

RECORD OF DECISION

NYSEG - Elmira Water St. MGP
State Superfund Project
Elmira, Chemung County
Site No. 808025
March 2017



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

DECLARATION STATEMENT - RECORD OF DECISION

NYSEG - Elmira Water St. MGP
State Superfund Project
Elmira, Chemung County
Site No. 808025
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Statement of Purpose and Basis

This document presents the remedy for the NYSEG - Elmira Water St. MGP site, a Class 2 inactive hazardous waste disposal site. The remedial program was chosen in accordance with the 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, and is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300), as amended.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for the NYSEG - Elmira Water St. MGP site and the public's input to the proposed remedy presented by the Department. A listing of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Description of Selected Remedy

The elements of the selected 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 major green remediation components are as follows;

- 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; and

- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. Excavation

Excavation and off-site disposal of MGP structures and contaminant source areas, including:

- the gas holder and contents;
- grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u);
- soil containing visually impacted soils, visual coal tar or non-aqueous phase liquid;
- soil containing total PAHs exceeding 500 ppm; and
- soil that create a nuisance condition, as defined in Commissioner Policy CP-51 Section G.

Approximately 3,815 cubic yards of contaminated soil will be removed from the site. Approximate depth of the excavation will be 30'. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil or complete the backfilling of the excavation and establish the designed grades at the site.

3. Cover System

A site cover currently exists outside of the excavation area described in paragraph 2 above and will be maintained to allow for commercial use of the site. Any site redevelopment will maintain the existing site cover, which consists either of the structures such as buildings, pavement, sidewalks or soil where the upper one foot of exposed surface soil meets the applicable soil cleanup objectives (SCOs) for commercial use. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6NYCRR part 375-6.7(d).

4. Institutional Controls

Imposition of an institutional control in the form of an environmental easement for the controlled property (including the areas covered by the flood control easements located in the southern portion of the site) which:

- requires 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);
- allows the use and development of the controlled property for commercial or industrial use as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restricts 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;
- requires compliance with the Department approved Site Management Plan.

5. 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 4 above.

Engineering Controls: The soil cover system discussed in paragraph 3 above.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations on-site;
 - a provision for further investigation and remediation should large scale redevelopment occur, such as maintenance, reconstruction, replacement of the flood control structure, 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 including the area within the flood control easements which was not investigated due the setback limits stipulated in the permit issued by the Department, will be immediately and thoroughly investigated pursuant to the investigation work 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. All necessary approvals for the construction within the flood control easement will be obtained. Citizen Participation Plan (CPP) activities will continue through this process. Any necessary remediation will be completed prior to, or in association with, redevelopment;
 - descriptions of the provisions of the environmental easement including any land use, and/or groundwater;
 - a provision for evaluation of the potential for soil vapor intrusion for any future buildings that are 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 ground water 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 future buildings that are developed on the site as may be required by the Institutional and Engineering Control Plan discussed above.

New York State Department of Health Acceptance

The New York State Department of Health (NYSDOH) concurs that the remedy for this site is protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

March 31, 2017

Date



Robert W. Schick, P.E., Director
Division of Environmental Remediation

RECORD OF DECISION

NYSEG - Elmira Water St. MGP
Elmira, Chemung County
Site No. 808025
March 2017

SECTION 1: SUMMARY AND PURPOSE

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), has selected 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. The disposal or release of hazardous wastes at this site, as more fully described in this document, has contaminated various environmental media. The remedy is intended to attain the remedial action objectives identified for this site for the protection of public health and the environment. This Record of Decision (ROD) identifies the selected remedy, summarizes the other alternatives considered, and discusses the reasons for selecting the remedy.

The New York State Inactive Hazardous Waste Disposal Site Remedial Program (also known as the State Superfund 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 6 NYCRR Part 375. This document is a summary of the information that can be found in the site-related reports and documents.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all remedies. A public comment period was held, during which the public was encouraged to submit comment on the proposed remedy. All comments on the remedy received during the comment period were considered by the Department in selecting a remedy for the site. Site-related reports and documents were made available for review by the public at the following document repositories:

Chemung County Steele Memorial Library
Attn: Connie Ogilvie
101 E. Church St.
Elmira, NY 14901
Phone: 607-733-9175

NYSDEC, Region 8

Attn: Linda Vera
6274 E. Avon-Lima Rd.
Avon, NY 14414
Phone: 585-226-5324

A public meeting was also conducted. At the meeting, the findings of the remedial investigation (RI) and the feasibility study (FS) were presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period was held, during which verbal or written comments were accepted on the proposed remedy.

Comments on the remedy received during the comment period are summarized and addressed in the responsiveness summary section of the ROD.

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, 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 site is located at 510 East Water Street, City of Elmira, New York. The site is situated on south side of East Water Street near the intersection of Dewitt Street. The Chemung River is located south of the site. The area to the east and west of the site are additional parcels owned by NYSEG which are vacant and partially paved.

Site Features: The site is approximately one acre in area and is currently vacant. In the northern portion of the site, the ground surface is covered by an asphalt parking lot. The site is surrounded to the south, east, and west by grass-covered areas. The southern portion of the site is bisected by a flood control levee constructed along the bank of the Chemung River. The levee is comprised of a concrete retaining wall, 82" interceptor sewer line, soil embankment, and an access road. The embankment is flat in the area of the concrete wall, and then slopes steeply to the south down to the access road, which is approximately 20 feet north of the shoreline of the river. The levee wall appears to have been constructed in the same foot print as historic Manufactured Gas Plant (MGP) structures.

Current Zoning/Use: The site is zoned for commercial land use and is currently vacant. The Chemung County Nursing facility and Elmira Housing Authority housing complex are located across East Water Street.

Past Uses of the Site: The Elmira Water Street MGP was constructed in 1852 by the Elmira Gas

Light Company on the site. The Elmira Gas Light Company became part of New York State Electric and Gas (NYSEG) through several mergers/acquisitions. The MGP was constructed and operated as a coal carbonization plant using coal as a feedstock until 1867 when operation ceased. The facility continued to be used as gas storage facility until 1869. Some time prior to 1898, the above grade portion of the gas holder was demolished. More recently, the site was the location of the former Hartman Lincoln Mercury auto dealership and repair shop which operated until 1997. Around 1998 the car dealership structures were demolished and in 1998 several underground storage tanks and hydraulic lifts were removed during Phase II of the Environmental Site Assessment. During the Phase II investigation, the presence of coal tar in the area of the former gas holder was identified.

Site Geology and Hydrology: A layer of fill material was observed at the majority of the soil borings installed in and around the former MGP operation areas. Fill material mostly consisted of sand and gravel, mixed with varying amounts of brick fragments, clinkers, ash, and coal. Underlying the fill is a thick alluvial deposit of comprised of a heterogeneous mix of silt, sand, and gravel. Interbedded within the alluvium are lenses of lacustrine clay. Shale (bedrock) was encountered at a depth of 82 feet below grade. The depth of the water table varies between approximately 6 feet (southern portion of the site) and 16 feet below grade (northern portion of the site). The groundwater generally flows from north to south towards the Chemung River.

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 (or an alternative) that restrict(s) the use of the site to commercial use (which allows for industrial use) as described in Part 375-1.8(g) were/was evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the RI 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:

NYSEG

The NYSDEC and NYSEG entered into a multi-site Consent Order on March 30, 1994. The Consent Order (#D0-0002-9309) obligates the responsible party to implement a full remedial program for 33 former MGP sites across the State, including the Elmira Water street site. After

the remedy is selected, NYSEG will be required to implement the selected remedy under an Order on Consent.

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
- sediment

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 contaminant(s) of concern identified at this site is/are:

dibenz[a,h]anthracene	pyrene
indeno(1,2,3-CD)pyrene	dibenzofuran
benzo(a)anthracene	phenol
benzo(b)fluoranthene	polycyclic aromatic hydrocarbons (PAHS),
benzo[k]fluoranthene	total
benzo(a)pyrene	xylene (mixed)
chrysene	benzene
fluoranthene	ethylbenzene
fluorene	toluene
phenanthrene	

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

- 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 OU 01.

Nature and Extent of Contamination: A Remedial Investigation (RI) was performed in 2013. During the RI soil, groundwater and sediment samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, polychlorinated biphenyls (PCBs), and pesticides.

Surface Soil: Two samples collected from the grassy area north of the levee wall slightly exceeded commercial SCOs for dibenz(a,h)anthracene, with a maximum concentration of 0.72 ppm, compared to the commercial SCO of 0.56 ppm. No other constituent exceeded the commercial SCOs.

Subsurface Soil: During the remedial investigation, anthropogenic fill material was encountered in the northern and southern parts of the site, as well as off-site in the area along the Chemung River shoreline. Areas north and south of the levee wall have been extensively reworked to enable construction of the various features of the flood control structure, which is reflected in the sampling results. The on-site subsurface investigation revealed manufactured gas plant (MGP) related impacts at the base of the former gas holder foundation and in subsurface soil just below the foundation floor. Levels of total polycyclic aromatic hydrocarbons (tPAHs) in soil ranged from non-detect (ND) to 2116 ppm, with a maximum tPAH concentration observed at a soil boring installed within the gas holder footprint to a depth of 14 -15 feet below grade. Eleven soil samples were taken from the six test pits performed within the footprint of the MGP structures. Five soil samples exceeded commercial SCOs for several PAHs and tPAHs ranged from ND to 110.4 ppm. Evidence of grossly contaminated soils was observed at the bottom of the gas holder and in soils underneath it in the form of stained soil containing sheen and blebs.

No borings were performed in the southern portion of the site. However, five borings were performed off-site along the southern site boundary on the access road along the Chemung River. The subsurface investigation did not reveal any visual presence of coal tar impacts. Two soil borings found exceedances of commercial SCOs for several PAHs including, benzo(a)anthracene at 66 ppm (commercial SCO 5.6 ppm), benzo(b) fluoranthene at 63 ppm (commercial SCO of 56 ppm) and benzo(a)pyrene at 47 ppm (commercial SCO 1 ppm) at a depth of 10 to 11 feet below grade. No other off-site borings were conducted.

