ARCADIS Design & Consultancy for natural and built assets

Ms. Kiera Thompson
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Subject:
NYSEG – Lyons Former MGP Site, Lyons, New York
NYSDEC Site No. 859020
Supplemental Pre-Design Investigation Summary

ENVIRONMENT

Dear Ms. Thompson:

Date:
April 16, 2019

Contact:
Jason Brien, P.E.

Phone:
315.671.9114

Email:
jason.brien@arcadis.com

Our ref:
B0013143.0000 #10

This letter summarizes the supplemental pre-design investigation (PDI) activities completed at the New York State Electric and Gas (NYSEG) Lyons Former Manufactured Gas Plant (MGP) Site (the site) located in Lyons, New York (Figure 1). Arcadis of New York, Inc. (Arcadis) conducted the Supplemental PDI activities in accordance with the following.

- The New York State Department of Environmental Conservation- (NYSDEC-) approved Remedial Design Work Plan (RDWP; Arcadis 2018)
- The PDI Summary letter (Arcadis, August 2018).
- December 13, 2018 e-mail correspondence from Arcadis.

A summary of the initial PDI activities and results is presented below followed by a summary of the supplemental PDI activities and results.

INITIAL PRE-DESIGN INVESTIGATION

Arcadis completed the initial PDI activities from May 10 through May 22, 2018. Initial PDI activities consisted of the following:

- Evaluating the nature and extent of utilities at the site.
- Collecting a total of nine surface soil samples for laboratory analysis of polycyclic aromatic hydrocarbons (PAHs) to delineate the limits of surface soil with PAHs exceeding commercial use soil cleanup objectives (SCOs) presented in Title 6 of the New York Code of Rules and Regulations (NYCRR) Part 375-6 (NYSDEC 2006).
- Completing a total of 21 soil borings (SB-100 through SB-120, as shown on Figure 2) to delineate the extent of remedial limits, evaluate pre-in-situ soil solidification (ISS) excavation soil handling requirements, and obtain soil for the bench-scale treatability study. Subsurface soil samples were submitted for laboratory analysis of PAHs, mercury, geotechnical parameters, and/or waste characterization parameters.

The initial PDI activities were successful in meeting the following initial PDI objectives:

- Delineating surface soil containing PAHs at concentrations exceeding commercial-use SCOs
- Confirming that residual mercury appears to have been addressed during the limited soil removal conducted during the Remedial Investigation activities
- Obtaining sufficient grossly impacted soil volume to facilitate a bench scale treatability study

Additional PDI activities were required to further delineate the extent of subsurface soil at depths to 15 feet bgs containing total PAHs at concentrations exceeding 500 parts per million (ppm). Supplemental PDI activities were implemented as described in the sections below. A complete summary of the initial PDI is included in the August 28, 2018 PDI summary letter included on the attached DVD.

SUPPLEMENTAL PRE-DESIGN INVESTIGATION

Arcadis completed soil borings at 12 locations (SB-121 through SB-132, as shown on Figure 2) from November 19 through 21, 2018 and on December 18 and 19, 2018 using direct push technology (DPT) drilling techniques.

Prior to drilling, Arcadis removed soil from each boring location to a depth of approximately 5 feet below ground surface (bgs) using air knife/vacuum/manual excavation as an additional measure to identify/avoid subsurface utilities/obstructions.

Soil samples were collected continuously using 5-foot long, 2-inch-diameter macro-core sampling devices. Arcadis' field geologist visually characterized each sample for soil type, texture, moisture content, compactness, plasticity, and the presence/absence of impacts (e.g., non-aqueous phase liquid [NAPL]). The field geologist also screened representative samples from each sampling interval for the presence of volatile organic vapors using a photoionization detector (PID).

Arcadis collected and submitted at least one soil sample from each soil boring for laboratory analysis for PAHs to further delineate the extent of remedial limits. A sampling summary presenting the location and depth of each soil sample submitted for laboratory analysis is included as Table 1. As presented in Table 1, two samples were collected from soil boring SB-129 (5 to 6.9 feet below ground surface [bgs] and 6.9 to 8.9 feet bgs) to evaluate the depth of impacted material. The sample collected from 6.9 to 8.9 feet bgs was archived for potential future analysis based on the results of the shallower interval.

