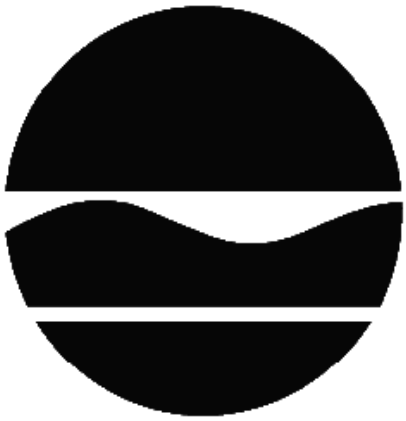
PROPOSED REMEDIAL ACTION PLAN

NYEG - Goshen MGP
Goshen, Orange County
Site No. 336046
February 2011



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 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:

Goshen Public Library
203 Main Street
Goshen, NY 10924
Phone: (845)-294-6606

NYSDEC
Attn: Bernard Franklin
625 Broadway
Albany, NY 12233-7014
Phone: (866)-520-2334

A public comment period has been set from:

2/28/2011 to 3/30/2011

A public meeting is scheduled for the following date:

3/17/2011 at 7:00 PM

Public meeting location:

Comfort Inn - The New York Room, 20 Hatfield Lane, Goshen, NY

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 through 3/30/2011 to:

Bernard Franklin
NYS Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233
bcfrankl@gw.dec.state.ny.us

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, 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 former Goshen Manufactured Gas Plant (MGP) is located at 250 West Main Street in the Village of Goshen, in a commercial and residential area. The site is 1 acre in size, and is bounded by Rio Grande Creek at the northwest corner, Village of Goshen property to the north and northeast, private commercial properties to the east and west, and West Main Street to the south.

Site Features: The site is occupied by a New York State Electric & Gas (NYSEG) office building, parking lot and an open outdoor equipment storage area. An active natural gas service center occupies the eastern portion of the site. Rio Grande Creek passes through the northwest corner of the site and flows in an east to west direction. No remnants of the former MGP structures exist above grade on-site.

Current Zoning/Use(s): The site is currently owned by NYSEG and is zoned for commercial uses.

Historical Use(s): The Goshen site was the location of a former MGP that operated for approximately 60 years, from 1885 to 1945, producing gas using the carbureted water gas and coal carbonization processes. The site was converted to a natural gas operations center between 1945 and 1947.

Site Geology and Hydrogeology: Site geology consists of three units. These are, from top to bottom: fill which is 10 to 12 feet thick; alluvial sand and silt with a thickness of approximately 15 feet; and a till unit which is comprised of a very dense mixture of sand and silt with varied amounts of gravel and clay. Groundwater is encountered at a depth of approximately 5 to 15 feet below the ground surface (bgs). Shallow groundwater (upper 20 feet) beneath the site moves in the direction of Rio Grande Creek (northwest), while deeper groundwater moves westward parallel with creek flow.

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) is/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 Department and New York State Electric and Gas Corporation (NYSEG) entered into a multi-site Consent Order D0-0002-9309 on March 30, 1994. The Order obligates the responsible party to implement a full remedial program for 33 former MGP sites across the State, including the Goshen MGP.

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.

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 Information

The analytical data collected on this site includes data for:

- air
- groundwater
- surface water
- soil
- sediment
- soil vapor
- indoor air

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:

coal tar
cyanides(soluble cyanide salts)
benzene, toluene, ethylbenzene and xylenes (BTEX)
polycyclic aromatic hydrocarbons (PAHs), total

As illustrated in Exhibit A, the contaminant(s) of concern exceed the applicable standards, criteria and guidance for:

- groundwater
- soil
- sediment

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 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 eastern half of the site is fenced with areas that are either vegetated, paved, or covered by buildings, access to site-related contamination is restricted. However, persons could contact contaminants in the soil by digging below these cover materials. The western half of the site is accessible and persons could contact contaminants in the soil and groundwater by digging on or below the ground surface or otherwise disturbing the soil. People are not drinking the contaminated groundwater because the area is served by a public water supply that obtains water from a different source. Although polyaromatic hydrocarbons were found in surface water from the Rio Grande Creek, they were found upgradient and downgradient from the site and consequently are not site-related contaminants. Therefore, people are not expected to contact MGP-related waste in the Rio Grande Creek. People may come in contact with contaminants present in the shallow creek sediments while entering or exiting the creek during the recreational activities. Volatile organic compounds in the groundwater and soil may move into the soil vapor (air spaces within the soil), which in turn may move into overlying 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. Sampling indicates soil vapor intrusion is not a current concern for the existing on-site building. Off-site migration of contaminated soil vapor is not expected.

