BPU resolution.
- 3 50% of the expenses incurred in the pursuit of Insurance and/or Third Party Claims.
- 4 Allowable recovery of the deferred expenses incurred in pursuit of Insurance and/or Third Party recoveries.
- 5 Credit of 100% of amounts received from Third Parties.

MFR-15 For each of the Company's MGP sites, provide a schedule showing the status of the remediation effort and estimated dates for the completion of remaining milestones, along with a discussion of major remediation problems. The parties understand that the timeframes to complete the remediation efforts are subject to a great deal of uncertainty due to factors beyond the Company's control.

The following provides the current status of remedial activities at each of the Company's MGP sites, an estimated schedule for completion of remaining milestones and a discussion of major remediation problems. Please note that the estimated time frames are subject to a great deal of uncertainty due to factors beyond the Company's control.

Erie Street

- The Company has completed a pre-design investigation in support of the remediation of remaining on-site Areas of Concern ("AOCs").
- The Company will perform pre-design investigation of off site AOCs while implementing on-site AOC remedial action within Area D.
- The Company is currently assessing remedial alternatives and permitting for remaining on-site AOCs including Areas C, E and F.
- Upon selection of remedial alternatives for remaining on-site AOCs, the Company will proceed with a remedial design and permitting to support the implementation of the remedial alternatives. An estimated date for the field work to begin is fourth quarter of 2020.
- Off-site AOCs including the former Bilkay's property, South Second Street, Third Avenue, 236 Erie Street and the Elizabeth River will be addressed while on-site AOCs are undergoing remediation.
- Groundwater remediation will likely be a long-term process and include a pump and treat scenario.

Major remediation problems at Erie Street include offsite impacts in two city streets and four offsite properties. The site's proximity to residential properties

and the fact that the site continues to be an important operational facility to the Company may also complicate remedial activities.

South Street

- A groundwater pre-design investigation to address site groundwater has been completed except for an area of NJDOT property.
- The Company has obtained access to the NJDOT property and will complete a pre-design investigation to address groundwater during the first quarter of 2021 RAC year.
- The Company estimates that a long-term groundwater remedy, likely including a pump and treat scenario, will be in place by 2021.

Major remediation problems include MGP related non-aqueous phase liquids (“NAPL”) within bedrock fractures beneath the location of the former large gas holder, the inability to excavate within the NJDOT right of way (“ROW”) beneath the elevated highway, gaining access to City of Elizabeth and NJDOT property, and negotiations concerning a deed notice with the City of Elizabeth.

Perth Amboy

- The Company completed a remedial investigation/action on Perth Amboy owned Sadowski Parkway and Sadowski Park.
- The Company anticipates a monitoring and natural attenuation groundwater remedy.

Flemington

- The Company and JCP&L completed the remediation of the onsite and offsite soils and offsite wetlands and stream sediment.
- The Company is currently performing quarterly monitoring of groundwater to support a monitoring and natural attenuation groundwater remedy.
- The Company and JCP&L are currently completing administrative requirements to close out the site, including the issuance of a Remedial Action Report (“RAR”), a Remedial Action Permit (“RAP”), deed notices for engineering controls and a Response Action Outcome (“RAO”).
- The Company and JCP&L continue with wetlands restoration and monitoring.

No major concerns for closing out the site are expected at this time.

Newton

- Remediation of MGP source areas on the property and extending offsite is being evaluated. A remedial action addressing on-site impacts will be implemented during the 2021 RAC period.
- The Company and JCP&L completed a pre-design investigation to address offsite MGP impacts that have migrated off site to a third party owned property and will address these concerns based on further evaluation of results obtained.
- The Company and JCP&L remediated a portion of adjacent third party owned property.
- The Company will implement a long-term groundwater remedy which includes a pump and treat scenario upon approval of the RAR.

Potential remedial problems include off site impacts in bedrock that will require deed restrictions on third party owned property and potential site access issues when on site remedial actions are conducted near the site entrance point.

MFR-16 Provide an update concerning the status of discussions with the NJDEP concerning its NRD initiative as well as any other NRD-related activities, with claimed confidential information provided pursuant to a confidentiality agreement. Such update will include information about NRD-related expenditures during the prior RAC period and related documentation, as well as total NRD-related expenses deferred to date.

The Company has not had any discussions with the NJDEP concerning natural resources damages (“NRD”) issues during the prior RAC period. The Company has not incurred any NRD-related costs -- defined as compensation to the State of New Jersey for injury to its natural resources -- above and beyond costs incurred to investigate, contain or remediate former manufactured gas plant sites. NRD-related costs also include any administrative, legal or consulting costs incurred by the Company associated with NRD claims being investigated by the New Jersey Department of Environmental Protection, as well as any amounts paid by the Company to resolve such claims.

The Company has not deferred any NRD-related expenses to date as none were incurred.

MFR-17 **Provide information about unreasonable delays in remediation efforts caused by the inability to obtain requisite approvals, clearances or other rights from the NJDEP, local authorities or property owners, or other circumstances that are unduly impeding remediation efforts. The Company will address issues that are outside of the ordinary experience for these matters.**

Per the Board Order in Docket No. GR13090839, the Company agrees that as part of its response to MFR-17, the Company will provide a detailed explanation of the causes of any variances between budgeted and actual expenditures in the RAC period at issue in the filing.

Negotiations for access with the City of Elizabeth and NJDOT caused delays in addressing groundwater at the South Street site.

Delays in site access caused discrepancies between budgeted and actual expenditures based on timing as budgeted expenses for remedial action in the RAC period were not incurred during the RAC period.

MFR-18 **Provide details concerning all remediation related charges to the Company from or through the Company's parent, SJI Utilities, and its affiliates for the past RAC period. The response should show amounts by month, by entity, and should describe the nature of services provided.**

There were no charges to the Company from or through SJI and its affiliates for the past RAC period, July 2019 through June 2020.