Conditions encountered in the soil borings drilled as part of the supplemental PDI are summarized on the soil boring logs included on the attached compact disc (CD). Key observations made from review of these data and information are presented in Table 2. No "grossly contaminated media" as defined in Section 1.3(b) of DER-10 was encountered in soil samples recovered from the supplemental PDI soil borings.

The subsurface soil delineation analytical results presented in Table 3 are compared to the commercial use SCOs. As indicated above, two soil samples were collected and submitted from soil boring SB-129 for potential laboratory analysis. Total PAHs results for SB-129 (5-6.9) were less than 500 ppm, indicating the depth of impacted material at SB-129 was delineated and therefore, the archived sample was not analyzed.

Subsurface soil samples with total PAHs greater than 500 ppm were identified at two soil borings (SB-124 and SB-125) completed during November 2018, which required drilling three additional step-out soil borings (SB-130, SB-131, and SB-132) in December 2018 to further delineate PAHs. Total PAHs

detected in soil samples collected at each of the three step-out locations were less than 500 ppm. Subsurface soil laboratory analytical data reports, geotechnical laboratory reports, and data usability summary reports are included on the attached CD.

Investigation-derived waste (IDW) generated during the supplemental PDI was containerized onsite in Department of Transportation- (DOT-) approved 55-gallon steel drums (2 total). NYSEG's waste disposal vendor (Clean Harbors, Inc.) transported the IDW for offsite treatment/disposal. Disposal documentation is included on the attached CD.

CONCLUSION

The objectives of the supplemental PDI were achieved by the field activities described in this letter. The horizontal and vertical limits for full-scale ISS implementation at the site have been sufficiently delineated to prepare the Remedial Design (RD).

The revised remedial limits are shown on Figure 3 and include the following:

- A 10-foot offset distance from natural gas mains as required by NYSEG's gas department for subsurface construction activities. The required set-back distance and geotechnical monitoring (vibration and settlement monitoring) are necessary to prevent damage to the natural gas mains and onsite natural gas regulator station.
- A 10-foot offset distance from the overhead utilities along Geneva Street, in accordance with the minimum approach distance for "exposed energized circuits for unqualified persons" as set forth in Occupational Safety and Health Act (OSHA) 29 Code of Federal Regulations (CFR) 1910.333(c)(3)(i)(A).

The utility offsets identified above will result in untreated MGP-impacted material that may exceed the remedial cleanup objectives presented in NYSDEC's March 2015 Record of Decision remaining in subsurface soil at the following locations:

- a narrow corridor beneath the natural gas mains aligned east-west from Geneva Street to the onsite natural gas regulator station;
- a small area along Geneva Street that is contiguous to Operable Unit 3 (i.e., which is located beneath Geneva Street and within the utility corridor).

Onsite areas where impacts are anticipated to remain onsite following the remedial activities are shown on Figure 3.

NYSEG proposes to address the remaining impacts in the future by additional investigation and remediation (if necessary) if future construction requires relocation or replacement of the natural gas mains/overhead utilities or excavation within Geneva Street. The proposed remedy is compliant with Section 7 of the Record of Decision, which indicates a site management plan will include "*provision for further investigation and remediation if MGP-related contamination is encountered in the subsurface beneath the road or within the utility corridor. The nature and extent of contamination in areas where access was previously limited or unavailable will be thoroughly investigated in a timely manner pursuant to a plan approved by the Department.*"

The remedial limits will be further described in the RD, which Arcadis is currently preparing. Arcadis proposes to prepare the RD on an expedited schedule that is anticipated to include an NYSDEC-approved Final RD for contractor bidding in late Summer/early Fall 2019. Based on a review of the PDI

results, Arcadis anticipates that the expedited schedule can be achieved, as the RD will require fewer major components (e.g., excavation bracing, temporary groundwater treatment system) than typical designs and proposes to prepare a 95% (Pre-Final) RD as the initial submittal to the NYSDEC.