Groundwater: Shallow groundwater on-site exceeded the applicable standards for several metals including arsenic (maximum 37 part per billion (ppb), standard 25 ppb) which are not attributable to the site. Additionally, PAHs and benzene, toluene, ethylbenzene and xylene (BTEX) which are more indicative of MGP contamination, were detected but below applicable groundwater standards. The site is served by municipal water.

Sediment: Sediment probing was performed in the Chemung River adjacent to and downstream of the site to the first sediment depositional area. No visual indications of MGP or petroleum impacts were noted.

Thirty four shallow (0-6 inch) sediment samples were collected from the Chemung River. Out of 34 samples, ten were collected upstream of the site and twenty four were collected adjacent to the site. In addition, six deeper sediment samples (1-4 feet below the river bottom) were collected from the Chemung River adjacent to the site.

The maximum tPAH concentration in shallow sediment samples was 6.9 ppm upstream and 9.1 ppm adjacent to the site (compared to the screening value of 4 ppm tPAH). The maximum tPAH concentration in the deeper sediments was 10.4 ppm (screening value 4.0 ppm). No deeper sediments samples were collected upstream.

The concentrations of the MGP constituents of concerns in sediment samples adjacent to the site are similar to and slightly higher than concentrations detected in upstream areas. The sediment sample results coupled with the lack of visual evidence of MGP impacts indicated that the site is not impacting the Chemung River. As such, no surface water samples were collected.

Special Resources Impacted/Threatened: There is no data to suggest that the special resources are impacted or threatened.

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*.

Since the site is covered by asphalt and grass, people are not expected to come into contact with site related soil contamination unless they dig below the surface. Volatile organic compounds in the soil, groundwater, or other sources may move into the soil vapor (air spaces within the soil), which in turn may move into nearby 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 buildings, is referred to as soil vapor intrusion. Because there is no on-site building, inhalation of site contaminants in indoor air due to soil vapor intrusion does not represent a concern for the site in its current condition. However, the potential exists for the inhalation of site contaminants due to soil vapor intrusion for any future on-site development. Environmental sampling indicates soil vapor intrusion is not a concern off-site.

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 Environmental Protection

- 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.

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.
- Prevent impacts to biota from ingestion/direct contact with soil causing toxicity or impacts from bioaccumulation through the terrestrial food chain.

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 SELECTED 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 feasibility study (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 remedy is set forth at Exhibit D.

The selected remedy is referred to as the Removal of Gas Holder Contents, Foundation and Deeper Impacted Soil remedy.

The estimated present worth cost to implement the remedy is \$3,050,000. The cost to construct the remedy is estimated to be \$2,844,000 and the estimated average annual cost is \$12,000.

The elements of the selected 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 major green remediation components are as follows;

- 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; and
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. Excavation

Excavation and off-site disposal of MGP structures and contaminant source areas, including:

- the gas holder and contents;
- grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u);
- soil containing visually impacted soils, visual coal tar or non-aqueous phase liquid;
- soil containing total PAHs exceeding 500 ppm; and
- soil that create a nuisance condition, as defined in Commissioner Policy CP-51 Section G.

Approximately 3,815 cubic yards of contaminated soil will be removed from the site. Approximate depth of the excavation will be 30'. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil or complete the backfilling of the excavation and establish the designed grades at the site.

3. Cover System

A site cover currently exists outside of the excavation area described in paragraph 2 above and will be maintained to allow for commercial use of the site. Any site redevelopment will maintain the existing site cover, which consists either of the structures such as buildings, pavement, sidewalks or soil where the upper one foot of exposed surface soil meets the applicable soil cleanup objectives (SCOs) for commercial use. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6NYCRR part 375-6.7(d).

4. Institutional Controls

Imposition of an institutional control in the form of an environmental easement for the controlled property (including the areas covered by the flood control easements located in the southern portion of the site) which:

- requires 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);
- allows the use and development of the controlled property for commercial or industrial use as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restricts 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;
- requires compliance with the Department approved Site Management Plan.

5. 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 4 above.

Engineering Controls: The soil cover system discussed in paragraph 3 above.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations on-site;
- a provision for further investigation and remediation should large scale redevelopment occur, such as maintenance, reconstruction, replacement of the flood control structure, 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 including the area within the flood control easements which was not investigated due the setback limits stipulated in the permit issued by the Department, will be immediately and thoroughly investigated pursuant to the investigation work 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. All necessary approvals for the construction within the flood control easement will be obtained. Citizen Participation Plan (CPP) activities will continue through this process. Any necessary remediation will be completed prior to, or in association with, redevelopment;
- descriptions of the provisions of the environmental easement including any land use, and/or groundwater;
- a provision for evaluation of the potential for soil vapor intrusion for any future buildings that are 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 ground water 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 future buildings that are developed 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.

Waste/Source Areas

As described in the RI report, waste/source materials were identified at the site and is impacting subsurface soil.

Wastes are defined in 6 NYCRR Part 375-1.2(aw) and include solid, industrial and/or hazardous wastes. Source areas are defined in 6 NYCRR Part 375(au). Source areas are areas of concern at a site where substantial quantities of contaminants are found which can migrate and release significant levels of contaminants to another environmental medium. Waste was identified at the site within the former subsurface gas holder located in the northeast corner of site. The diameter of the gas holder at the foundation is 40 feet and depth of the gas holder floor is 17.5 feet below grade. The gas holder is filled with fill material and hydrocarbon odors, staining, blebs and sheen were observed in the fill material at the bottom of the holder foundation. Soil below the gas holder foundation was observed to have hydrocarbon odor and sheens. The soil sample taken at the depth of 16.5 -17 feet below grade within gas holder footprint exceeded the commercial Soil Cleanup Objectives (SCOs) for several polycyclic aromatic hydrocarbons (PAHs), with a total PAHs concentration of 3,372 parts per million (ppm).

The waste/source areas identified will be addressed in the remedy selection process.

Groundwater

Groundwater samples were collected from the thirteen (13) overburden monitoring wells during the remedial investigation and were analyzed for VOCs, SVOCs, inorganics, pesticides, herbicides polychlorinated biphenyls (PCBs) and cyanide. The samples were collected to assess groundwater conditions on and off the site. The results indicate that contaminants in shallow groundwater on-site exceeded the Ambient Water Quality Standard (AWQS) for arsenic (maximum 37 parts per billion (ppb), standard 25 ppb). The arsenic detection was limited to single well located on the access road and was only slightly above the AWQS. PAHs and benzene, toluene, ethylbenzene and xylenes (BTEX) compounds, which are more indicative of MGP contamination, were not detected. No PAHs, except for phenanthrene were detected in any of the groundwater samples. Phenanthrene was detected in one sample at 0.52 ppb which was well below the AWQS of 50 ppb. A summary of groundwater exceedances in samples collected during the 2013 remedial investigation is presented in **Figure 5**. Table 1 summarizes the exceedances of groundwater SCGs found during the remedial investigation.

Table 1 – Groundwater

Detected Constituents	Concentration Range Detected (ppb)^a	Standard or Guidance Value^b (ppb)	Frequency Exceeding Standard or Guidance Value
Inorganics			
Arsenic	7.2 - 37	25	1 of 13
Barium	82 - 3900	1000	3 of 13
Iron	99 - 3000	300	10 of 13
Manganese	74 - 2000	300	7 of 13
Sodium	76900 - 194000	20000	13 of 13

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).

The iron, manganese and sodium found in shallow groundwater were also noted in up gradient wells and are attributable to the site background conditions. The barium, which was detected above AWQS standards is not deemed constituent of concern for this site. The exceedance of arsenic AWQS is deemed insignificant. Additionally, the site and surrounding area is served by municipal water supply whose source is located upstream of the site. Therefore, no remedial alternatives need to be evaluated for groundwater.

Surface Soil

Twelve surface soil samples were collected from the site during the RI. Surface soil samples were collected from a depth of 0-2 inches to assess direct human exposure. The results indicate that surface soils at the site exceed the unrestricted SCG for PAHs and metals.

Out of twelve samples, four samples (SS-1 through SS-4) were taken from the grassy area located north of the levee wall. Out those four samples, two samples exceeded the SCGs for commercial use for dibenz(a,h)anthracene.

The remaining eight samples taken south of the levee wall slightly exceeded the unrestricted SCO for indeno(1,2,3-cd)pyrene but were less than the commercial SCOs. Out of these eight samples, three samples were taken off-site south of the levee wall from the access road adjacent to the river. The maximum total PAH concentrations in these three samples was 4.38 ppm. A summary of surface soil exceedances in samples collected during the 2013 remedial investigation is presented in Figure 3. Table 2 summarizes the exceedances of surface soil SCGs found during the remedial investigation.

Table 2 - Surface Soil

Detected Constituents	Concentration Range Detected (ppm)^a	Unrestricted SCG^b (ppm)	Frequency Exceeding Unrestricted SCG	Commercial SCG^c (ppm)	Frequency Exceeding Commercial SCG
SVOCs					

Benzo(b)fluoranthene	0.63 - 1.1	1	1 of 12	5.6	0 of 12
Dibenz(a,h)anthracene	0.7 - 0.72	0.33	2 of 12	0.56	2 of 12
Indeno(1,2,3-cd)pyrene	0.69 - 0.83	0.5	12 of 12	5.6	0 of 12
Inorganics					
Lead	22.3 - 75	63	1 of 12	1000	0 of 12
Zinc	72.3 - 127	109	1 of 12	10000	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 (SCOs).

c - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives (SCOs) for the Protection of Public Health for commercial Use, unless otherwise noted.

Based on the findings of the Remedial Investigation, exceedance of dibenz(a,h)anthracene in two surface soil samples is deemed insignificant and not related to MGP operations conducted on the site in the past.

