PROPOSED REMEDIAL ACTION PLAN

NYSEG - Auburn Green St. MGP
Manufactured Gas Plant Program
Auburn, Cayuga County
Site No. 706009
February 2020

Prepared by
Division of Environmental Remediation
New York State Department of Environmental Conservation

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SECTION 1: SUMMARY AND PURPOSE OF THE PROPOSED PLAN

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), is proposing a remedy for the above referenced site. The disposal of hazardous wastes at the site has resulted in threats to public health and the environment that would be addressed by the remedy proposed by this Proposed Remedial Action Plan (PRAP). The disposal of hazardous wastes at this site, as more fully described in Section 6 of this document, has contaminated various environmental media. The proposed remedy is intended to attain the remedial action objectives identified for this site for the protection of public health and the environment. This PRAP identifies the preferred remedy, summarizes the other alternatives considered, and discusses the reasons for the preferred remedy.

The New York State Manufactured Gas Plant Program (also known as the MGP Program) is an enforcement program, the mission of which is to identify and characterize suspected inactive hazardous waste disposal sites and to investigate and remediate those sites found to pose a significant threat to public health and environment.

The Department has issued this document in accordance with the requirements of New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York; (6 NYCRR) Part 375. This document is a summary of the information that can be found in the site-related reports and documents in the document repositories identified below.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all PRAPs. This is an opportunity for public participation in the remedy selection process. The public is encouraged to review the reports and documents, which are available at the following repositories:

Seymour Library
176 Genesee Street
Auburn, NY 13021
Phone: (315) 252-2571

DEC Info Locator: https://www.dec.ny.gov/data/DecDocs/706009/

A public comment period has been set from:

2/26/2020 to 3/27/2020

A public meeting is scheduled for the following date:

3/16/2020 at 6:30 pm

Public meeting location:

Memorial City Hall, 24 South Street, Auburn, NY 13021

At the meeting, the findings of the remedial investigation (RI) and the feasibility study (FS) will be presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period will be held, during which verbal or written comments may be submitted on the PRAP.

Written comments may also be sent to:

William Bennett
NYS Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233
william.bennett@dec.ny.gov

The Department may modify the proposed remedy or select another of the alternatives presented in this PRAP based on new information or public comments. Therefore, the public is encouraged to review and comment on the proposed remedy identified herein. Comments will be summarized and addressed in the responsiveness summary section of the Record of Decision (ROD). The ROD is the Department's final selection of the remedy for this site.

Receive Site Citizen Participation Information By Email

Please note that the Department's Division of Environmental Remediation (DER) is "going paperless" relative to citizen participation information. The ultimate goal is to distribute citizen participation information about contaminated sites electronically by way of county email listservs. Information will be distributed for all sites that are being investigated and cleaned up in a particular county under the State Superfund Program, Manufactured Gas Plant Program, Environmental Restoration Program, Brownfield Cleanup Program, Voluntary Cleanup Program, and Resource Conservation and Recovery Act Program. We encourage the public to sign up for one or more county listservs at http://www.dec.ny.gov/chemical/61092.html

SECTION 3: SITE DESCRIPTION AND HISTORY

Location: The NYSEG Auburn Green St. MGP site is a 0.6-acre rectangular shaped area located in a mixed commercial/residential area of the City of Auburn, Cayuga County. The site is bordered by Green Street to the east, Water Street to the north, Hulbert Street to the west, and a parking lot to the south. The site is approximately 500 feet southeast of the NYSEG Auburn McMaster St. MGP site (Site No. 706010).

Site Features: The site is comprised of two adjacent parcels. The southern parcel contains an active electrical substation. The southern parcel also contains a brick building and a small shed. Both of these buildings are not regularly occupied and are used for storage. The southern parcel is secured by a chain-link fence. The northern parcel is vacant and covered with grass and trees. There is no fence surrounding the northern parcel. The foundation and lower walls of a former MGP gas holder is present beneath the surface of the site.

Current Zoning and Land Use: The site is zoned for commercial use (C-2: Central Commercial) by the City of Auburn and is currently a NYSEG electric substation. The substation was constructed in 1950.

Past Use of the Site: The site formerly contained a Manufactured Gas Plant (MGP) distribution holder. This holder received gas generated at the Auburn McMaster MGP and possibly the Clark Street MGP sites for distribution. The 100,000 cubic feet distribution holder was constructed in 1890 and was partially demolished between 1930 and 1941. The site was then used as an auto sales and service shop, and as a portion of an adjacent lumber yard.

Site Geology Hydrology: The site lies on relatively flat terrain approximately 500 feet south of the Owasco Outlet. Site soils consist of a fill layer which generally ranges from 5 to 7 feet in depth underlain by a sandy silt layer which generally ranges from 3 to 8 feet in thickness. Beneath the sandy silt layer is a native silty/clay layer which generally ranges from 3 to 8 feet in thickness. Bedrock was encountered at approximately 20 feet below grade throughout the site.

The overburden groundwater table is present at depths between 5 and 14 feet below grade and groundwater generally flows northeast across the site towards the Owasco Outlet. A monitoring well in the southwest corner of the site had water levels consistently lower than other site wells indicating possible radial groundwater flow from the site. The water level in this well is believed to represent a different water layer with a lower hydraulic head compared to the other site wells and could be indicative of local groundwater mounding near the former MGP gas holder. The foundation and lower walls of the former gas holder are located below grade in the central portion of the site. Within the holder, fill extends to bedrock.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site,

alternatives that restrict the use of the site to commercial use (which allows for industrial use) as described in Part 375-1.8(g) are being evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the investigation to the appropriate standards, criteria and guidance values (SCGs) for the identified land use and the unrestricted use SCGs for the site contaminants is included in the Tables for the media being evaluated in Exhibit A.

SECTION 5: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

The PRPs for the site, documented to date, include:

New York State Electric and Gas (NYSEG)

The NYSDEC and NYSEG entered into a Consent Order on March 30, 1994. The order obligates NYSEG to investigate and, if necessary, remediate 33 former MGP sites in their service area. The Auburn (Green Street) site is one of the sites included in the multi-site order.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

A Remedial Investigation (RI) has been conducted. The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The field activities and findings of the investigation are described in the RI Report.

The following general activities are conducted during an RI:

- Research of historical information,
- Geophysical survey to determine the lateral extent of wastes,
- Test pits, soil borings, and monitoring well installations,
- Sampling of waste, surface and subsurface soils, groundwater, and soil vapor,
- Sampling of surface water and sediment,
- Ecological and Human Health Exposure Assessments.

The analytical data collected on this site includes data for:

- groundwater

- soil

6.1.1: Standards, Criteria, and Guidance (SCGs)

The remedy must conform to promulgated standards and criteria that are directly applicable or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, Criteria and Guidance are hereafter called SCGs.

To determine whether the contaminants identified in various media are present at levels of concern, the data from the RI were compared to media-specific SCGs. The Department has developed SCGs for groundwater, surface water, sediments, and soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. The tables found in Exhibit A list the applicable SCGs in the footnotes. For a full listing of all SCGs see: http://www.dec.ny.gov/regulations/61794.html

6.1.2: RI Results

The data have identified contaminants of concern. A "contaminant of concern" is a hazardous waste that is sufficiently present in frequency and concentration in the environment to require evaluation for remedial action. Not all contaminants identified on the property are contaminants of concern. The nature and extent of contamination and environmental media requiring action are summarized in Exhibit A. Additionally, the RI Report contains a full discussion of the data. The contaminants of concern identified at this site are:

acetone
arsenic
benzene
ethylbenzene
toluene
xylene
styrene
2-Methylphenol
2-Methylnaphthalene
benzo(a)anthracene
benzo(a)pyrene
benzo(b)fluoranthene
benzo(k)fluoranthene
chrysene
dibenzo(a,h)anthracene
indeno(1,2,3-cd)pyrene
naphthalene
phenol
cyanide

As illustrated in Exhibit A, the contaminant(s) of concern exceed the applicable SCGs for:

- groundwater
- soil

6.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before issuance of the Record of Decision.

There were no IRMs performed at this site during the RI.

6.3: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts may include existing and potential future exposure pathways to fish and wildlife receptors, wetlands, groundwater resources, and surface water.

Based upon the resources and pathways identified and the toxicity of the contaminants of ecological concern at this site, a Fish and Wildlife Resources Impact Analysis (FWRIA) was deemed not necessary for this site.

Nature and Extent of Contamination: Soil and groundwater samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), metals, and cyanide. Groundwater samples were also analyzed for per- and polyfluoroalkyl substances (PFAS), and 1,4-dioxane. Based upon investigations conducted to date the primary contaminants of concern include arsenic in surface soils, VOCs, SVOCS, and arsenic in subsurface soils, and VOCs, SVOCs, and cyanide in groundwater.