Please do not hesitate to call me at (315) 671-9114 if you have any questions or require additional information.

Sincerely,

Arcadis of New York, Inc.

Jason D. Brien, PE
Principal Engineer

Copies:
Jeremy Wolf, RGE
Matt Hysell, P.E., Arcadis

Enclosures:

Tables

1 Sampling and Laboratory Analyses Summary
2 Subsurface Soil Visual Characterization
3 Subsurface Soil Analytical Results (ppm)

Figures

1 Site Location Map
2 PDI Soil Sampling Locations and Distribution of PAHs and NAPL in Soil
3 Proposed Remedial Limits

Electronic Attachments (on CD)

1 August 28, 2018 PDI Summary Letter
2 Analytical Laboratory Reports
3 Data Validation Reports
4 Soil Boring Logs
5 Fisher Site Survey
6 Clean Harbors Waste Disposal Documents

TABLES

Table 1
Sampling and Laboratory/Geotechnical Analyses Summary

NYSEG
Lyons Former MGP Site
Lyons, New York

Sample ID	Depth (ft bgs)	Date Collected	Analytical	
			PAHs	Archive
Subsurface Soil				
SB-121	6-8	11/20/2018	X	
SB-122	13-15	11/20/2018	X	
SB-123	0.5-2	11/19/2018	X	
SB-124	5.6-7.6	11/20/2018	X	
SB-125	7-9	11/21/2018	X	
SB-126	3-5	11/21/2018	X	
SB-127	3-5	11/21/2018	X	
DUP-112118 [SB-127]	3-5	11/21/2018	X	
SB-128	7-9	11/20/2018	X	
SB-129	5-6.9	11/20/2018	X	
	6.9-8.9	11/20/2018		X
SB-130	5-7	12/19/2018	X	
SB-131	6-8	12/19/2018	X	
SB-132	5.2-7.2	12/19/2018	X	
DUP-121918 [SB-132]	5.2-7.2	12/19/2018	X	

Notes:
1. Samples were collected by Arcadis.
2. Duplicate samples are identified in brackets [ ].
3. Laboratory analysis was performed by SGS Laboratories of Dayton, New Jersey for analysis of of Polycyclic Aromatic Hydrocarbons (PAHs) using USEPA SW-846 Method 8270D.
4. An **X** indicates analysis was conducted or the sample was archived.

Table 2
Subsurface Soil Visual Characterization

NYSEG
Lyons Former MGP Site
Lyons, New York

Sample ID/ Depth Interval (feet bgs)	Sample Description	Grossly Impacted Material
SB-121		
4-5	Trace coal	- -
5-7.5	Little Anthropogenic material (glass, red brick, coal, cinder, slag)	- -
8.2-8.4	Coal fragments	- -
SB-122		
5-9	Little Anthropogenic material (red brick, slag, coal)	- -
13-15	Mild discoloration, very faint tar-like odor between 13.9 and 14.6 feet bgs	- -
SB-123		
- -	- -	- -
SB-124		
5.5-7	Very faint tar-like odor	- -
7-9	Cinder, very faint tar-like odor	- -
9-10	Very faint tar-like odor	- -
10-12	Cinder	- -
SB-125		
6.25-11	Anthropogenic material (glass, coal, red brick, wood)	- -
SB-126		
3-5	Some Anthropogenic material (slag, coal, cinder, red brick)	- -
SB-127		
3-5	Trace antrhopogenic material (coal, slag, cinder)	- -
SB-128		
- -	- -	- -
SB-129		
4-5	Little coal	- -
5-7	Little some slag, cinder	- -
SB-130		
1-5	Little to some Anthropogenic material (red brick, slag, asphalt, coal, concrete)	- -
SB-131		
1-5	Little to some Anthropogenic material (red brick, slag, coal, asphalt, concrete)	- -
5-9	Little Anthropogenic material (slag, cinder, red brick)	- -
14	Slight organic-like odor	- -
SB-132		
1-5	Little Anthropogenic materia (red brick, slag, coal, concrete)	- -
5-9	Little to some Anthropogenic material (slag, cinder, red brick, coal), fain cinder-like odor	- -

Note:
1. bgs = below ground surface.