6.4: 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.

The Fish and Wildlife Resources Impact Analysis (FWRIA) for OU(s) 01, which is/are included in the RI report(s), present(s) a detailed discussion of the existing and potential impacts from the site to fish and wildlife receptors.

Based upon investigations conducted to date, the primary contaminants of concern at the site include coal tar, which contains benzene, toluene, ethylbenzene, xylenes (collectively referred to as BTEX) and polycyclic aromatic hydrocarbons (PAHs). Coal tar was the principal waste product produced at the former MGP site and is a reddish brown to black oily liquid by-product which formed as a condensate as the gas was cooled. Coal tar is referred to as a dense non-aqueous phase liquid (DNAPL) since it is slightly heavier than water and will not readily dissolve in water.

Soil, groundwater and sediment have been impacted by these contaminants, in some cases exceeding Department standards and guidance values.

Coal tar has been released at the site and has migrated only a short distance (20 to 30 feet) north and northwest of the assumed release points (i.e., former MGP structures). The coal tar moved through the fill, into the sand and silt, and then into the upper portion of the till in one area of the site. Most of the tar was encountered below the water table in relatively thin, sporadic seams. Soils contain coal tar in exceedance of NYSDEC SCGs.

The investigation results indicate that sediment in an area adjacent to the site (an outfall to the Rio Grande Creek) exceed the Department's SCGs for sediments for PAHs.

Coal tar below the water table will slowly dissolve and thereby adversely affect the quality of groundwater. Groundwater resources at the site include overburden groundwater typically 5-15 feet bgs flowing in a northern direction towards the Rio Grande Creek. The extent of groundwater affected by the site is largely limited to the sand and silt unit, extending about 50 to 60 feet downgradient (generally northwest) of the former MGP structures. Affected groundwater is generally limited to within the site boundary. Site-related contamination is impacting groundwater. No current or potential site-related surface water impacts have been identified.

SECTION 7: SUMMARY OF THE EVALUATION OF ALTERNATIVES

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 Exhibit B. 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 C. 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 D.

7.1: Evaluation of Remedial 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.

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.

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.

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.

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.

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.

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.

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 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.

7.2: Elements of the Proposed Remedy

The basis for the Department's proposed remedy is set forth at Exhibit E.

The estimated present worth cost to implement the remedy is $3,400,000. The cost to construct the remedy is estimated to be $2,400,000 and the estimated average annual cost is $60,000.

The elements of the proposed remedy are as follows:

1. A remedial design program would be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program. It will include an evaluation of the site service center building's status as a historical building. Green remediation principals 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 gas 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 and off-site disposal of approximately 760 cubic yards of surface and subsurface soil, including former MGP structures and foundations. Piping associated with these structures will be removed to the extent practical when determined to contain MGP-related by-products. Excavated materials that meet the DER 10 criteria may be reused to backfill the lower portion of the excavation area located at least 10 feet from the service center building.

3. An area impacted by MGP contamination, including source material outside the footprint of the existing structures will be addressed using in-situ soil stabilization (ISS), the volume to be stabilized is approximately 2,600 cubic yards of contaminated soils to the top of the till layer located at approximately 28 feet below grade.

4. Sediment in the Rio Grande Creek near the mouth of the 24-inch outfall pipe where elevated levels of PAHs are present will be removed to a depth up to 2 feet. The final limits of removal will be determined during design of the remedy. Clean material suitable for benthic habitat will be imported from off-site location to replace the impacted sediment removed from the Creek.

5. NAPL recovery wells will be installed in the 10-foot area between the existing service center building and the ISS area.

6. A site cover will be required to allow for commercial use of the site. The cover will consist either of the structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where the soil cover is required it will be a minimum of one foot of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for commercial use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d). Excavated soil meeting the Department's reuse criteria may be used to backfill the bottom part of the deeper excavation.