Total of five surface soil samples were collected from the sloped embankment and access road located south of the levee wall. There were no exceedances of commercial SCOs. Off-site to the south of the site, three surface soil samples were taken from the grassy area adjacent to the Chemung River. Only indeno(1,2,3-cd)pyrene was noted above the unrestricted SCO in these three samples with a maximum concentration of 0.76 ppm which is slightly above the unrestricted SCO of 0.5 ppm. No other constituent exceed the unrestricted SCO. These exceedances are not related to former MGP operations but rather indicative of the adjacent urban environment, therefore no remedial alternatives are evaluated to address these exceedances.

Therefore, no remedial alternatives need to be evaluated for surface soil.

Subsurface Soil

Twenty two soil borings were performed during the RI to determine the nature and extent of MGP contamination in subsurface. The soil samples taken from underneath the gas holder were found to be impacted with MGP wastes. Visible evidence of MGP related impacts were limited to hydrocarbon staining, sheens and blebs in soil/fill material at the floor of the gas holder and in soils immediately underneath the floor of the holder. Exceedances of unrestricted SCOs for several PAHs were observed within the gas holder footprint between the depths of 14 to 25 feet below grade. The reported maximum total PAH concentration within the holder footprint is 3,372 ppm at a depth of 16.5 to 17 feet below grade.

Six test pits were performed in the area of the former MGP structures. Soil samples taken from the test pit adjacent to the gas holder exceeded unrestricted SCOs for several individual PAHs, however the maximum total PAH concentration was 90.3 ppm at the depth of 13 feet below grade.

Samples taken from the test pit within the footprint of MGP building, exceeded the unrestricted SCOs for several PAHs at a depth of 3 to 7 feet below grade, with a maximum total PAH concentration of 110.4 ppm.

Off site Subsurface soil:

Off-site, the subsurface soil samples taken from the borings located on south side of the site on the access road adjacent to the river exceeded unrestricted SCOs for several PAHs at a depth of 10 to 12 feet below grade. The maximum total PAH concentration is 1,062 ppm at a depth of 10 to 11 feet below grade. At this location there

was no visible evidence of MGP impacts, and groundwater in this area is not impacted by MGP constituents. The subsurface contamination is likely from fill material placed during the construction of the flood control structure. Given the depth at which this contamination exists, the proximity to the flood control levee and the lack of potential exposure, no remedial alternatives are evaluated to address these exceedances.

A summary of subsurface soil exceedances in samples collected during the 2013 remedial investigation is presented in **Figure 4**. Table 3 summarizes the exceedances of subsurface soil SCGs found during the remedial investigation

Table 3 - Subsurface Soil

Detected Constituents	Concentration Range Detected^a (ppm)	Unrestricted SCG^b (ppm)	Frequency Exceeding Unrestricted SCG	Commercial SCG^c (ppm)	Frequency Exceeding Commercial SCG
VOCs					
Acetone	0.005 - 0.16	0.05	2 of 78	500	0 of 78
Benzene	0.0026 - 10	0.06	4 of 78	44	0 of 78
Ethylbenzene	0.00044 - 15	1	1 of 78	390	0 of 78
Toluene	0.00043 - 33	0.7	2 of 78	500	0 of 78
Total Xylene	0.0019 - 93	0.26	3 of 78	500	0 of 78
SVOCs					
Acenaphthene	0.0039 - 50	20	3 of 78	500	0 of 78
Acenaphthylene	0.005 - 110	100	1 of 78	500	0 of 78
Anthracene	0.0087 - 160	100	2 of 78	500	0 of 78
Benzo(a)anthracene	0.03 - 220	1	16 of 78	5.6	11 of 78
Benzo(b)fluoranthene	0.0054 - 170	1	16 of 78	5.6	11 of 78
Benzo(k)fluoranthene	0.002 - 91	0.8	14 of 78	56	2 of 78
Benzo(a)pyrene	0.0051 - 150	1	15 of 78	1	15 of 78
Chrysene	0.0064 - 180	1	16 of 78	56	4 of 78
Dibenz(a,h)anthracene	0.15 - 42	0.33	7 of 78	0.56	7 of 78
Dibenzofuran	0.0052 - 130	7	8 of 78	350	0 of 78
Fluoranthene	0.0054 - 440	100	5 of 78	500	0 of 78
Fluorene	0.011 - 180	30	4 of 78	500	0 of 78
Indeno (1,2,3-cd)pyrene	0.0063 - 53	0.5	14 of 78	5.6	8 of 78
2-Methylphenol (o-Cresol)	0.0087 - 19	0.33	2 of 78	500	0 of 78
4-Methylphenol (p-Cresol)	0.018 - 59	0.33	6 of 78	500	0 of 78
Naphthalene	0.0097 - 490	12	2 of 78	500	0 of 78
Phenanthrene	0.0038 - 620	100	4 of 78	500	1 of 78
Phenol	0.45 - 28	0.33	4 of 78	500	0 of 78
Pyrene	0.0022 - 360	100	4 of 78	500	0 of 78
Pesticides					
4,4'-DDE (p,p'-DDE)	0.015 - 0.015	0.0033	1 of 11	62	0 of 11
Inorganics					

Detected Constituents	Concentration Range Detected ^a (ppm)	Unrestricted SCG ^b (ppm)	Frequency Exceeding Unrestricted SCG	Commercial SCG ^c (ppm)	Frequency Exceeding Commercial SCG
Arsenic	1.2 - 16.3	13	1 of 78	16	1 of 78
Copper	9.8 - 337	50	3 of 78	270	1 of 78
Lead	4.4 - 2940	63	14 of 78	1000	2 of 78
Manganese	159 - 2000	1600	1 of 78	10000	0 of 78
Mercury	0.0085 - 3.5	0.18	9 of 78	2.8	1 of 78
Nickel	6.4 - 47.5	30	7 of 78	310	0 of 78
Zinc	21 - 1080	109	7 of 78	10000	0 of 78

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.

The former gas holder area of concern is to be addressed in the remedy selection process.

Sediments

Sediment probing was performed along 22 transects established perpendicular to the Chemung river shoreline adjacent to the site to investigate possible visible evidence of the MGP related impacts. In addition, probing was performed within first depositional area located downstream of the site. No evidence of MGP or petroleum contamination was noted during the sediment probing. Sediment samples were then collected to assess the potential for MGP impacts to the river. Thirty four shallow (0-6 inch) sediment samples were collected from the Chemung River. Out of the 34 samples, 10 samples were collected upstream of the site and 24 were collected adjacent to the site. In addition, six deeper sediment samples (1–4 feet below sediment surface) were collected from the Chemung River adjacent to the site. No deeper sediment samples were collected upstream or downstream of the site.

Except for phenanthrene, lead, and silver there were no exceedances of the Department's Technical Guidance for Screening Contaminated Sediments (the SCG for sediments). The concentration of phenanthrene was noted at 1.6 ppm (SCG 1.5 ppm). Phenanthrene was detected at maximum concentration of 1.1 ppm in an upstream sediment sample. The maximum concentration of lead was noted at 389 ppm (SCG 218 ppm). Lead was detected at maximum concentration of 300 ppm in upstream sediment sample. The concentration of silver was noted at 19.6 ppm (SCG 3.7 ppm).

Total PAH concentrations in shallow sediments ranged from 0.16 ppm to 9.1 ppm, compared to 6.9 ppm reported for upstream sediment samples. Total PAH concentrations in deeper sediments ranges from 0.17 ppm to 10.4 ppm.

A summary of sediment exceedances in samples collected during the 2013 remedial investigation is presented in **Figure 6**. Table 4 below summarizes the exceedances of sediment SCGs found during the remedial investigation.

Table 4 – Sediment

Detected Constituents	Concentration Range Detected (ppm)^a	NYSDEC ER-L^b (ppm)	Frequency Exceeding NYSDEC ER-L	NYSDEC ER-M^b (ppm)	Frequency Exceeding NYSDEC ER-M
SVOCs					
Acenaphthene	0.038 - 0.17	0.016	6 of 40	0.5	0 of 40
Acenaphthylene	0.047 - 0.17	0.044	6 of 40	0.64	0 of 40
Anthracene	0.044 - 0.78	0.0853	13 of 40	1.1	0 of 40
Benzo(a)anthracene	0.041 - 0.96	0.261	11 of 40	1.6	0 of 40
Benzo(a)pyrene	0.032 - 0.6	0.43	3 of 40	1.6	0 of 40
Chrysene	0.05 - 0.83	0.384	7 of 40	2.8	0 of 40
Dibenz(a,h)anthracene	0.051 - 0.091	0.0634	3 of 40	0.26	0 of 40
Fluoranthene	0.062 - 2	0.6	9 of 40	5.1	0 of 40
Fluorene	0.049 - 0.22	0.019	11 of 40	0.54	0 of 40
Naphthalene	0.055 - 0.084	0.16	0 of 40	2.1	0 of 40
Phenanthrene	0.047 - 1.6	0.24	13 of 40	1.5	1 of 40
Pyrene	0.053 - 1.7	0.665	6 of 40	2.6	0 of 40
Pesticides					
4,4'-DDE (p,p'-DDE)	0.0064 - 0.0069	0.0022	2 of 2	0.027	0 of 2
Inorganics					
Arsenic	2.9 - 30.5	8.2	3 of 32	70	0 of 32
Copper	5.9 - 247	34	8 of 32	270	0 of 32
Lead	7.1 - 389	47	14 of 32	218	2 of 32
Mercury	0.0099 - 0.2	0.15	1 of 32	0.71	0 of 32
Nickel	8.9 - 23.6	21	1 of 32	52	0 of 32
Silver	0.26 - 19.6	1	1 of 32	3.7	1 of 32

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in sediment;

b - SCG: The Department's Technical Guidance for Screening Contaminated Sediments.

ER-M: Effect Range Moderate, ER-L: Effect Range Low

There was no visible evidence of MGP impacts to sediments in the river adjacent and downstream of the site. Sediments samples results were consistent with or only slightly higher than upstream sediment samples results and are consistent with levels anticipated in urban environments. As such, no site-related sediment contamination of concern was identified during the RI.