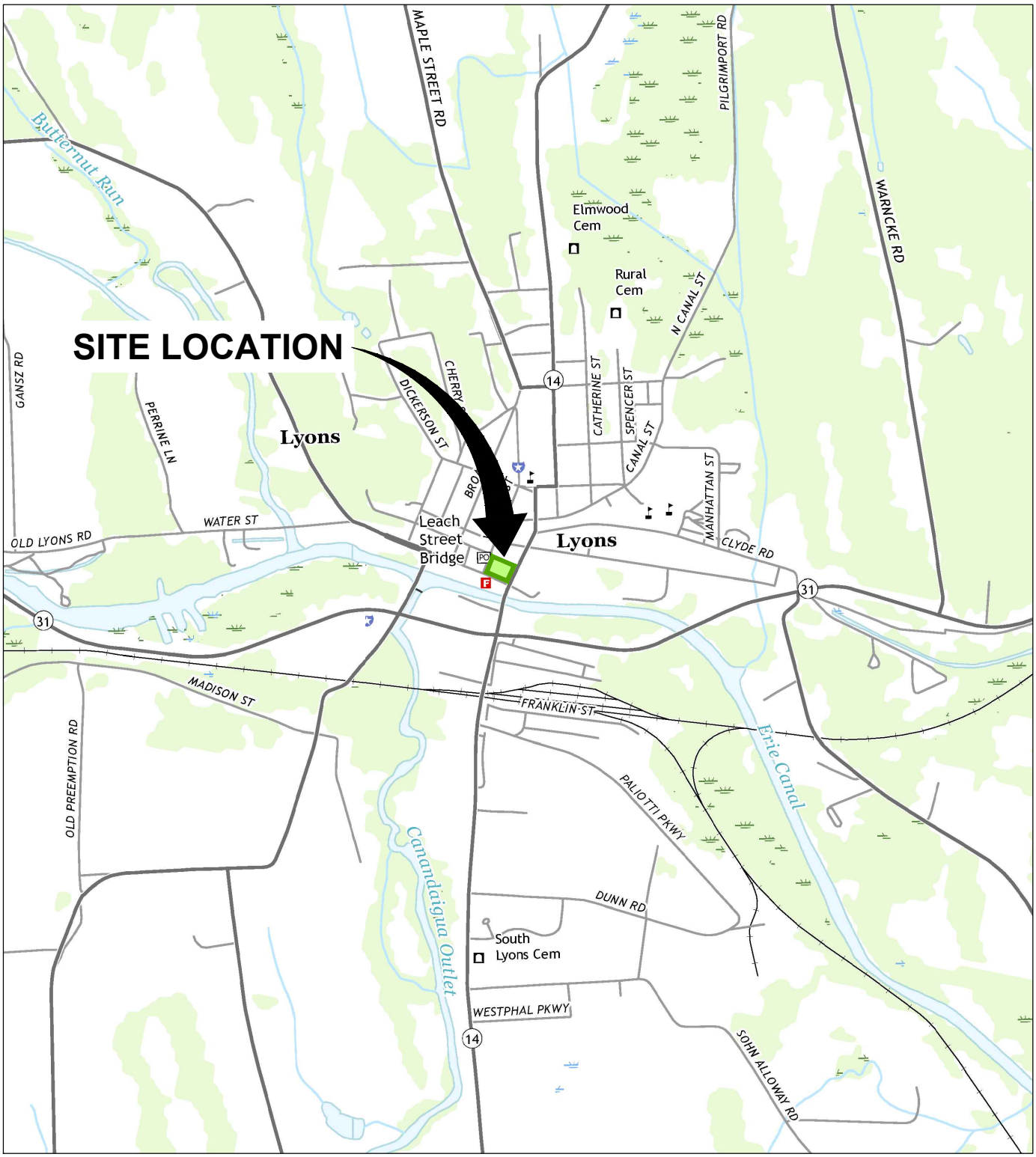
Table 3
Subsurface Soil Analytical Results (ppm)