Soil: Several metals including arsenic, iron, calcium, lead, mercury and zinc are found in surface soils (0-2 inches) at the site exceeding unrestricted soil cleanup objectives (SCOs). Arsenic is the only metal found in surface soils at the site exceeding commercial use SCOs. Arsenic exceeding commercial SCOs is located within a narrow strip of surface soil along the western boundary of the site. The maximum concentration of arsenic encountered in surface soil at the site was 24.9 parts per million (ppm). There is no indication that site-related surface soil contamination extends off-site. The area around the impacted surface soil area is covered with crushed stone or pavement.

Subsurface soil (2 to 20 feet) is impacted by several constituents associated with the historic use of the site for manufactured gas plant (MGP) operations at levels exceeding unrestricted SCOs and protection of groundwater SCOs including VOCs (benzene, ethylbenzene, toluene, and xylene (BTEX)), SVOCs (polycyclic aromatic hydrocarbons (PAHs)), and metals (arsenic). Elevated levels of acetone were also detected in several subsurface soil samples. Subsurface soil contamination at levels exceeding protection of groundwater SCOs is found primarily in the central portion of the site within the former MGP gas holder or just outside the former MGP gas holder. The maximum concentration of a VOC detected in subsurface soil is benzene at a concentration of 11 ppm and the maximum concentration of an SVOC detected in subsurface soil is benzo(a)anthracene at a concentration of 11 ppm. Arsenic was detected at a maximum concentration of 43 ppm in subsurface soil.

There is no indication that site-related subsurface soil contamination extends off-site.

Groundwater: VOCs, SVOCs, and cyanide are found in groundwater within the former MGP gas holder in overburden groundwater at levels exceeding groundwater standards. VOCs including styrene and BTEX; SVOCs including naphthalene, phenol, and 2-Methylphenol; and cyanide were encountered at levels above groundwater standards in one monitoring well within the former MGP gas holder. In groundwater samples collected in May 2014, the maximum concentration of total BTEX encountered in overburden groundwater was 2,040 parts per billion

(ppb), the maximum concentration of total SVOCs encountered in overburden groundwater was 127 ppb and the maximum concentration of total cyanide encountered in overburden groundwater was 1,300 ppb compared to a standard for cyanide of 200 ppb. Benzene was the only constituent found in overburden groundwater exceeding groundwater standards in monitoring wells outside the former MGP gas holder. Benzene concentrations in groundwater outside the former MGP gas holder ranged from non-detect to 22 ppb compared to a standard of 1 ppb.

Data indicates the SVOC and cyanide groundwater impacts are limited to within the former MGP gas holder and thus the site boundary. VOC groundwater impacts (benzene) may extend beyond the site boundary. Additional monitoring wells will be installed to further address this item. However, groundwater is much less impacted by site-related contaminants outside of the former MGP gas holder.

6.4: Summary of Human Exposure Pathways

This human exposure assessment identifies ways in which people may be exposed to site-related contaminants. Chemicals can enter the body through three major pathways (breathing, touching or swallowing). This is referred to as *exposure*.

People are not drinking the contaminated groundwater because the area is served by a public water supply that is not affected by this contamination. People will not come into contact with site related soil unless they dig below the surface. Volatile organic compounds in soil vapor (air spaces within the soil) may move into buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of the buildings, is referred to as soil vapor intrusion. The inhalation of site related contaminants due to soil vapor intrusion does not represent a current concern because the site is vacant. However, the potential exists for the inhalation of site contaminants due to soil vapor intrusion for any future onsite development. In addition, sampling indicates soil vapor intrusion is not a potential concern for offsite buildings.

6.5: Summary of the Remediation Objectives

The objectives for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. The goal for the remedial program is to restore the site to pre-disposal conditions to the extent feasible. At a minimum, the remedy shall eliminate or mitigate all significant threats to public health and the environment presented by the contamination identified at the site through the proper application of scientific and engineering principles.

The remedial action objectives for this site are:

Groundwater

RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.

- Prevent contact with, or inhalation of volatiles, from contaminated groundwater.

RAOs for Environmental Protection

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Prevent the discharge of contaminants to surface water.
- Remove the source of ground or surface water contamination.

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil.

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.

Soil Vapor

RAOs for Public Health Protection

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a site.

SECTION 7: SUMMARY OF THE PROPOSED REMEDY

To be selected, the remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. The remedy must also attain the remedial action objectives identified for the site, which are presented in Section 6.5. Potential remedial alternatives for the Site were identified, screened and evaluated in the FS report.

A summary of the remedial alternatives that were considered for this site is presented in Exhibit B. Cost information is presented in the form of present worth, which represents the amount of money invested in the current year that would be sufficient to cover all present and future costs associated with the alternative. This enables the costs of remedial alternatives to be compared on a common basis. As a convention, a time frame of 30 years is used to evaluate present worth costs for alternatives with an indefinite duration. This does not imply that operation, maintenance, or monitoring would cease after 30 years if remediation goals are not achieved. A summary of the Remedial Alternatives Costs is included as Exhibit C.

The basis for the Department's proposed remedy is set forth as Exhibit D.

The proposed remedy is referred to as the Surface Soil Removal, Cover System, Enhanced Bioremediation, Monitored Natural Attenuation (MNA), Institutional Control (IC), and Site Management remedy.

The estimated present worth cost to implement the remedy is $953,000. The cost to construct the remedy is estimated to be $544,000 and the estimated average annual cost is $20,000.

The elements of the proposed remedy are as follows:

1. Remedial Design

A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The design program will include:

- A pilot scale studies will be conducted to more clearly define design parameters for enhanced bioremediation;
- A pre-design investigation of the upper foot of surface soils to confirm excavation limits and the suitability of existing surface and near surface soil as a site cover;
- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals;
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development; and
- Additionally, to incorporate green remediation principles and techniques to the extent feasible in the future development at this site, any future on-site buildings will include, at a minimum, a 20-mil vapor barrier/waterproofing membrane on the foundation to improve energy efficiency as an element of construction.

2. Excavation

To accommodate the site cover described in remedy element 4, all soils in the upper foot which exceed the commercial SCOs as defined by 6 NYCRR Part 375-6.8 will be excavated and transported off-site for disposal. Approximately 27 cubic yards of contaminated soil will be removed from the site. A pre-design investigation of the upper foot of surface soils will be completed to confirm excavation limits and the suitability of existing surface and near surface soil as a site cover.

3. Backfill

Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil and establish the designed grades at the site.

4. Cover System

A site cover will be required to allow for commercial use of the site in areas where the upper one foot of exposed surface soil exceeds the applicable soil cleanup objectives (SCOs). Where a soil cover is to be used it will be a minimum of one foot of soil placed over a demarcation layer, with the upper six inches of soil of sufficient quality to maintain a vegetative layer. Soil cover material, including any fill material brought to the site, will meet the SCOs for cover material for the use of the site as set forth in 6 NYCRR Part 375-6.7(d). Substitution of other materials and components may be allowed where such components already exist or are a component of the tangible property to be placed as part of site redevelopment. Such components may include, but are not necessarily limited to: pavement, concrete, paved surface parking areas, sidewalks, building foundations, building slabs, and crushed stone.

5. Enhanced Bioremediation

In-situ enhanced biodegradation will be employed to treat VOCs in groundwater within the subsurface former MGP gas holder and downgradient of the subsurface holder. The biological breakdown of contaminants through aerobic respiration will be enhanced by increasing the dissolved oxygen concentration in groundwater. Prior to the full implementation of this technology, on-site pilot scale studies will be conducted to more clearly define design parameters. Between the pilot and the full-scale implementations, treatment wells will be installed. The screen depth of treatment wells be determined during the design.

Groundwater monitoring will be required within and downgradient of the treatment zone for contaminants of concern as well as dissolved oxygen and oxidation/reduction potential.

6. Monitored Natural Attenuation (MNA)

Groundwater contamination (remaining after active remediation) will be addressed with MNA. Groundwater will be monitored for site related contamination and also for MNA indicators which will provide an understanding of the (biological activity) breaking down the contamination. MNA will require the installation of additional monitoring wells so that the full limits of groundwater contamination are contained within the monitoring well network. It is anticipated that contamination downgradient of the holder will decrease to levels below groundwater standards in a reasonable period of time (5 to 10 years). Reports of the attenuation will be provided every year.

7. Institutional Controls

Imposition of an institutional control in the form of environmental easement for the controlled property which will:

- require the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- allow the use and development of the controlled property for commercial use or industrial use as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH; and
- require compliance with the Department approved Site Management Plan.