Therefore, no remedial alternatives need to be evaluated for sediment.

Surface Water

The groundwater investigation did not reveal any former MGP related contamination or its ongoing migration to the Chemung River located south of the site. Above conclusion was reaffirmed by evaluating the results of the past surface water investigation conducted in the Chemung River. As a result, surface water was not sampled during the remedial investigation.

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: Cover with Institutional Control

This alternative will include covering MGP impacted soils/materials with the existing asphalt pavement and placement of 1 foot soil cover meeting the SCOs specified in 6 NYCRR Pat 375-6.7(d) for commercial use. Institutional controls in the form of Environmental Easement restricting land use, prohibiting site ground water use and implementation of Department approved Site Management Plan (SMP) will be required. The SMP will contain an excavation plan to manage soils underneath the cover should they be uncovered. SMP will also contain monitoring plan to assess the effectiveness of the remedy, and periodic inspection of the cover. Periodic certification of the institutional and engineering controls (IC/ECs) will be required.

Present Worth: \$ 400,000
Capital Cost: \$ 99,000
Annual Costs: \$ 18,000

Alternative 3: In-Situ Solidification (ISS) with Institutional Controls

This alternative will include in-situ solidification (ISS) of contaminated soils within and below the gas holder foundation to remediate soils exceeding 500 ppm of total PAHs. This alternate will require excavation of soil in ISS footprint (0-5 feet), then auger ISS soil within and below holder foundation (5-30 feet) and repair asphalt cover. ISS is a process that binds the soil particles in place creating a low permeability mass. The contaminated soil will be mixed in place together with solidifying agents (typically Portland cement) or other binding agents using an excavator or augers. The soil and binding agents are mixed to produce a solidified mass resulting in a low permeability monolith. The solidified mass would then be covered with a cover system to prevent direct exposure to the solidified mass and protect it from freeze/thaw cycles. The resulting solid matrix reduces or eliminates mobility of contamination and reduces or eliminates the matrix as a source of groundwater contamination. Where a soil cover is required over the ISS treatment area, it would consist of a minimum of four feet of soil meeting the SCOs for commercial use. For areas where solidified material underlies the cover, the solidified material itself would serve as the demarcation layer due to the nature of the material. Institutional controls, including periodic certification of the IC/ECs as described in Alternative 2 will be required.

Present Worth: \$ 1,420,000
Capital Cost: \$ 1,217,000
Annual Costs: \$ 12,000

Alternative 4: Source Material Excavation with Site Cover and Institutional Controls

This alternative consists of excavation and off-site disposal of the subsurface gas holder structure and its contents to remediate source material containing visible coal tar impacts and soil/material exceeding 500 ppm of total PAHs. Anticipated depth of excavation is 30’ which will require excavation support. Excavation will be backfilled and cover will be installed with the demarcation layer to allow for the commercial use of the property. Institutional controls including periodic certification of the IC/ECs, as described in Alternative 2, will be required.

Present Worth: \$ 3,050,000
Capital Cost: \$ 2,844,000
Annual Costs: \$ 12,000

Alternative 5: Soil Removal to Unrestricted Use SCOs

This alternative includes excavation and off-site disposal of all soil/material that exceeds the unrestricted SCO. The remedy includes placement of backfill meeting the unrestricted SCOs. This alternate includes removal and reconstruction of the flood control features present at the site to remove soils exceeding unrestricted SCOs.

Capital Cost: \$ 21,577,000

Exhibit C**Remedial Alternative Costs**

Remedial Alternative	Capital Cost (2015 \$)	Annual Costs (\$)	Total Present Worth (Rounded \$)
Alternative 1 - No Action	\$0	\$0	\$0
Alternative 2 – Cover with Institutional Control	\$99,000	\$18,000	\$400,000
Alternative 3 - In-Situ Solidification (ISS) with Institutional Controls	\$1,217,000	\$12,000	\$1,420,000
Alternative 4 - Source Material Excavation with Site Cover and Institutional Controls	\$2,844,000	\$12,000	\$3,050,000
Alternative 5 - Soil Removal to Unrestricted Use SCOs	\$21,577,000	\$0	\$21,577,000

Exhibit D

SUMMARY OF THE SELECTED REMEDY

The Department is selecting Alternative 4, **Excavation of Source Material, Site Cover and Institutional Controls** as the remedy for this site. Alternative 4 would achieve the remediation goals for the site by removal of the gas holder foundation contents, foundation and deeper impacted soils, removal and imposition institutional controls and engineering controls (IC/ECs) to restricting the use of the site to commercial use and prohibit use of site ground water. The elements of this remedy are described in Section 7. The selected remedy is depicted in Figure 7.

Basis for Selection

The selected 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. Alternative 1 (No Action) does not protect public health and the environment and therefore, does not meet the threshold criteria. Alternative 1 will not be evaluated further. The four remaining alternatives include common elements that will result in overall protection of human health and the environment. Alternative 5 (removal to unrestricted Soil Cleanup Objectives (SCOs)) would return the site to pre-release conditions and remove all contamination from the site. Alternative 2 (site cover), Alternative 3 (In-situ Soil Stabilization (ISS) of source material)) and Alternative 4 (excavation of source material) all meet the criterion as they include placement of a soil cover and measures to prevent migration of contamination to the environment.

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.

All four of the remaining alternatives include common elements that will result in compliance with the SCGs. Alternative 5 meets all of the site specific SCGs as it returns the site to pre-release conditions. Alternatives 2 through 4 meet the criterion for subsurface soils, as they all include establishment of a soil cover. Alternatives 3 and 4 would address source materials through treatment and removal respectively, and would therefore continue to meeting applicable groundwater SCGs.

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.

Alternative 5 would be the most effective and permanent, because it would involve the removal of all contamination to unrestricted levels but would provide little additional benefit compared to the high cost. Alternative 4 (excavation of the gas holder) is the next most effective and permanent option due to the removal of source materials by excavation, and would eliminate the source of potential future groundwater impacts. Under Alternative 3 the contamination would be solidified by ISS to eliminate the potential for migration, contamination remaining in the subsurface soil would require long-term management. Alternative 2 (site cover) would be the least effective and impermanent as higher levels of contamination would require long-term management.

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.

Alternative 5 would result in the most reduction in toxicity, mobility and volume, because it would involve the complete removal of all impacts above the unrestricted SCO's but would provide little additional TMV benefit compared to the high cost. Alternative 4 would result in slightly less reduction in volume because soil containing lower levels of contamination would remain at the site. Alternative 3 would result in a reduction in mobility to a similar degree because of the soil solidification. Alternative 2 would not involve any reduction of toxicity, mobility, or volume.

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 would have the fewest short-term impacts as there are no intrusive activities, only the installation of a cover system. Alternatives 3 and 4 will have short-term impacts resulting from increased on-site construction activities, either the ISS or the excavation. However, there are methods available to control these impacts reliably and effectively. Alternative 5 would involve significant short term impacts due to the removal and restoration of the flood control structure to enable excavation of the impacted soils underneath. Alternative 5 would also require the greatest number of truck trips as compared to the other alternatives.

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 would be most implementable, because it involves the least intrusive site work, with little uncertainty with regard to the construction methods to be utilized. Alternative 4 would rank as next most implementable, because soil removal will use conventional technologies which are widely available. Alternative 3 would be slightly less implementable compared to Alternative 4 because ISS involves specialized equipment and contractors. Alternative 5 would be the most technically and administratively difficult to implement due to the permit requirements to remove and replace a flood control structures within a flood control easement. It would also necessitate managing large volumes of excavated soils and excavation below the water table.

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.

Alternative 2 has the lowest capital cost (\$99,000) but a relatively high present value of annual cost (\$305,000) but this remedy does not address the MGP-impacted material at the site. Alternative 3 has a lower present worth cost (\$1,420,000) than the other two active remedies (4 and 5) but alternative 3 leave behind a solidified material that will require continued monitoring and maintenance. Alternative 5 is the least cost effective as its high cost of \$21,600,000 and would not have a commensurably increase in the value of added public health or environmental protection. Alternative 4 is the most cost-effective option as it provides for the current and widest-range of future land use, and addresses potential exposure issues for surface soil and subsurface soil, and is protective of groundwater. It has a relatively moderate Present Worth cost of approximately \$3,100,000.