NYSEG
Lyons Former MGP Site
Lyons, New York

Location ID: Sample Depth(feet): Date Collected:	Restricted Use SCOs Commercial	SB-121 6 - 8 11/20/18	SB-122 13 - 15 11/20/18	SB-123 0.5 - 2 11/19/18	SB-124 5.6 - 7.6 11/20/18	SB-125 7 - 9 11/21/18	SB-126 3 - 5 11/21/18	SB-127 3 - 5 11/21/18	SB-128 7 - 9 11/20/18	SB-129 5 - 6.9 11/20/18	SB-130 5 - 7 12/19/18	SB-131 6 - 8 12/19/18	SB-132 5.2 - 7.2 12/19/18
Detected Semivolatile Organics													
2-Methylnaphthalene	- -	0.0675	13.2 D	<0.035	53.2	270	1.44	0.526 J [0.238 J]	<0.042	0.968	0.0096 J	0.0544	0.685 [0.414]
Acenaphthene	500	0.0381 J	2.66	<0.035	8.66	55.5	1.29	0.399 [0.331]	<0.042	1.06	0.0175 J	0.0367 J	0.232 [0.138]
Acenaphthylene	500	0.239	1.49	<0.035	78.8 D	288 D	2.08	0.805 J [0.411 J]	<0.042	2.18	<0.04	0.0538	0.947 [0.895]
Anthracene	500	0.302	22.9 D	<0.035	107 D	531 D	13.1	2.82 J [1.61 J]	<0.042	9.7	0.0566	0.145	1.92 [1.29]
Benzo(a)anthracene	5.6	2.22	20.3 D	<0.035 J	273 D	1,010 D	44.1 D	10.2 DJ [5.1 J]	0.0188 J	36.9 D	0.1	0.671	12.6 D [15.8 D]
Benzo(a)pyrene	1	2.85	13.9 DJ	<0.035	201 D	867 D	44 D	10.1 DJ [5.61 J]	<0.042	39.4 D	0.084	0.817	16.8 D [22.4 D]
Benzo(b)fluoranthene	5.6	3.19	14.1 DJ	<0.035	236 D	966 D	45.2 D	10.1 DJ [5.42 J]	<0.042	38.4 D	0.0968	0.927	18.1 D [26.5 D]
Benzo(g,h,i)perylene	500	1.86	4.43	<0.035	50.2	449 D	20.8	5.54 [3.6]	<0.042	18.8	0.042	0.496	10.4 D [12.3 D]
Benzo(k)fluoranthene	56	1.15	4.04	<0.035	51.9	370 D	12.8	3.38 [2.19]	<0.042	11.5	0.0392 J	0.413	5.61 [8.48]
Chrysene	56	2.1	14.5 D	<0.035 J	218 D	847 D	37.8 D	7.22 J [4.18 J]	<0.042	30.2 D	0.101	0.7	11.5 D [14.7 D]
Dibenzo(a,h)anthracene	0.56	0.348	1.57	<0.035	22.6	183	7.94	2.02 J [1.14 J]	<0.042	6.47	<0.04	0.138	4.51 [5.89]
Fluoranthene	500	2.63	38 D	<0.035	440 DJ	1,210 DJ	56.8 DJ	11.5 DJ [6.67 J]	0.02 J	49.9 DJ	0.194	0.808	6.93 [8.3]
Fluorene	500	0.0652	17.6 D	<0.035	24.9	293 D	3	0.596 [0.435]	<0.042	2.31	0.0222 J	0.0434	0.338 [0.154]
Indeno(1,2,3-cd)pyrene	5.6	1.81	5.01	<0.035	49.1	431 D	19.6	5 [3.19]	<0.042	17.2	0.0727 J	0.518 J	10.8 DJ [14 DJ]
Naphthalene	500	0.128	51.2 D	<0.035	10.4	323 D	1.75	0.516 J [0.279 J]	<0.042	2.03	<0.04	0.0968	2.48 J [1.38 J]
Phenanthrene	500	1.29	69.7 D	<0.035	328 D	1,520 D	36.5 D	6.63 J [3.89 J]	0.0182 J	23.5 D	0.219	0.508	4.6 [3.31]
Pyrene	500	2.97	30.6 D	<0.035 J	385 D	1,400 D	49.3 D	16.5 DJ [6.52 J]	0.0174 J	39.5 D	0.197	0.948	13 D [15.3 D]
Total PAHs	- -	23.1903 J	312 J	ND	2,484.56 J	10,743.5 J	396.06 J	93.326 J [50.576 J]	0.0744 J	329.05 J	1.242 J	7.3197 J	120.767 J [150.837 J]