8. Site Management Plan

A Site Management Plan is required, which includes the following:

a. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: The Environmental Easement discussed in Paragraph 7 above.

Engineering Controls: The soil cover discussed in Paragraph 4 above.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- a provision for further investigation and remediation should large scale redevelopment occur, if any of the existing structures are demolished, or if the subsurface is otherwise made accessible. The nature and extent of contamination in areas where access was previously limited or unavailable will be immediately and thoroughly investigated pursuant to a plan approved by the Department. Based on the investigation results and the Department determination of the need for a remedy, a Remedial Action Work Plan (RAWP) will be developed for the final remedy for the site, including removal and/or treatment of any source areas to the extent feasible. Citizen Participation Plan (CPP) activities will continue through this process. Any necessary remediation will be completed prior to, or in association with, redevelopment. This includes the area beneath the active electrical substation, in the event that the electrical substation is removed temporarily or permanently from the site;
- descriptions of the provisions of the environmental easement including any land use and groundwater use restrictions;
- a provision for evaluation of the potential for soil vapor intrusion for any new buildings developed on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

b. A Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

- monitoring of groundwater to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department; and
- monitoring for vapor intrusion for any buildings on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

Exhibit A

Nature and Extent of Contamination

This section describes the findings of the Remedial Investigation for all environmental media that were evaluated. As described in Section 6.1, samples were collected from various environmental media to characterize the nature and extent of contamination.

For each medium for which contamination was identified, a table summarizes the findings of the investigation. The tables present the range of contamination found at the site in the media and compares the data with the applicable SCGs for the site. The contaminants are arranged into three categories: volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and inorganics (metals and cyanide). For comparison purposes, the SCGs are provided for each medium that allows for unrestricted use. For soil, if applicable, the Restricted Use SCGs identified in Section 4 and Section 6.1.1 are also presented.

Groundwater

Groundwater samples were collected from on-site overburden monitoring wells in May 2013, May 2014 and September 2019 as part of the Remedial Investigation (RI) for the site. Groundwater samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), metals, and cyanide as part of May 2013 and May 2014 groundwater sampling and per- and polyfluoroalkyl substances (PFAS) as part of September 2019 groundwater sampling. The samples were collected to assess groundwater conditions on-site and determine if groundwater contamination may be migrating off-site. The results of groundwater sampling are summarized in Table 1 and Figure 2. The results of groundwater sampling indicate that contamination in groundwater at the site exceeds groundwater standards for VOCs, SVOCs, and cyanide. Table 1 presents the most recent groundwater monitoring results for VOCs, SVOCs and cyanide which were obtained during the May 2014 sampling event.

One monitoring well was installed within the former MGP gas holder foundation (MW-4). The groundwater sample collected from this monitoring well was the most impacted by site related contaminants. Groundwater exceeds standards in MW-4 for VOCs including styrene and benzene, toluene, ethylbenzene, and xylene (BTEX); SVOCs including naphthalene, phenol, and 2-methylphenol; and cyanide. In May 2014, the concentration of total BTEX at well MW-4 was 2,040 parts per billion (ppb), the concentration of total SVOCs was 127 ppb and the concentration of cyanide was 1,300 ppb compared to a standard of 200 ppb. However, groundwater is much less impacted by site related contaminants outside of the former MGP gas holder. Benzene was the only parameter which exceeded groundwater standards in a monitoring well installed outside the former MGP gas holder foundation. In May 2014, the concentration of benzene at well MW-7 was 22 ppb compared to a standard of 1 ppb. The RI determined that groundwater generally flows to the northeast at the site, thus, MW-7 is down gradient of MW-4. Groundwater exceeding the ambient quality standard for benzene may extend off-site. Additional monitoring wells will be installed to further address this item.

Figure 2 shows the nature and extent of the groundwater contamination including and relative to the former gas holder location.

Table 1 – Groundwater (May 2014)

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCs			
Benzene	ND – 1,400	1	2 of 8
Ethylbenzene	ND – 20	5	1 of 8
Styrene	ND – 33	5	1 of 8
Toluene	ND – 410	5	1 of 8
Xylene	ND - 220	5	1 of 8
SVOCs			
2-Methylphenol	ND – 2.5	1	1 of 8
Naphthalene	ND – 120	10	1 of 8
Phenol	ND – 4.9	1	1 of 8
Inorganics			
Barium	90 – 2,300	1,000	2 of 8
Iron	670 – 33,800	300	8 of 8
Magnesium	1,100 – 45,600	35,000	3 of 8
Manganese	5.7 – 2,100	300	3 of 8
Sodium	24,300 – 456,000	20,000	8 of 8
Cyanide (total)	ND – 1,300	200	2 of 8

a - ppb: parts per billion, which is equivalent to micrograms per liter, ug/L, in water.
b - SCG: Standard Criteria or Guidance - Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1), 6 NYCRR Part 703, Surface water and Groundwater Quality Standards, and Part 5 of the New York State Sanitary Code (10 NYCRR Part 5).
ND - Not Detected

The primary groundwater contaminants are VOCs including BTEX, SVOCs, and cyanide associated with the use of the site as a MGP storage facility. As noted on Figure 2, groundwater is significantly impacted within the former MGP gas holder foundation by these contaminants, while impacted by benzene to a much lesser degree outside the former MGP gas holder foundation.

The remaining inorganic compounds (other than cyanide) found in overburden groundwater exceeding groundwater standards as shown in Table 1 were also found in upgradient monitoring wells and are considered to

represent site background conditions. Therefore, the metal compounds found in groundwater are not considered site specific contaminants of concern.

Based on the findings of the RI, the presence of VOCs, SVOCs and cyanide has resulted in the contamination of groundwater. The site contaminants that are considered to be the primary contaminants of concern which will drive the remediation of groundwater to be addressed by the remedy selection process are: VOCs, SVOCs and cyanide.

Soil

Surface and subsurface soil samples were collected at the site during the RI. Surface soil samples were collected from a depth of 0 to 2 inches to assess direct human exposure in November 1990 and May 2013. Subsurface soil samples were collected from a depth of 2 - 20 feet to assess soil contamination impacts to groundwater. The results indicate that surface soils at the site exceed the unrestricted and commercial soil cleanup objectives (SCOs) for metals and subsurface soil samples exceed unrestricted and protection of groundwater SCOs for VOCs, SVOCs, and metals. Table 2a and Figure 3 present a summary of surface soil sampling results. Table 2b and Figure 4 present a summary of subsurface soil sampling results.

Table 2a compares metals concentrations in surface soils to unrestricted SCOs as well as to applicable commercial use SCOs. The metals arsenic, calcium, iron, lead, mercury, and zinc were found to exceed unrestricted SCOs. However, only arsenic was found to exceed commercial SCOs in four of twelve surface soil samples collected at the site. Arsenic was present in soils in a narrow strip of grass covered ground along the western boundary of the site.

Table 2a – Surface Soil (0-2 inches depth)

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG[c] (ppm)	Frequency Exceeding Restricted SCG
Metals					
Arsenic	4 – 24.9	13	5 of 12	16	4 of 12
Calcium	7,360 – 110,000	10,000	11 of 12	N/A	N/A
Iron	9,510 – 17,400	2,000	12 of 12	N/A	N/A
Lead	16.3 – 171	63	5 of 12	1,000	0 of 12
Mercury	ND – 0.41	0.18	1 of 12	2.8	0 of 12
Zinc	41.1 - 229	109	5 of 12	10,000	0 of 12

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
b - SCG: Part 375-6.8(a), Unrestricted Soil Cleanup Objectives.
c - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Public Health for Commercial Use, unless otherwise noted.
N/A – Not Applicable (No Standard)
ND – Not Detected

Table 2b compares VOCs, SVOCs, and arsenic concentrations in subsurface soil to unrestricted SCOs as well as applicable protection of groundwater SCOs. Several constituents associated with the historic use of the site for MGP operations were encountered at elevated levels in subsurface soil samples. These constituents include VOCs (BTEX), SVOCs (polycyclic aromatic hydrocarbons (PAHs)), and arsenic. Elevated levels of acetone were also detected in several subsurface soil samples. These constituents exceeded both applicable unrestricted and protection of groundwater SCOs. The highest concentrations of MGP related constituents were encountered in subsurface soil samples collected from within the former gas holder foundation. The maximum concentration of a VOC detected in subsurface soil is benzene at a concentration of 11 ppm at soil boring location SB-4. The maximum concentration of an SVOC detected in subsurface soil is benzo(a)pyrene at a concentration of 11 ppm at soil boring SB-2.