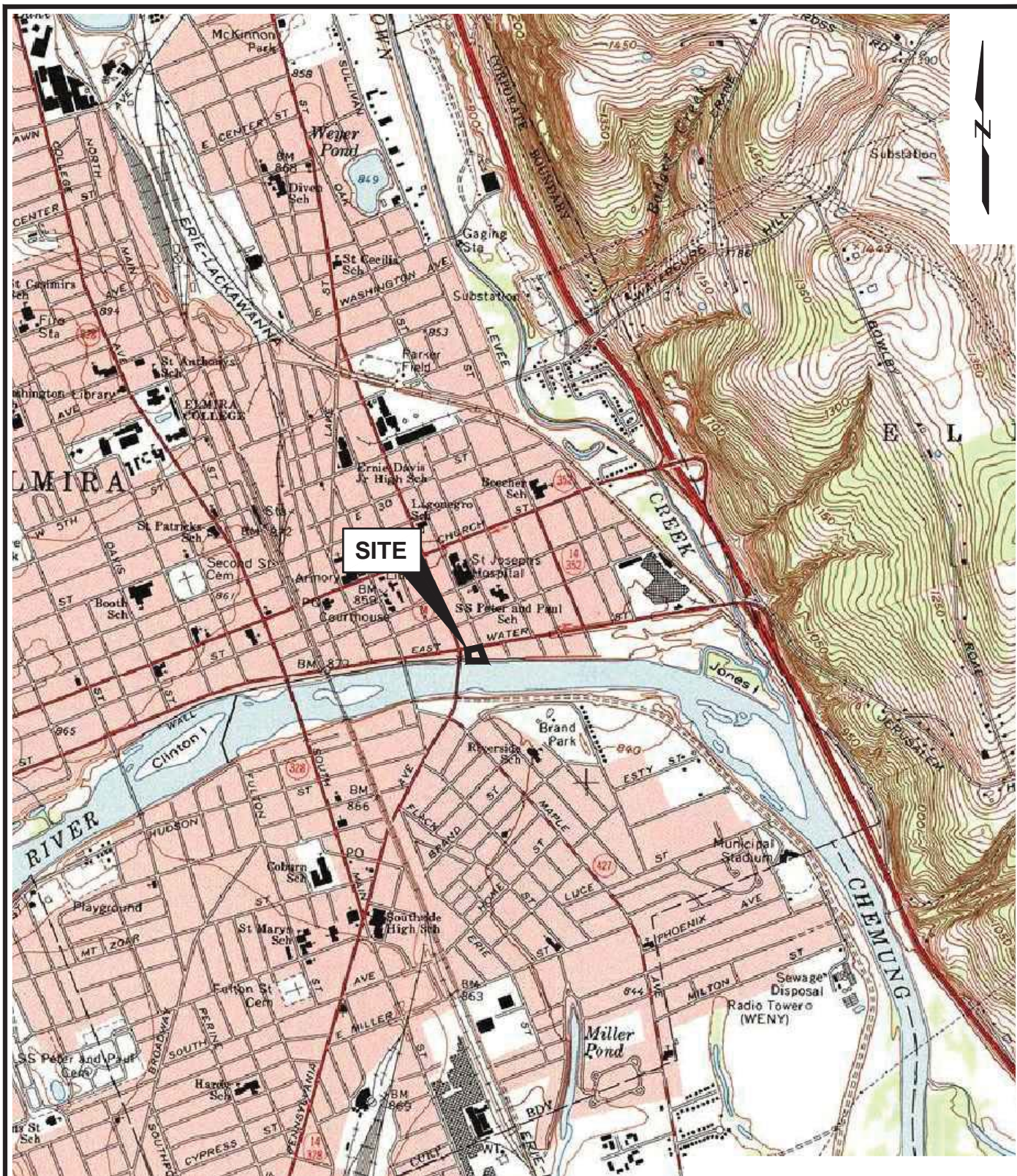
8. Land Use. When cleanup to pre-disposal conditions is determined to be infeasible, the Department may consider the current, intended, and reasonable anticipated future land use of the site and its surroundings in the selection of the soil remedy.

The anticipated use of the site is commercial land use and flood control. Alternative 4 would allow for the significant removal of contamination, would allow for commercial land use, which includes certain recreational uses. Although Alternative 5 would completely remove contamination and would allow for commercial and higher land uses without controls, such higher uses are unlikely in the vicinity of a flood control structure. Alternatives 3 and 2 are less desirable since contamination would remain at the site. However, with the proper site management commercial use of the site is feasible.

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 were evaluated. A responsiveness summary has been prepared that describes public comments received and the manner in which the Department addressed the concerns raised.

Therefore, Alternative 4 (figure 7) has been selected because, as described above, it satisfies the threshold criteria and provides the best balance of the balancing criterion.



SOURCE:

U.S.G.S. TOPOGRAPHIC MAP ELMIRA, NY 1969, CREATED WITH TOPO!
 © 2001 NATIONAL GEOGRAPHIC (www.nationalgeographic.com/topo)

0 2000' 4000'



SCALE: 1" = 2000'

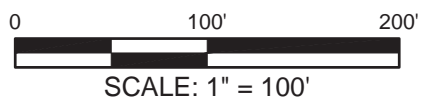
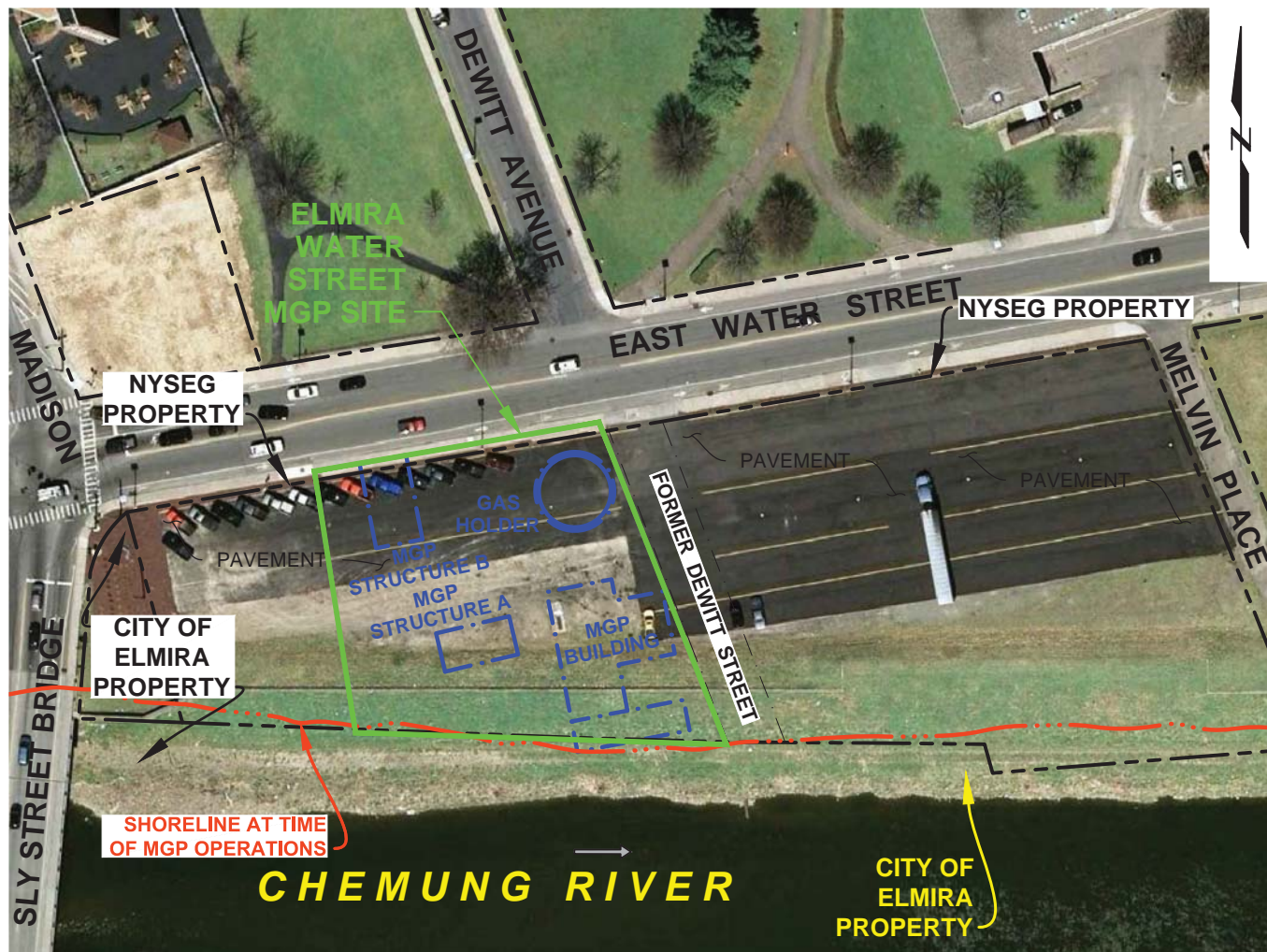
Elmira Water Street MGP Site
 Elmira, New York

NYSEG
 Binghamton, New York



SITE LOCATION

Fig. 1



SOURCES

1. AERIAL PHOTOGRAPH FROM GOOGLE-IMAGERY
COPYRIGHT 2011 GEOEYE, NEW YORK GIS.
2. 5/30/13 KEYSTONE ASSOCIATES PLS, SURVEY.

LEGEND:

- CURRENT PROPERTY LINE
- MGP SITE BOUNDARY
- [---] HISTORICAL MGP FEATURE
- FORMER ROADWAY

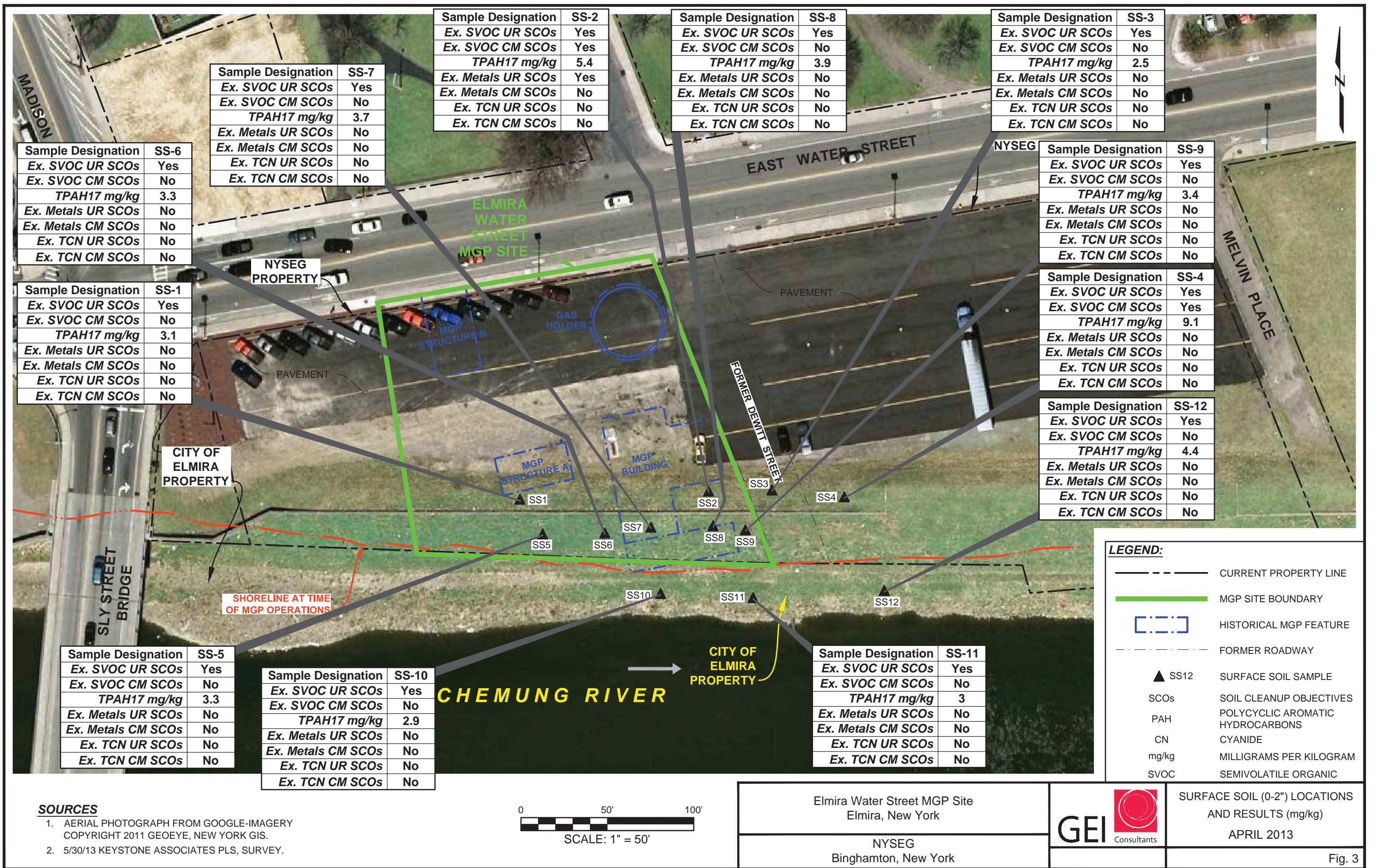
Elmira Water Street MGP Site
Elmira, New York