Notes:
1. Samples were collected by Arcadis on the dates indicated.
2. Duplicate samples are identified in brackets [ ].
3. PAHs = polycyclic aromatic hydrocarbons.
4. Samples were analyzed by SGS Laboratories (SGS) located in Dayton, New Jersey for PAHs using United States Environmental Protection Agency (USEPA) SW-846 Method 8270D.
5. Concentrations reported milligrams per kilogram (mg/kg), which is equivalent to parts per million (ppm).
6. Data qualifiers are defined as follows:
   - < - Constituent not detected at a concentration above the reported detection limit.
   - D - Concentration is based on a diluted sample analysis.
   - J - Indicates that the associated numerical value is an estimated concentration.
7. 6 NYCRR Part 375 Soil Cleanup Objectives (SCOs) are from Title 6 of the Official Compilation of Codes, Rules, and Regulations of the State of New York (6 NYCRR) Part 375-6.8(a) and (b), effective December 14,2006.
8. Shading indicates that the result exceeds the 6 NYCRR Part 375 Commercial Use SCO.
9. ND = not detected.
10. Results have been validated.
11. - - = No 6 NYCRR Part 375 SCO listed.

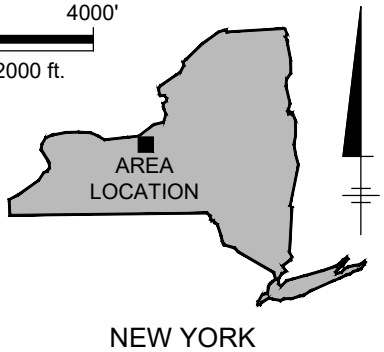
FIGURES



REFERENCE: BASE MAP USGS 7.5. MIN. TOPO. QUAD., LYONS & NEWARK, NY, 2016.

0 2000' 4000'

Approximate Scale: 1 in. = 2000 ft.



NYSEG
LYONS FORMER MANUFACTURED GAS PLANT SITE
LYONS, NEW YORK

SITE LOCATION MAP

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FIGURE 1

LEGEND:

- SUPPLEMENTAL PDI SOIL BORING LOCATION
- PDI SOIL BORING LOCATION
- PDI SURFACE SOIL SAMPLING LOCATION
- CATCH BASIN
- LIGHT POLE
- UTILITY POLE
- FORMER MGP STRUCTURES
- MONITORING WELL LOCATION
- SOIL BORING LOCATION
- SURFACE SOIL SAMPLE LOCATION
- TEST PIT LOCATION
- SOIL BORING WITH TAR-LIKE MATERIAL
- SOIL BORING WITH TRACE OIL-LIKE MATERIAL
- SURFACE SOIL SAMPLE EXCEEDING COMMERCIAL USE SCOs
- TOTAL PAH SOIL ANALYTICAL RESULT >500 ppm (SAMPLE <15 FEET BGS)
- PROPOSED EXCAVATION/ISS LIMITS (RECORD OF DECISION)
- PROPOSED SURFACE SOIL REMOVAL LIMITS (RECORD OF DECISION)

NOTES:

1. ALL LOCATIONS ARE APPROXIMATE.
2. BASE MAP REFERENCE: "CURRENT AND HISTORICAL FEATURES AND UTILITIES" BY GEI CONSULTANTS; DATED OCTOBER 2013. SOIL BORING LOCATIONS BY FISHER ASSOCIATES; DATED MAY 8, 2018.
3. THE LOCATION OF SOIL BORING SB-117 IS BASED ON FIELD MEASUREMENTS.