Several other metals were present in subsurface soils samples above unrestricted SCOs including aluminum, barium, cadmium, calcium, iron, lead, mercury, nickel, and zinc. With the exception of barium, each of these metals was present at levels below protection of groundwater SCOs. These constituents are typically associated with historic fill and were present at concentrations below protection of groundwater SCOs and are therefore not expected to have an impact on groundwater. Barium was present in only one of 27 samples in exceedance of protection of groundwater SCOs and is also typically associated with historic fill.

Table 2b – Subsurface Soil (2-20 feet depth)

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Protection of Groundwater SCG[c] (ppm)	Frequency Exceeding Restricted SCG
VOCs					
Acetone	ND – 8.4	0.05	6 of 27	0.05	6 of 27
Benzene	ND – 11	0.06	6 of 27	0.06	6 of 27
Ethylbenzene	ND – 1.1	1	1 of 27	1	1 of 27
Toluene	ND – 1.1	0.7	1 of 27	0.7	1 of 27
Xylene	ND – 4.1	0.26	2 of 27	1.6	2 of 27
SVOCs					
2-Methylnaphthalene	ND – 1.9	0.41	1 of 27	36.4	0 of 27
Benzo(a)anthracene	ND – 11	1	4 of 27	1	4 of 27
Benzo(a)pyrene	ND – 8.1	1	4 of 27	22	0 of 27
Benzo(b)fluoranthene	ND – 10	1	5 of 27	1.7	2 of 27
Benzo(k)fluoranthene	ND – 3.9	0.8	3 of 27	1.7	2 of 27
Chrysene	ND – 9	1	4 of 27	1	4 of 27
Dibenzo(a,h)anthracene	ND – 4.1	0.33	2 of 27	1,000	0 of 27

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Protection of Groundwater SCG[c] (ppm)	Frequency Exceeding Restricted SCG
Indeno(1,2,3-cd)pyrene	ND – 6.3	0.5	4 of 27	8.2	0 of 27
Metals					
Aluminum	3,660 – 10,800	10,000	2 of 27	N/A	N/A
Arsenic	3 - 43	13	9 of 27	16	7 of 27
Barium	32.7 – 1,290	350	1 of 27	820	1 of 27
Cadmium	0.032 – 3.7	2.5	1 of 27	7.5	0 of 27
Calcium	3,190 – 121,000	10,000	1 of 27	N/A	N/A
Iron	6,300 – 42,100	2,000	25 of 27	N/A	N/A
Lead	6 – 272	63	27 of 27	450	0 of 27
Mercury	0.014 – 0.72	0.18	8 of 27	0.73	0 of 27
Nickel	7.9 – 40.5	30	7 of 27	130	0 of 27
Zinc	17.8 - 589	109	5 of 27	2,480	0 of 27

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
b - SCG: Part 375-6.8(a), Unrestricted Soil Cleanup Objectives.
c - SCG: Part 375-6.8(b), Soil Cleanup Objectives for the Protection of Groundwater
N/A – Not Applicable (No Standard)
ND – Not Detected

The primary soil contaminants are VOCs (acetone and BTEX), SVOCs (polycyclic aromatic hydrocarbons (PAHs)) and arsenic and barium associated with historic use of the site for MGP operations (remote gas storage). As noted on Figure 4, the primary soil contamination is associated with the former MGP gas holder which is centrally located within the site boundary. Other metals encountered in surface and subsurface samples including aluminum, cadmium, calcium, iron, lead, mercury, nickel and zinc were present at levels below applicable SCOs for the site (commercial and protection of groundwater SCOs) and are typically associated with historic fill.

Based on the findings of the Remedial Investigation, the presence of VOCs, SVOCs and arsenic has resulted in the contamination of soil. The site contaminants identified in soil which are considered to be the primary contaminants of concern, to be addressed by the remedy selection process are VOCs, SVOCs and arsenic.

Exhibit B

Description of Remedial Alternatives

The following alternatives were considered based on the remedial action objectives (see Section 6.5) to address the contaminated media identified at the site as described in Exhibit A.

Alternative 1: No Action

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. This alternative leaves the site in its present condition and does not provide any additional protection to public health and the environment.

Alternative 2: Surface Soil Removal, Cover System, Monitored Natural Attenuation (MNA), Institutional Controls (ICs) and Site Management

This alternative includes a site cover over the entire site consisting of existing soils and crushed stone with excavation of soils in exceedance of commercial SCOs in the top one foot on the western portion of the site to accommodate the cover. The Alternative also includes an institutional control in the form of an environmental easement to limit development of the site to commercial or industrial use, restrict the use of groundwater from beneath the site as a source of a potable water without NYSDOH or Cayuga County Health Department approval, and require evaluation of soil vapor intrusion prior to development of the property with implementation of appropriate actions if deemed necessary. Long-term groundwater monitoring would be required pursuant to a Site Management Plan. The long-term groundwater monitoring plan must meet the requirements of monitored natural attenuation as established in DER-10 and continue until concentrations of contaminants in groundwater meet NYSDEC standards or asymptotic levels acceptable to the NYSDEC. Periodic certification of institutional and engineering controls would be required.

Present Worth: *$301,000*
Capital Cost: *$70,000*
Annual Costs (years 1-30): *$15,000*

Alternative 3: Surface Soil Removal, Cover System, Enhanced Bioremediation, MNA, ICs and Site Management

This alternative includes all of the elements in Alternative 2 (surface soil removal, cover system, MNA, institutional controls, site management) with the addition of in-situ treatment of groundwater by aerobic biodegradation. In-situ enhanced biodegradation employs a treatment additive to expedite the degradation of contaminants in groundwater within the former MGP gas holder foundation and downgradient of the subsurface holder.

Present Worth: *$953,000*
Capital Cost: *$544,000*
Annual Costs (years 1-10): *$43,000*
Annual Costs (years 11-20): *$15,000*
Annual Costs (years 21-30): *$2,000*

Alternative 4: Restoration to Pre-Disposal or Unrestricted Conditions

This alternative achieves all of the SCGs discussed in Section 6.1.1 and Exhibit A and soil meets the unrestricted soil clean objectives listed in Part 375-6.8 (a). This alternative includes the excavation and off-site disposal of all soil contamination above unrestricted SCOs and backfilling with soil meeting unrestricted SCOs. The excavation of all soils in exceedance of unrestricted SCOs eliminates sources of groundwater contamination. Removal of the sub-station is required for this excavation. This Alternative would include confirmation groundwater sampling under the Site Management Plan to confirm groundwater meets standards both on and off-site. Groundwater monitoring under Alternative 4 is expected to be less extensive than under Alternatives 2 and 3 because the source of groundwater contamination is permanently removed. This Alternative does not rely on institutional controls to prevent future exposure.

Present Worth: *$11,565,000*
Capital Cost: *$11,500,000*
Annual Costs (years 1-5): *$15,000*

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
Alternative 1: No Action	0	0	0
Alternative 2: Surface Soil Excavation, Cover System, Monitored Natural Attenuation, Institutional Controls and Site Management	$ 70,000	$ 15,000 (1-30 years)	$ 301,000
Alternative 3: Surface Soil Excavation, Cover System, Monitored Natural Attenuation, Enhanced Bioremediation, Institutional Controls and Site Management	$ 544,000	$ 43,000 (1-10 years) $ 15,000 (11-20 years) $ 2,000 (21-30 years)	$ 953,000
Alternative 4: Restoration to Pre-Disposal or Unrestricted Conditions	$ 11,500,000	$ 15,000 (1-6 years)	$ 11,565,000

Exhibit D

SUMMARY OF THE PROPOSED REMEDY

The Department is proposing Alternative 3, Surface Soil Excavation, Cover System, Enhanced Bioremediation, MNA, ICs and Site Management as the remedy for this site. Alternative 3 achieves the remediation goals for the site by establishing a site cover which allows for continued use of the site as an electrical substation and implementing groundwater treatment with the goal of meeting groundwater standard by treatment and MNA. The elements of this remedy are described in Section 7. The proposed remedy is depicted in Figure 5.

Basis for Selection

The proposed remedy is based on the results of the RI and the evaluation of alternatives. The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375. A detailed discussion of the evaluation criteria and comparative analysis is included in the FS report.

The first two evaluation criteria are termed "threshold criteria" and must be satisfied in order for an alternative to be considered for selection.

1. Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

The proposed remedy Alternative 3 satisfies this criterion by eliminating exposure to contaminants of concern by establishing a site cover, treating contaminated groundwater, and placing institutional controls (environmental easement and site management plan) on the site. Alternative 3 removes contamination exceeding commercial SCOs from surface soils (top one foot) and eliminates exposure to subsurface soils and groundwater through the implementation of institutional controls. In-situ groundwater treatment provides further protection of the environment by reducing the concentrations of contaminants in groundwater. Alternative 1 (No Further Action) does not provide sufficient protection to public health and the environment and will not be evaluated further. Alternative 2 satisfies this criterion, but not as effectively as Alternative 3 because Alternative 2 does not include in-situ treatment of groundwater contamination, therefore groundwater contamination may persist beneath the site for a longer period of time. Alternative 4 satisfies this criterion by the complete elimination of site contamination.

2. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether a remedy will meet environmental laws, regulations, and other standards and criteria. In addition, this criterion includes the consideration of guidance which the Department has determined to be applicable on a case-specific basis.

Alternatives 2 through 4 each comply with this criterion. Alternatives 2 and 3 remove contaminated surface soil above soil cleanup objectives (SCOs) and treat contaminated groundwater in exceedance of groundwater standards with the goal of meeting groundwater standards. In-situ groundwater treatment combined with MNA under Alternative 3 is expected to decrease groundwater contaminant concentrations over time. Alternative 2 is expected to eventually comply with this Alternative however it is expected to take significantly longer to achieve groundwater standards without in-situ treatment. Alternative 4 removes all contamination from the site exceeding any SCGs, and thus satisfies this criterion.

The next six "primary balancing criteria" are used to compare the positive and negative aspects of each of the

remedial strategies.

3. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on-site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the engineering and/or institutional controls intended to limit the risk, and 3) the reliability of these controls.

Long-term effectiveness is accomplished by Alternatives 2, 3, and 4. The site cover and institutional controls (environmental easement and site management plan) under Alternatives 2 and 3 effectively eliminate the risk of direct contact exposure to contaminants over the long term. Full removal of contaminated site soils under Alternative 4 eliminates long-term risks without the use of institutional or engineering controls (site cover).

4. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

Alterative 4 permanently removes the volume of subsurface soil contamination from the site. The full removal of contaminated subsurface soil results in a reduction in the volume of contaminated groundwater beneath the site within a short amount of time. Alternative 3 leaves the subsurface soil contamination in place beneath the site but reduces the volume of groundwater contamination at the site through treatment via enhanced biodegradation. Similar to Alternative 3, Alternative 2 leaves subsurface soil contamination in place, however under Alternative 2 groundwater contamination is reduced at a slower rate.

5. Short-term Impacts and Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

Alternative 2 has the least short-term impacts as there is no intrusive remediation in the subsurface. Alternative 3 necessitates more short-term impacts than Alternative 2 due to the in-situ groundwater treatment. Enhanced biodegradation is a frequently used remedial technology and short-term impacts such as drilling operations can be effectively managed. Alternative 4 necessitates significant short-term impacts because it involves the relocation of the electrical substation and the excavation and off-site disposal of subsurface soil. Best management practices are needed under this alternative to protect the surrounding community during relocation of the electrical substation, excavation, and off-site disposal. Alternative 3 is more effective in the short-term than Alternative 2 because Alternative 3 is expected to achieve remedial objectives for groundwater more quickly than Alterative 2.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction of the remedy and the ability to monitor its effectiveness. For administrative feasibility, the availability of the necessary personnel and materials is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, institutional controls, and so forth.

Alternative 2 is the easiest alternative to implement. Alternative 2 includes only the removal and replacement of surface soil, the long-term maintenance of a site cover, and the long-term monitoring of groundwater. Each of these activities is easily implementable. Alternative 3 is also easily implementable. Alternative 3 includes the components of Alternative 2 described above and in-situ treatment of groundwater by enhanced biodegradation. Enhanced biodegradation is a common technology which is easily implementable. Alternative 4 is more difficult to implement than Alternatives 2 and 3. Alternative 4 requires the relocation of the electrical substation currently

at the site so that contaminated subsurface soil beneath the electrical substation can be removed. The electrical substation is critical infrastructure to the community; therefore, either temporary or permanent relocation of the electrical substation is needed to implement this alternative.

7. Cost-Effectiveness. Capital costs and annual operation, maintenance, and monitoring costs are estimated for each alternative and compared on a present worth basis. Although cost-effectiveness is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the other criteria, it can be used as the basis for the final decision.

The cost of remedial action at this site differs substantially between Alternative 4 and Alternatives 2 and 3. Alternative 4 removes all subsurface soil contamination from the site which requires the removal of the electrical substation at significant cost. The removal action under Alternative 4 includes excavation to a depth of 20 feet with a significant amount of removal beneath the groundwater table which is also costly. Alternative 4 reduces the length of time groundwater needs to be monitored thus reducing the monitoring cost, but this reduction does not off-set the difference in capital costs.

Alternative 2 has little capital costs because it only includes a small soil removal and placement of institutional controls (placement of an environmental easement and establishment of a site management plan). Alternative 3 is more costly than Alternative 2 because it includes the cost of in-situ groundwater treatment. Long-term costs for monitoring under Alternative 2 and 3 are approximately the same. Alternative 3 is expected to be cost effective because it will reduce contaminant concentrations at a significantly lower cost than Alternative 4.

8. Land Use. When cleanup to pre-disposal conditions is determined to be infeasible, the Department may consider the current, intended, and reasonable anticipated future land use of the site and its surroundings in the selection of the soil remedy.

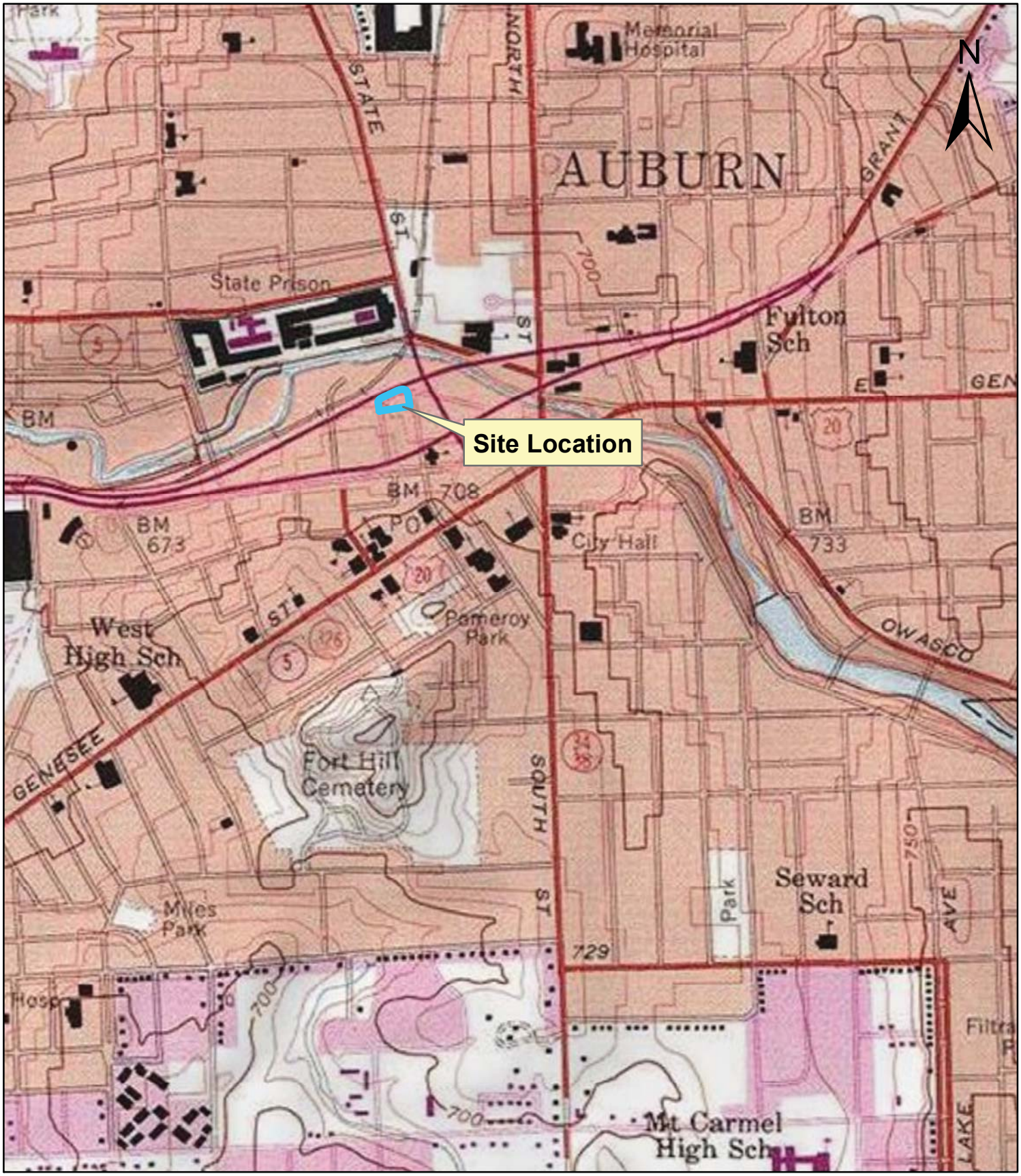
The site is currently the location of an electrical substation operated by the site owner NYSEG. Site use is not expected to change in the foreseeable future. The electrical substation is important infrastructure to the local community and cannot be easily relocated. Alternatives 2 and 3 allow for the continued use of the site for this purpose. Alternative 4 requires the removal and relocation of the electrical substation during implementation of the remedial action so that all subsurface contamination can be removed.