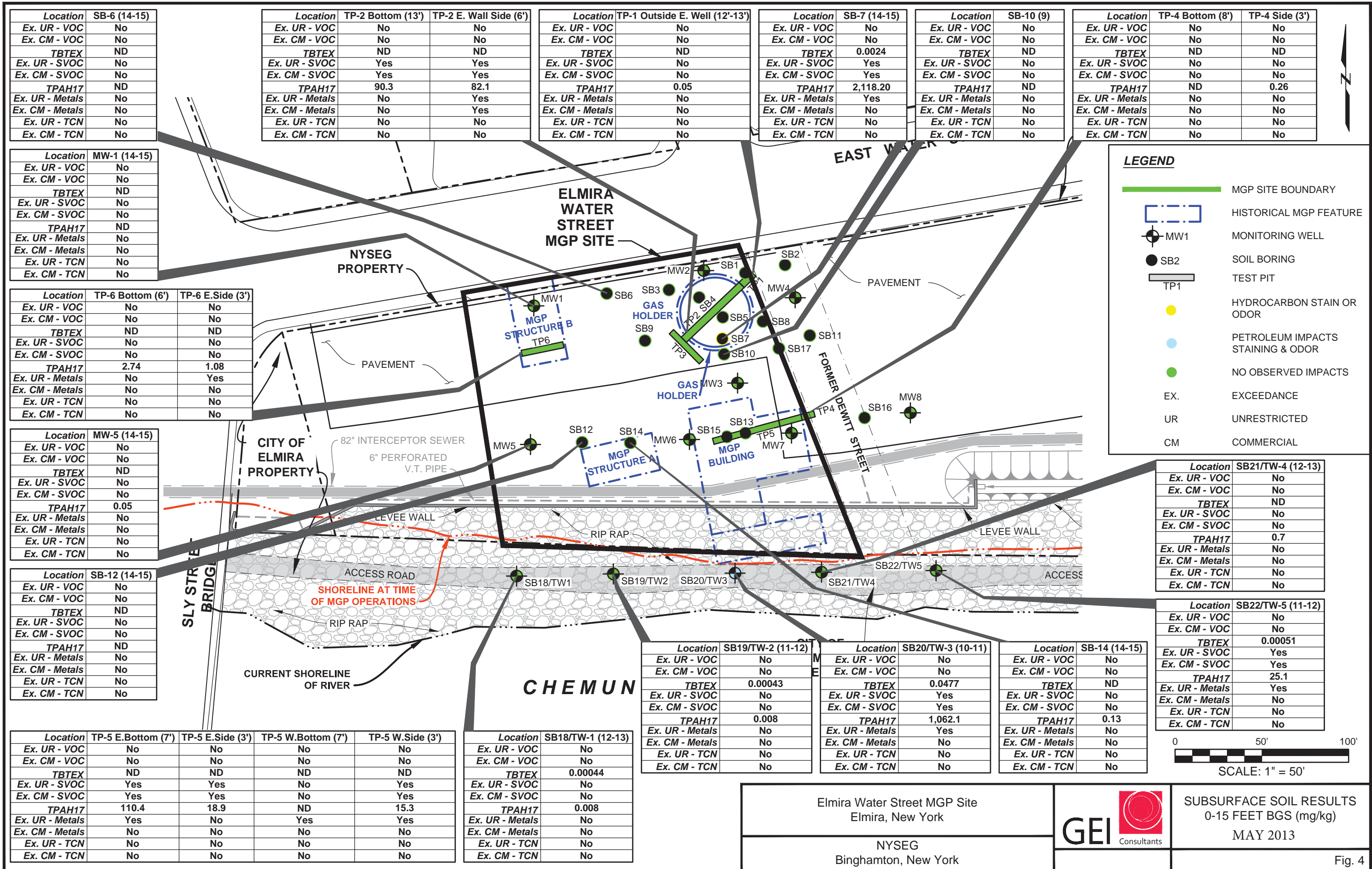
NYSEG
Binghamton, New York

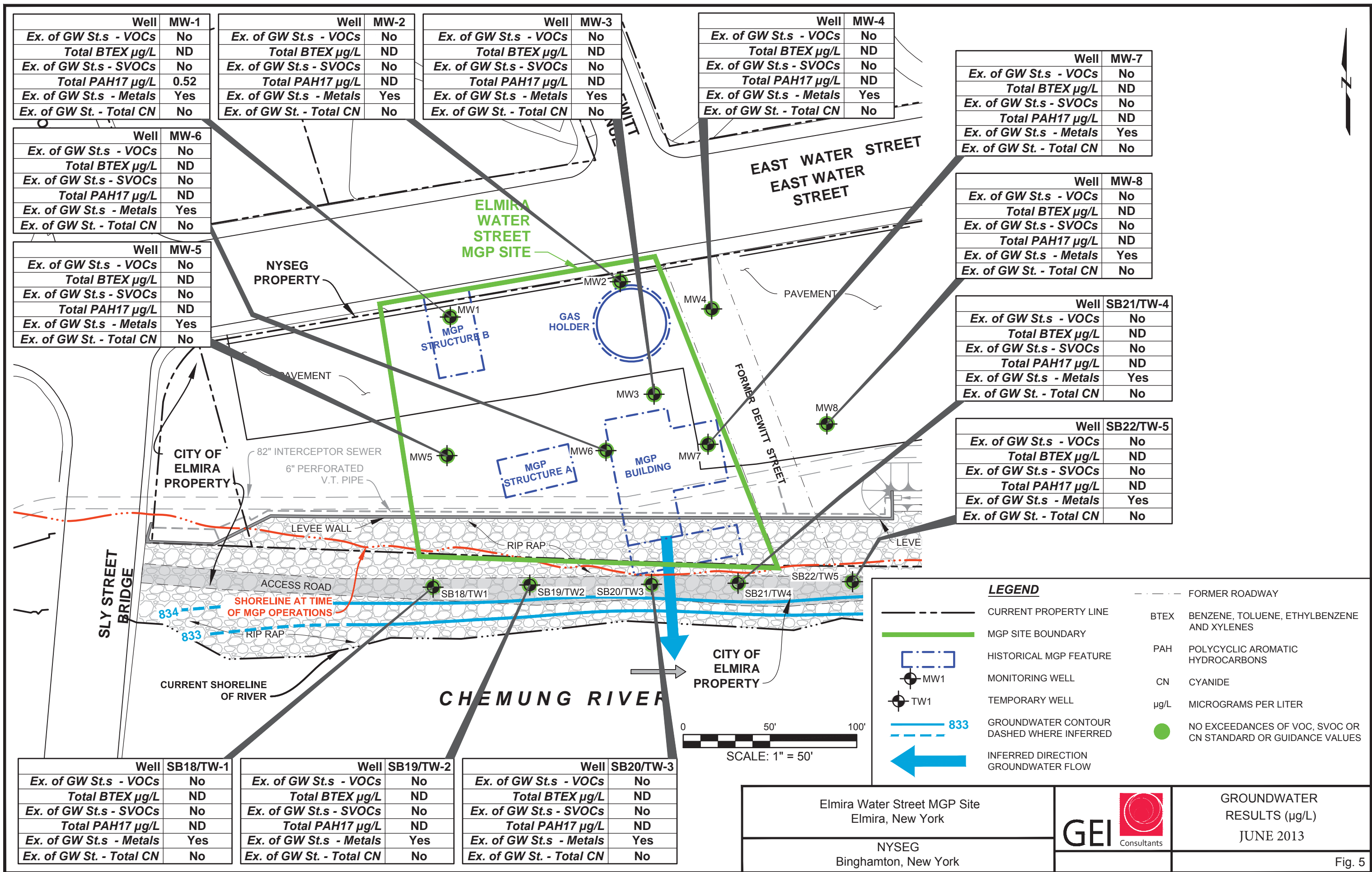


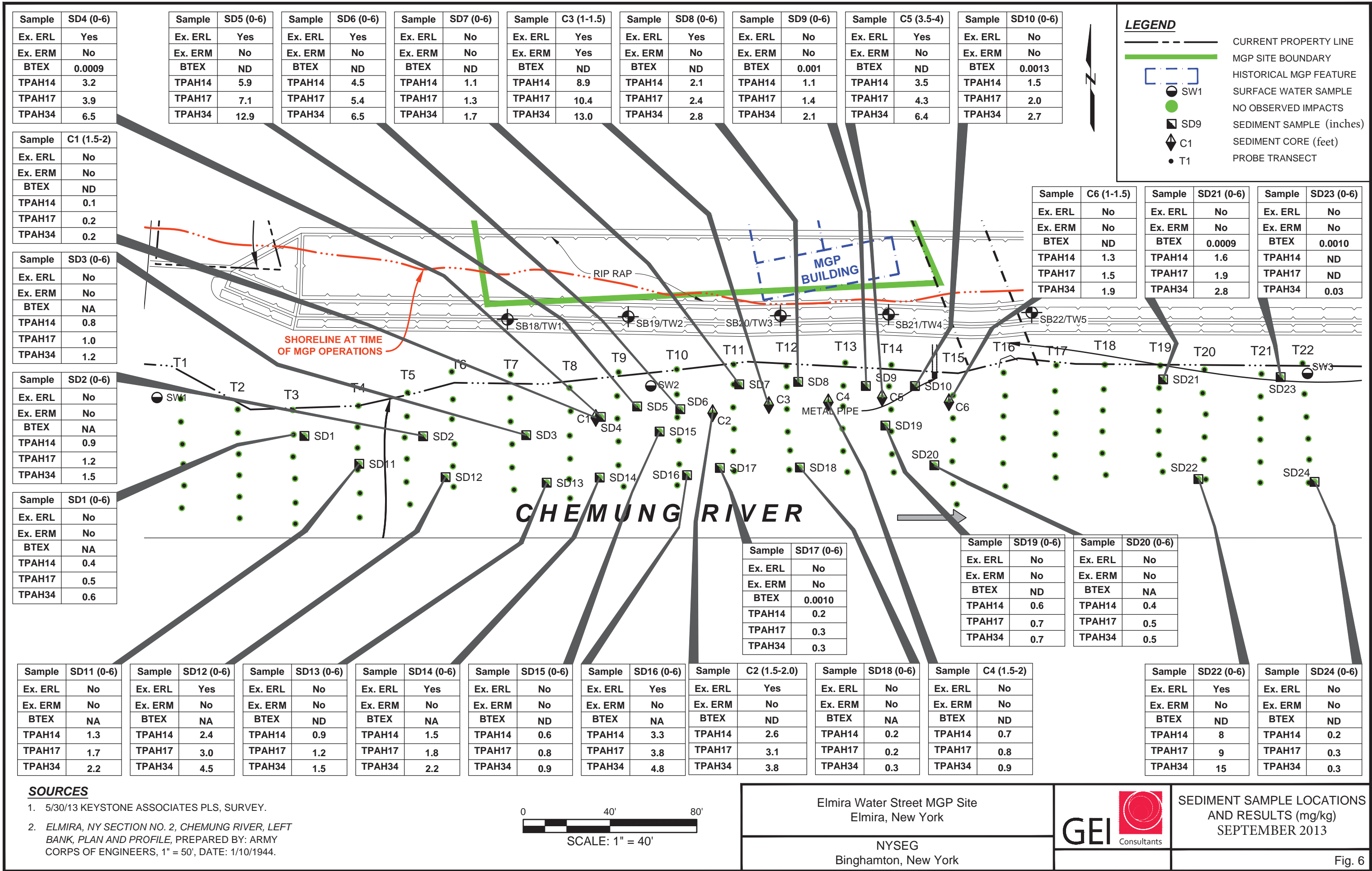
SITE LOCATION

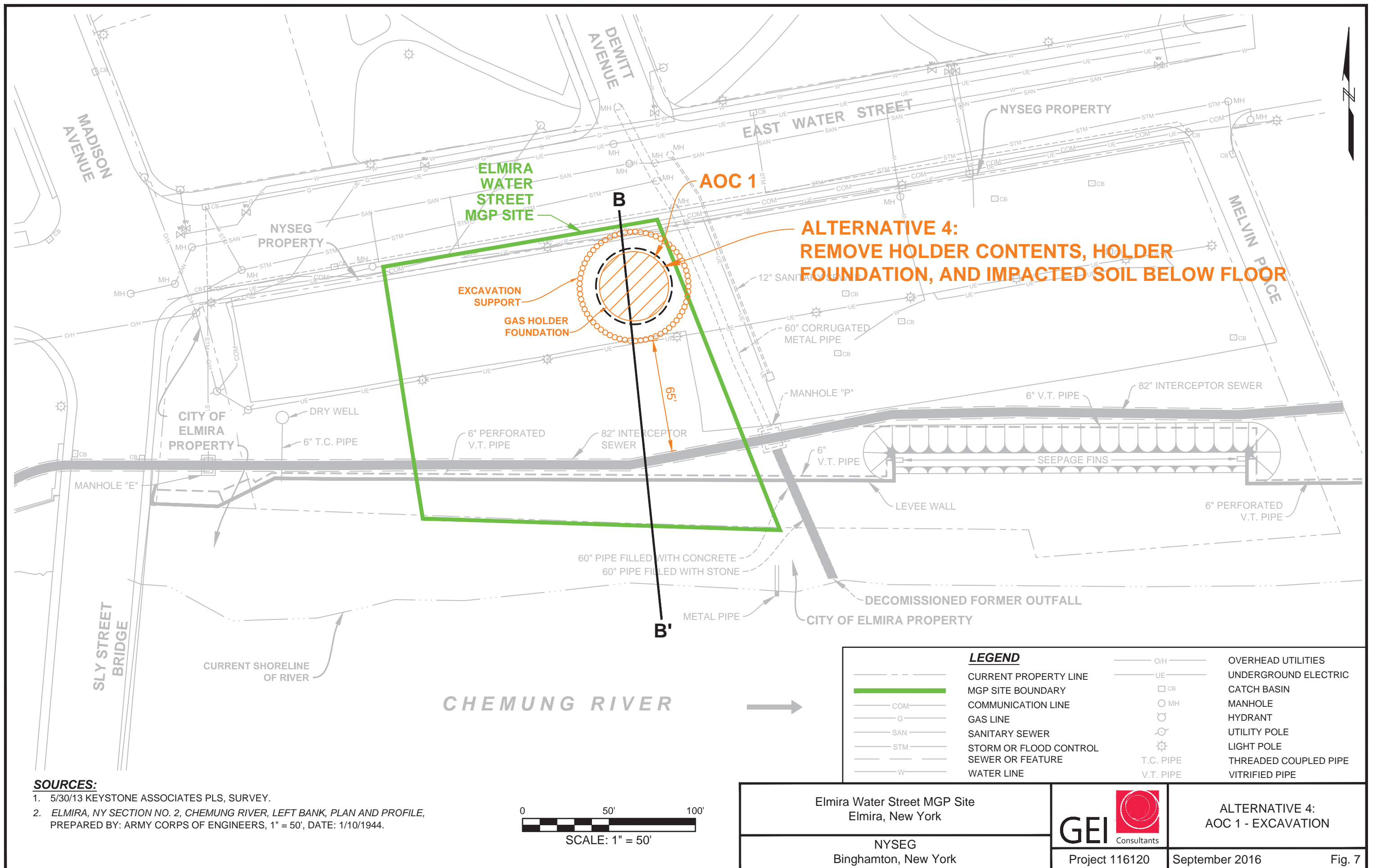
Fig. 2





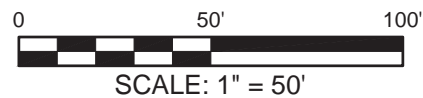






SOURCES:

1. 5/30/13 KEYSTONE ASSOCIATES PLS, SURVEY.
2. ELMIRA, NY SECTION NO. 2, CHEMUNG RIVER, LEFT BANK, PLAN AND PROFILE, PREPARED BY: ARMY CORPS OF ENGINEERS, 1" = 50', DATE: 1/10/1944.



LEGEND

---	CURRENT PROPERTY LINE	— O/H —	OVERHEAD UTILITIES
—	MGP SITE BOUNDARY	— UE —	UNDERGROUND ELECTRIC
— COM —	COMMUNICATION LINE	□ CB	CATCH BASIN
— G —	GAS LINE	○ MH	MANHOLE
— SAN —	SANITARY SEWER	○	HYDRANT
— STM —	STORM OR FLOOD CONTROL SEWER OR FEATURE	○	UTILITY POLE
— W —	WATER LINE	○	LIGHT POLE
		— T.C. PIPE —	THREADED COUPLED PIPE
		— V.T. PIPE —	VITRIFIED PIPE