0 50' 100'

GRAPHIC SCALE

NYSEG
LYONS FORMER MANUFACTURED GAS PLANT SITE
LYONS, NEW YORK

PDI SOIL SAMPLING LOCATIONS AND DISTRIBUTION OF PAHs AND NAPL IN SOIL

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FIGURE 2

CITY: SYRACUSE NY DIV/GROUP: ENVCAD DB: R. ALLEN, E. KRAHMER PIC: J. BRIEN PM: J. GOLUBSKI TM: M. HYSELL TR: J. SINAY LYR: ON=*;OFF=REF_(FRZ)
C:\BIM\OneDrive - ARCADIS\BIM 360 Docs\ANA-IBERDROLA USA\NYSEG Lyons Former MGP Site\2019\B0013143.000001-DWG\13143_Fig2_PDI SB Locs-PAHs-NAPL.dwg LAYOUT: 2 SAVED: 4/15/2019 12:54 PM ACADVER: 23.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB
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LEGEND:

- SUPPLEMENTAL PDI SOIL BORING LOCATION
- PDI SOIL BORING LOCATION
- PDI SURFACE SOIL SAMPLING LOCATION
- CATCH BASIN
- LIGHT POLE
- UTILITY POLE
- FORMER MGP STRUCTURES
- MONITORING WELL LOCATION
- SOIL BORING LOCATION
- SURFACE SOIL SAMPLE LOCATION
- TEST PIT LOCATION
- SOIL BORING WITH TAR-LIKE MATERIAL FOLLOWING REMEDIAL ACTIVITIES
- SOIL BORING WITH TRACE OIL-LIKE MATERIAL FOLLOWING REMEDIAL ACTIVITIES
- TOTAL PAH SOIL ANALYTICAL RESULT >500 PPM (SAMPLE <15 FEET BGS)FOLLOWING REMEDIAL ACTIVITIES
- INVESTIGATION LOCATION MEETING THE REMEDIATION CLEANUP OBJECTIVES
- PROPOSED ISS LIMITS
- PROPOSED EXCAVATION LIMITS
- UTILITY CORRIDORS POTENTIALLY CONTAINING UNTREATED MATERIALS EXCEEDING REMEDIAL OBJECTIVES FOLLOWING COMPLETION OF REMEDIAL CONSTRUCTION
- (4') PROPOSED ISS/EXCAVATION DEPTHS (FEET BELOW GROUND SURFACE)

NOTES:

1. ALL LOCATIONS ARE APPROXIMATE.
2. BASE MAP REFERENCE: "CURRENT AND HISTORICAL FEATURES AND UTILITIES" BY GEI CONSULTANTS; DATED OCTOBER 2013. SOIL BORING LOCATIONS BY FISHER ASSOCIATES; DATED MAY 8, 2018.
3. THE LOCATION OF SOIL BORING SB-117 IS BASED ON FIELD MEASUREMENTS.

0 50' 100'

GRAPHIC SCALE

NYSEG
LYONS FORMER MANUFACTURED GAS PLANT SITE
LYONS, NEW YORK

PROPOSED REMEDIAL LIMITS

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FIGURE 3

CITY: SYRACUSE NY DW/GROUP: ENVCAD DB: R. ALLEN, E. KRAHMER PIC: J. BRIEN PM: J. GOLUBSKI TM: M. HYSELL TR: J. SINAY LYR: ON=*;OFF=REF; (FRZ)
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