Alternatives 2 and 3 include a provision for evaluation of additional remedial actions should use of the site as an electrical substation be discontinued in the future allowing for better access to contaminated soil and groundwater beneath the site. However, a significant change of use of this site is not expected during the time over which Alternatives 3 is expected to effectively achieve remedial action objectives for groundwater.

The final criterion, Community Acceptance, is considered a "modifying criterion" and is taken into account after evaluating those above. It is evaluated after public comments on the Proposed Remedial Action Plan have been received.

9. Community Acceptance. Concerns of the community regarding the investigation, the evaluation of alternatives, and the PRAP are evaluated. A responsiveness summary will be prepared that describes public comments received and the manner in which the Department will address the concerns raised. If the selected remedy differs significantly from the proposed remedy, notices to the public will be issued describing the differences and reasons for the changes.

Alternative 3 is being proposed because, as described above, it satisfies the threshold criteria and provides the best balance of the balancing criterion.



Legend

Approximate Site Boundary

0 700 1,400 2,800 Feet

Former Auburn Green Street MGP Site
Green Street
Auburn, Cayuga County, New York

Figure 1

Site Location Map

AECOM

July 2013

MW-4	CRIT	05/13
VOCs:		
Benzene	1	2100
Toulene	5	750
Ethylbenzene	5	25
Xylenes (total)	5	260

MW-4	CRIT	05/14
VOCs:		
Benzene	1	1400
Ethylbenzene	5	20
Styrene	5	33J
Toulene	5	410
Xylenes (total)	5	220

MW-7	CRIT	05/14
VOCs:		
Benzene	1	22

MW-2	CRIT	05/13
VOCs:		
Benzene	1	15

MW-4	CRIT	05/13
SVOCs:		
Napthalene	10	140
Phenol	1	5.3
2-Methylphenol(o-cresol)	1	2.9J
4-Methylphenol(p-cresol)	1	2.8J
Cyanide (total)	200	910J

MW-4	CRIT	05/14
SVOCs:		
Napthalene	10	120
Phenol	1	4.9
2-Methylphenol(o-cresol)	1	2.5J
Cyanide (total)	200	1300J

MW-1	CRIT	05/13
VOCs:		
Benzene	1	59

NEW YORK STATE ROUTE 5 & 20
(WEST BOUND TRAFFIC)

WATER STREET

HULBERT STREET

GREEN STREET

ESTIMATED EXTENT OF DISSOLVED PHASE GROUNDWATER PLUME

MW-7
MW-2/SB11
SB12
MW-1/SB01
MW-4/SB04
SB13
SB02
MW-3/SB03
SB07
SB10
MW-6/SB06
SB09
MW-8
SB14
SB08
MW-5/SB05

SHED
BUILDING
TEST PIT 1
TEST PIT 2
TEST PIT 3
TEST PIT 4
TEST PIT 5
GATE
HIGH VOLTAGE TRANSFORMER AREA
ASPHALT PARKING LOT

APPROXIMATE HORIZONTAL EXTENT OF DISSOLVED PHASE GROUNDWATER PLUME

MW-5	CRIT	05/13
VOCs:		
Acetone	50	82
Benzene	1	14

MW-3	CRIT	05/13
VOCs:		
Benzene	1	10

N

LEGEND

- MONITORING WELL LOCATION
- SOIL BORING
- BUILDING
- PAVEMENT
- BERM
- APPROXIMATE PROPERTY BOUNDARY
- FENCE
- APPROXIMATE FORMER GAS HOLDER LOCATION

CRITERIA DATE

LOC. ID — MW-1 | CRIT | 05/13

PARAMETER — VOCs: Benzene | 1 | 59 — CONCENTRATION (µg/L)

0 20 40 80
SCALE IN FEET

CRITERIA: NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
SOURCE: BASEMAP CREATED USING *T.G. MILLER P.C. ENGINEERS AND SURVEYORS* TOPOGRAPHIC MAP; JUNE 20, 2013.

AECOM
257 West Genesee Street, Suite 400
Buffalo, NY 14202
P: 716.856.5636

Figure 2
Groundwater Exceedances

Former Auburn Green Street MGP Site
Green Street
Auburn, Cayuga County, New York

June 2017 60543583

SS-12	CRIT 1	CRIT 2	CRIT 3	04/14
Metals:				
Calcium	10000	--	--	46,200
Iron	2000	--	--	10,000
Zinc	109	10000	2480	112

SS-7	CRIT 1	CRIT 2	CRIT 3	05/13
Metals:				
Calcium	10000	--	--	30,500J
Iron	2000	--	--	13,900J

SS-9	CRIT 1	CRIT 2	CRIT 3	05/13
Metals:				
Calcium	10000	--	--	42,600J
Iron	2000	--	--	17,400J

SS-3	CRIT 1	CRIT 2	CRIT 3	11/90
Metals:				
Calcium	10000	--	--	54,000
Iron	2000	--	--	10,000

SS-8	CRIT 1	CRIT 2	CRIT 3	05/13
Metals:				
Calcium	10000	--	--	49,800J
Iron	2000	--	--	9,510J

SS-4	CRIT 1	CRIT 2	CRIT 3	05/13
Metals:				
Arsenic	13	16	16	17
Calcium	10000	--	--	107,000J
Iron	2000	--	--	12,100J
Lead	63	1000	450	85
Zinc	109	10000	2480	229

SS-2	CRIT 1	CRIT 2	CRIT 3	11/90
Metals:				
Calcium	10000	--	--	110,000
Iron	2000	--	--	10,000

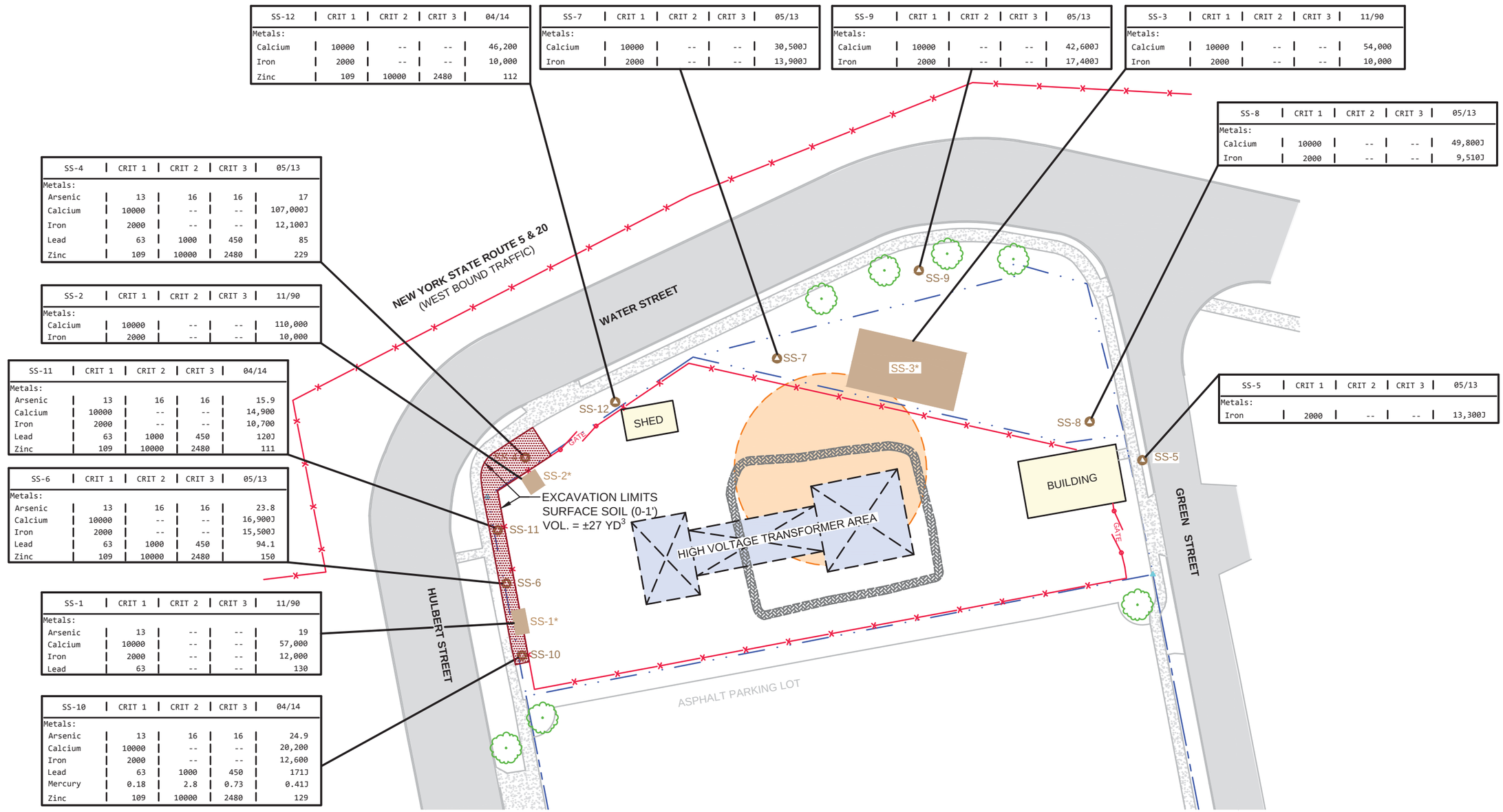
SS-5	CRIT 1	CRIT 2	CRIT 3	05/13
Metals:				
Iron	2000	--	--	13,300J