Elmira Water Street MGP Site
Elmira, New York

NYSEG
Binghamton, New York

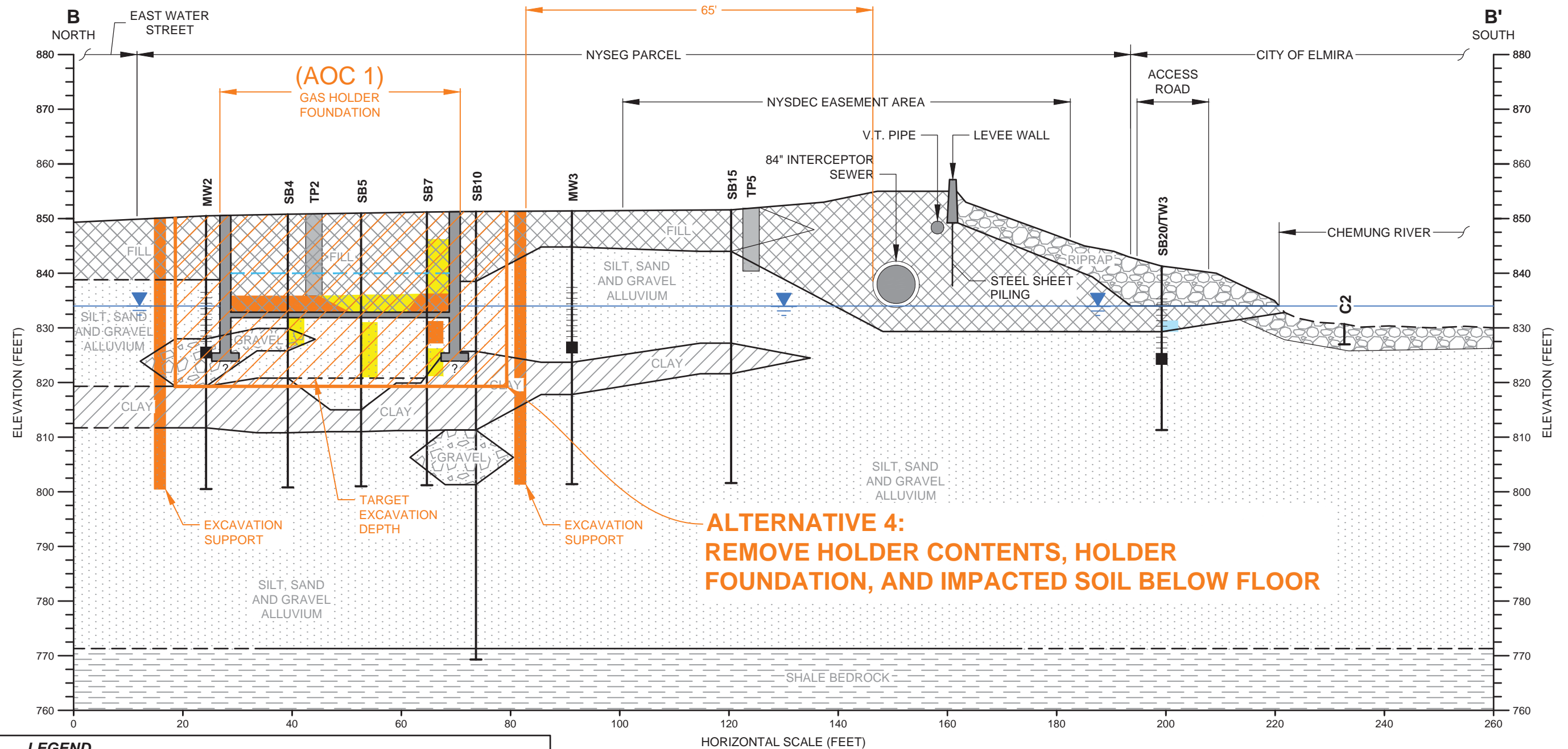


Project 116120

ALTERNATIVE 4:
AOC 1 - EXCAVATION

September 2016

Fig. 7

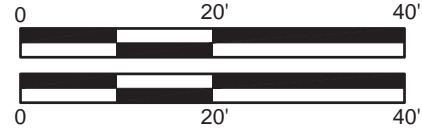


**ALTERNATIVE 4:
REMOVE HOLDER CONTENTS, HOLDER
FOUNDATION, AND IMPACTED SOIL BELOW FLOOR**

LEGEND

	WATER LEVEL IN GAS HOLDER FOUNDATION		TP2 TEST PIT
	GROUNDWATER TABLE (JUNE 18, 2013)		FILL
	CONTACT		SILT, SAND AND GRAVEL ALLUVIUM
	INFERRED CONTACT		CLAY
	SOIL BORING/WELL IDENTIFICATION		GRAVEL
	SCREEN INTERVAL		SHALE BEDROCK
	DNAPL SUMP		HYDROCARBON STAIN OR ODOR
	BOTTOM OF BORING		BLEBS, GLOBS OR SHEEN
	GEOPROBE BORING / GROUNDWATER SAMPLE		PETROLEUM IMPACTS STAINING AND ODOR
	V.T. PIPE		
	VITRIFIED PIPE		

HORIZONTAL SCALE: 1" = 20'



VERTICAL SCALE: 20'

NOTE: 1x VERTICAL EXAGGERATION

Elmira Water Street MGP Site
Elmira, New York

NYSEG
Binghamton, New York



Project 116120

ALTERNATIVE 4:
CROSS SECTION B-B'

September 2016

Fig. 8

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

**NYSEG - Elmira Water St. MGP
State Superfund Project
Elmira, Chemung County, New York
Site No. 808025**

The Proposed Remedial Action Plan (PRAP) for the NYSEG - Elmira Water St. MGP site was prepared by the New York State Department of Environmental Conservation (the Department) in consultation with the New York State Department of Health (NYSDOH) and was issued to the document repositories on February 27, 2017. The PRAP outlined the remedial measure proposed for the contaminated soil and groundwater at the NYSEG - Elmira Water St. MGP site.

The release of the PRAP was announced by sending a notice to the public contact list, informing the public of the opportunity to comment on the proposed remedy.

A public meeting was held on March 23, 2017, which included a presentation of the remedial investigation, feasibility study (RI/FS) for the NYSEG - Elmira Water St. MGP as well as a discussion of the proposed remedy. The meeting provided an opportunity for the public to discuss their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. The public comment period for the PRAP ended on March 30, 2017.

This responsiveness summary responds to all questions and comments raised during the public comment period. The following are the comments received at the public meeting, with the Department's responses:

COMMENT 1: How many Manufactured Gas Power Plant (MGP) sites are there in New York and how does the contamination at this site compare?

RESPONSE 1: There are approximately 230 MGP sites identified in New York State that require some type of investigation or remediation. New York State Electric and Gas (NYSEG) is addressing 33 under a consent order with the Department. The nature and extent of MGP related contamination noted at the Elmira MGP Site is limited to the former subsurface gas holder structure and the contamination does not appear to have migrated beyond the holder. This MGP site is minimally contaminated in comparison to some other MGP site in the New York State.

COMMENT 2: Can contamination from the on-site source area reach the Chemung River via groundwater?

RESPONSE 2: The remedial investigation did not identify migration of MGP contamination to the Chemung River via groundwater or any medium. The subsurface contamination is limited to the former subsurface gas holder structure at a depth of over 10 feet below grade. The investigation only found groundwater contamination directly within the former holder, and monitoring wells

installed between the holder and the river did not show any site-related contamination. The remedy will eliminate the source of the contamination via excavation and off-site disposal. The removal will include the gas holder structure, its contents, and any impacted soil underneath the gas holder. This will ensure that site-related contamination will not impact the groundwater or the Chemung River in the future. The remedy requires post-remediation groundwater monitoring to ensure that the remedy remains protective of human health and environment.

COMMENT 3: When describing subsurface contamination what is a bleb?

RESPONSE 3: Blebs are small globules of the coal tar or oil that are noted by the field geologist when they describe the appearance of the sample from a soil boring. The presence of blebs is a visual indication of the extent of soil contamination. Generally, blebs observed at MGP sites are brown to black oil globules and usually have a petroleum-like odor.

COMMENT 4: Has anyone become ill from contamination from an MGP site?

RESPONSE 4: The primary contaminants of concern associated with MGP sites are poly aromatic hydrocarbon (PAHs) and benzene, ethylbenzene, toluene, and xylene (BETX). Exposure to these contaminants may result in health effects; specifically, odors associated with MGP waste may result in acute health effects such as respiratory irritation or headaches. However, people are not expected to come in contact with site-related contaminants at this site in its current state and measures will be in place during the remedial activities to minimize the potential for exposure during construction activities.

The potential for exposure to site-related contaminants is evaluated at each regulated former MGP site throughout the State and actions are implemented to reduce exposure if necessary.

COMMENT 5: What is the annual cost of the proposed remedy and what does it include?

RESPONSE 5: The remedy requires NYSEG to comply with the provisions of a Site Management Plan (SMP) to ensure that the remedy continues to remain effective and protective of human health and the environment. The \$12,000 annual cost to comply with the SMP for this site includes inspection/maintenance of the site cover, groundwater sampling, reporting and certification to the Department. For the purposes of estimating, the total cost of the remedy, the 'Present Worth' cost, includes the cost of design and construction as well as the annual operating costs for 30 years of maintenance.

COMMENT 6: How does the proposed Site Management Plan address soil vapor intrusion?

RESPONSE 6: Following remedy implementation the Department, in consultation with the NYSDOH, will review and approve a Site Management Plan (SMP). The remedy includes a provision for evaluation of the potential for soil vapor intrusion for any future buildings that are developed on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion.

COMMENT 7: Can the site be used as a farmers market and/or a community garden and what can the site be used for after the remedial action is complete?

RESPONSE 7: The proposed remedy imposes an institutional control (IC) in the form of an environmental easement (EE). The EE to be placed on the site will restrict the use of the site to commercial and industrial land uses, which would prevent the use of the site for agricultural purposes such as a community garden. However, raised bed gardening may be permitted if the soil is placed above the cover system and they are controlled and monitored by a single entity (e.g., the City). The site could be used as farmers market provided that there is no penetration of the site cover system.

COMMENT 8: What is the next phase of the project and what is the schedule?

RESPONSE 8: The next phase of the project will consist of preparing the remedial design for Department review and approval. Once the remedial design is approved, NYSEG will construct the remedy. The remedy construction is currently scheduled for 2021.

APPENDIX B

Administrative Record

Administrative Record

**NYSEG - Elmira Water St. MGP
State Superfund Project
Elmira, Chemung County, New York
Site No. 808025**

1. Proposed Remedial Action Plan for the NYSEG - Elmira Water St. MGP site, dated February 27, 2017 prepared by the Department.
2. Order on Consent D0-0002-9309, between the Department and NYSEG, March 1994.
3. Remedial Investigation Work Plan, February 2013.
4. Remedial Investigation Report (RIR), August 2014.
5. Feasibility Study, November 2015
6. Feasibility Study addendum, October 2016.
7. Citizen Participation Plan, January 2012.