SS-11	CRIT 1	CRIT 2	CRIT 3	04/14
Metals:				
Arsenic	13	16	16	15.9
Calcium	10000	--	--	14,900
Iron	2000	--	--	10,700
Lead	63	1000	450	120J
Zinc	109	10000	2480	111

SS-6	CRIT 1	CRIT 2	CRIT 3	05/13
Metals:				
Arsenic	13	16	16	23.8
Calcium	10000	--	--	16,900J
Iron	2000	--	--	15,500J
Lead	63	1000	450	94.1
Zinc	109	10000	2480	150

SS-1	CRIT 1	CRIT 2	CRIT 3	11/90
Metals:				
Arsenic	13	--	--	19
Calcium	10000	--	--	57,000
Iron	2000	--	--	12,000
Lead	63	--	--	130

SS-10	CRIT 1	CRIT 2	CRIT 3	04/14
Metals:				
Arsenic	13	16	16	24.9
Calcium	10000	--	--	20,200
Iron	2000	--	--	12,600
Lead	63	1000	450	171J
Mercury	0.18	2.8	0.73	0.41J
Zinc	109	10000	2480	129



LEGEND

- SURFACE SOIL LOCATION
- HISTORICAL SURFACE SOIL SAMPLE*
- BUILDING
- PAVEMENT
- AREAL EXTENT OF SURFACE SOIL REQUIRING REMEDIATION, (0-1')
- BERM
- APPROXIMATE PROPERTY BOUNDARY
- FENCE
- APPROXIMATE FORMER GAS HOLDER LOCATION

LOC. ID	CRITERIA	CRITERIA	CRITERIA	DATE	
SS-4	CRIT 1	CRIT 2	CRIT 3	05/13	
Metals:					
PARAMETER: Arsenic	16	16	16	17	CONCENTRATION (mg/kg)

CRITERIA: 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Protection of Public Health, Unrestricted, Commercial, and Protection of Groundwater including CP-51 Table 1, Effective 12/2/10.
CRITERIA 1 = Unrestricted, CRITERIA 2 = Commercial, CRITERIA 3 = Protection of Groundwater
SOURCE: BASEMAP CREATED USING *T.G. MILLER P.C. ENGINEERS AND SURVEYORS* TOPOGRAPHIC MAP; JUNE 20, 2013.
*ATLANTIC ENVIRONMENTAL SERVICES, INC, SEPTEMBER 1991. "MANUFACTURED GAS PLANT SITE SCREENING REPORT, GREEN STREET SITE, AUBURN, NY"

0 20 40 80
SCALE IN FEET

AECOM
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Buffalo, NY 14202
P: 716.856.5636

Figure 3
Surface Soil Exceedances

Former Auburn Green Street MGP Site
Green Street
Auburn, Cayuga County, New York

June 2017 60543583

J:\Projects\60543583_AubrnGrnFS\900-CAD-GIS\910-CAD\CAD\Auburn Green Street-OLD\MAY 2017\60269784_012 Surface Soil Exceedances.dwg, 7/31/2017 9:35:56 AM, jjs

N

SB04 (9'-11')	CRIT 1	CRIT 2	CRIT 3	05/13
VOCs:				
Benzene	0.06	44	0.06	0.73
Toulene	0.7	500	0.7	1.1
Xylene (total)	0.26	500	1.6	2.5

SB04 (18'-20')	CRIT 1	CRIT 2	CRIT 3	05/13
VOCs:				
Benzene	0.06	44	0.06	11
Ethylbenzene	1	390	1	1.1
Xylene (total)	0.26	500	1.6	4.1

SB12 (9'-11')	CRIT 1	CRIT 2	CRIT 3	05/13
SVOCs:				
Benzo(b)fluoranthene	1	5.6	1.7	1.1

MW-7 (9'-11')	CRIT 1	CRIT 2	CRIT 3	04/14
VOCs:				
Acetone	0.05	500	0.05	8.4
METALS:				
Arsenic	16	16	16	43.4

MW-7 (17'-18')	CRIT 1	CRIT 2	CRIT 3	04/14
VOCs:				
Benzene	0.06	44	0.06	4.4

SB02 (13'-16')	CRIT 1	CRIT 2	CRIT 3	05/13
SVOCs:				
Methylnaphthalene	0.41	--	36.4	1.9J
Benzo(a)anthracene	1	5.6	1	11
Benzo(a)pyrene	1	1	22	8.1
Benzo(b)fluoranthene	1	5.6	1.7	10
Benzo(k)fluoranthene	0.8	56	1.7	3.9J
Chrysene	1	56	1	9
Dibenz(a,h)anthracene	0.33	0.56	1,000	4.1J
Indeno(1,2,3-cd)pyrene	0.5	5.6	8.2	6.3

SB11 (9.1'-13')	CRIT 1	CRIT 2	CRIT 3	05/13
METALS:				
Arsenic	16	16	16	20.6

SHEETED EXCAVATION LIMITS
OF FORMER GAS HOLDER
(ASSUME 20' DEPTH)
VOL. = ±5,113 YD^3

TP02-FLOORS(7)	CRIT 1	CRIT 2	CRIT 3	05/13
METALS:				
Arsenic	16	16	16	24.3

SB01 (5'-7')	CRIT 1	CRIT 2	CRIT 3	05/13
METALS:				
Arsenic	16	16	16	43.2

TP01-BOT1(10)	CRIT 1	CRIT 2	CRIT 3	04/13
VOCs:				
Acetone	0.05	500	0.05	0.079
Benzene	0.06	44	0.06	1.8

TP01-BOT2(10)	CRIT 1	CRIT 2	CRIT 3	04/13
VOCs:				
Acetone	0.05	500	0.05	0.11
Benzene	0.06	44	0.06	0.81

TP04-FLOORE(7)	CRIT 1	CRIT 2	CRIT 3	05/13
SVOCs:				
Benzo(a)anthracene	1	5.6	1	1.4J
Benzo(a)pyrene	1	1	22	1.3J
Benzo(b)fluoranthene	1	5.6	1.7	1.5J
Chrysene	1	56	1	1.2J
Indeno(1,2,3-cd)pyrene	0.5	5.6	8.2	0.56J
METALS:				
Arsenic	16	16	16	24.3

SB13 (8'-10')	CRIT 1	CRIT 2	CRIT 3	05/13
METALS:				
Arsenic	16	16	16	19.1J

SB03 (9'-11')	CRIT 1	CRIT 2	CRIT 3	05/13
SVOCs:				
Benzo(a)anthracene	1	5.6	1	3.2J
Benzo(a)pyrene	1	1	22	2.8J
Benzo(b)fluoranthene	1	5.6	1.7	4.4
Benzo(k)fluoranthene	0.8	56	1.7	1.8J
Chrysene	1	56	1	2.8J
Dibenz(a,h)anthracene	0.33	0.56	1,000	3.3J
Indeno(1,2,3-cd)pyrene	0.5	5.6	8.2	4.1J

SB03 (9'-11')	CRIT 1	CRIT 2	CRIT 3	05/13
METALS:				
Arsenic	16	16	16	24.7

SB03 (18'-20')	CRIT 1	CRIT 2	CRIT 3	05/13
VOCs:				
Benzene	0.06	44	0.06	0.066

SB07 (9'-11')	CRIT 1	CRIT 2	CRIT 3	05/13
VOCs:				
Acetone	0.05	500	0.05	0.053

TP01-WALLNW(3)	CRIT 1	CRIT 2	CRIT 3	04/13
SVOCs:				
Benzo(a)anthracene	1	5.6	1	1.2J
Benzo(a)pyrene	1	1	22	1.6J
Benzo(b)fluoranthene	1	5.6	1.7	1.5J
Benzo(k)fluoranthene	0.8	56	1.7	0.98J
Chrysene	1	56	1	1.1J
Indeno(1,2,3-cd)pyrene	0.5	5.6	8.2	0.85J

SB10 (9'-11')	CRIT 1	CRIT 2	CRIT 3	05/13
VOCs:				
Acetone	0.05	500	0.05	0.078

SB08 (5'-7')	CRIT 1	CRIT 2	CRIT 3	05/13
VOCs:				
Acetone	0.05	500	0.05	0.11

NEW YORK STATE ROUTE 5 & 20
(WEST BOUND TRAFFIC)
WATER STREET
HULBERT STREET
GREEN STREET
SHED
BUILDING
HIGH VOLTAGE TRANSFORMER AREA
ASPHALT PARKING LOT
GATE
TEST PIT 5
TEST PIT 1
TEST PIT 2
TEST PIT 4
MW-7
MW-2/SB11
MW-1/SB01
MW-4/SB04
SB12
SB02
SB13
MW-3/SB03
SB07
SB10
MW-6/SB06
SB09
MW-8
SB14
MW-5/SB05
SB08

LEGEND

- MONITORING WELL LOCATION
- SOIL BORING
- BUILDING
- PAVEMENT
- AREAL EXTENT OF SUBSURFACE SOIL REQUIRING REMEDIATION
- BERM
- APPROXIMATE PROPERTY BOUNDARY
- FENCE
- APPROXIMATE FORMER GAS HOLDER LOCATION

LOC. ID	CRITERIA	CRITERIA	CRITERIA	DATE
SB03 (18'-20')	CRIT 1	CRIT 2	CRIT 3	05/13
VOCs:				
PARAMETER: Benzene	4.8	44	0.06	0.066

CONCENTRATION (mg/kg)

0 20 40 80
SCALE IN FEET

CRITERIA: 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Protection of Public Health, Unrestricted, Commercial, and Protection of Groundwater including CP-51 Table 1, Effective 12/2/10.
CRITERIA 1 = Unrestricted, CRITERIA 2 = Commercial, CRITERIA 3 = Protection of Groundwater
SOURCE: BASEMAP CREATED USING *T.G. MILLER P.C. ENGINEERS AND SURVEYORS* TOPOGRAPHIC MAP; JUNE 20, 2013.

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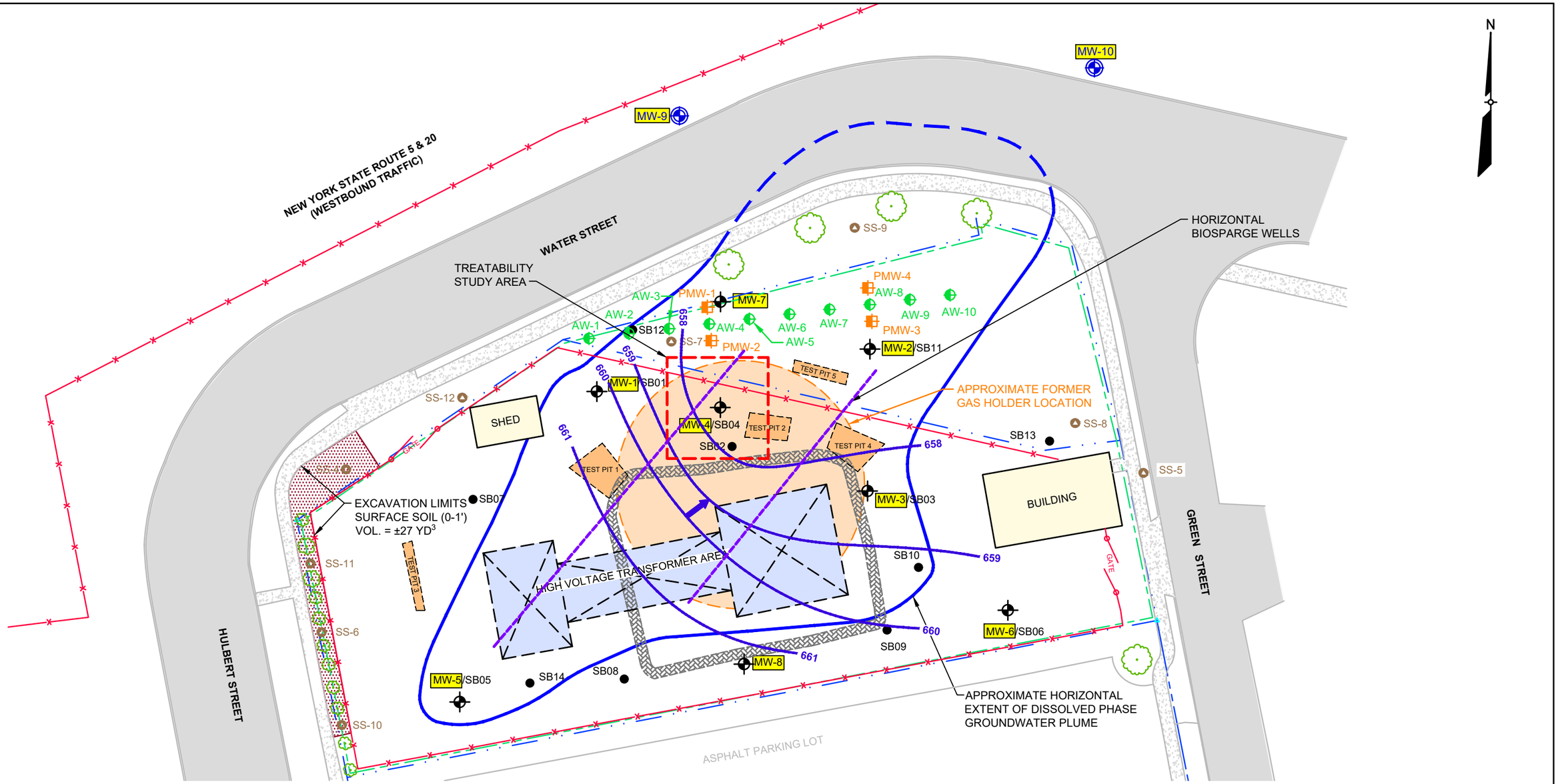
Figure 4
Subsurface Soil Exceedances

Former Auburn Green Street MGP Site
Green Street
Auburn, Cayuga County, New York

June 2017 60543583

J:\Projects\60543583_AubrnGrnFS\900-CAD-GIS\910-CAD\CAD\Auburn Green Street-OLD\MAY 2017\60269784_013 Subsurface Soil Exceedances.dwg, 4/3/2019 2:36:07 PM, jjs



LEGEND

- EXISTING MONITORING WELL LOCATION
- SURFACE SOIL SAMPLE LOCATION
- SOIL BORING
- BUILDING
- ASPHALT PAVEMENT
- SIDEWALK
- BERM
- APPROXIMATE PROPERTY BOUNDARY
- EXTENT OF SITE COVER SYSTEM
- CHAIN LINK FENCE
- APPROXIMATE FORMER GAS HOLDER LOCATION
- MW-4 — MONITORING WELLS SAMPLED QUARTERLY YEAR 1; SEMI-ANNUALLY YEAR 2; ANNUALLY THEREAFTER
- PROPOSED MONITORING WELL
- EXCAVATION LIMITS SURFACE SOIL (0-1')
- O_2 PERFORMANCE MONITORING WELLS
- O_2 APPLICATION WELL

0 15 30 60
SCALE IN FEET

SOURCE: BASEMAP CREATED USING *T.G. MILLER P.C. ENGINEERS AND SURVEYORS* TOPOGRAPHIC MAP; JUNE 20, 2013.

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Figure 5 - Supplement to Auburn Green Street FS Supplement to FS Alternative 3 Enhanced In situ Aerobic Treatment Option

Former Auburn Green Street MGP Site
Green Street
Auburn, Cayuga County, New York

FEBRUARY 2020 60543583

J:\Projects\60543583_AuburnGrnFS\900-CAD-GIS\910-CAD\CAD\FIGURE 1-ALTERNATIVE 3.dwg, 2/20/20 1:1-RAL