7. Imposition of an institutional control in the form of an environmental easement for the controlled property that:

(a) 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).
(b) limits the use and development of the controlled property for commercial and industrial use, recognizing that land use is subject to local zoning laws,
(c) restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the Department, NYSDOH or County DOH,
(d) prohibits agriculture or vegetable gardens on the controlled property,
(e) requires compliance with the Department approved Site Management Plan.

8. 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 assure 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 recovery wells discussed in Paragraph 5 above and the site cover discussed in Paragraph 6 above.

This plan includes, but may not be limited to:

(i) an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination (under and next to the service center building),
(ii) descriptions of the provisions of the environmental easement including any land use, or groundwater use restrictions,
(iii) provisions for the management and inspection of the identified engineering controls,
(iv) maintaining site access controls and Department notification, and

(v) 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 not be limited to:

(i) monitoring of soil cover and groundwater to assess the performance and effectiveness of the remedy,
(ii) a schedule of monitoring and frequency of submittals to the Department,
(iii) provision to evaluate the potential for vapor intrusion for any buildings developed on the site, implementing actions recommended to address exposure related to soil vapor intrusion.

Exhibit A

Nature and Extent of Contamination

This section describes the findings of the Remedial Investigation (RI). As described in the RI report, waste/ source materials were identified at the site and are impacting groundwater, soil, sediments in the adjacent off-site creek, and soil vapor.

This section describes the findings for all environmental media that were evaluated. As described in Section 6.1.2, samples were collected from various environmental media to characterize the nature and extent of contamination.

For each medium, 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 6.1.1 are also presented.

Waste/Source Areas

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.

Manufactured gas was cooled and purified prior to distribution. Two principal waste materials including coal tar and purifier waste were produced in this process. Coal tar is a reddish brown oily liquid by-product which formed as a condensate as the gas cooled. Purifier waste is a mixture of iron filings and wood chips which was used to remove cyanide and sulfur gases from the gas prior to distribution.

Coal tar does not readily dissolve in water. Materials such as this are commonly referred to as non-aqueous phase liquids, or NAPLs. The terms NAPL and coal tar are used interchangeably in this document. Although most coal tars are slightly denser than water, the difference in density is slight. Consequently, they can either float or sink when in contact with water.

Unlike NAPL, purifier waste is a solid waste of oatmeal consistency. Purifier waste has the potential to leach cyanide and create acidic conditions in nearby surface water and/or groundwater. It contains high concentrations of sulfur and cyanide and has a characteristic blue color from complex ferrocyanides.

Specific volatile organic compounds (VOCs) of concern are benzene, toluene, ethylbenzene and xylenes. These are referred to collectively as BTEX in this document. Specific semivolatile organic compounds of concern are the polycyclic aromatic hydrocarbons (PAHs):

acenaphthene
acenaphthylene
anthracene
benzo(a)anthracene
benzo(a)pyrene
benzo(b)fluoranthene
benzo(g,h,i)perylene
benzo(k)fluoranthene

pyrene
chrysene
fluoranthene
fluorene
indeno(1,2,3-cd)pyrene
2-methylnaphthalene
naphthalene
phenanthrene
dibenzo(a,h)anthracene

Total PAH concentrations as referred to in this plan are the sum of the individual PAHs listed above. The italicized PAHs are probable human carcinogens.

The extent of coal tar that was found on the site is shown in Figure 2. On-site, the tar is present in a limited area of the former MGP, including in the vicinity of two of the former gas holders, underground storage tank (UST) and tar drip tanks. The vast majority of the NAPL was encountered in relatively thin, sporadic seams at depths below the water table generally between 12 to 25 feet below grade. NAPL appears to have migrated only a short distance from the assumed NAPL sources (i.e., gas holders, tar drip).

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

Groundwater

Groundwater samples were collected from monitoring wells and analyzed for volatile, semivolatile, and metals compounds to assess groundwater conditions both on and off the site. The results indicate that contamination in shallow groundwater at the site exceeds the SCGs for BTEX, PAHs and cyanide. Significant groundwater impact is limited to approximately 50 feet from the source of contamination (gas holder). Groundwater contamination does not appear to have migrated beyond the site boundary. Figure 2 shows the extent of groundwater that exceeds the SCGs.

Table 1 - Groundwater

Detected Constituents	**Concentration Range Detected (ppb)[a]**	**SCG[b] (ppb)**	**Frequency Exceeding SCG**
VOCs			
Benzene	ND – 4900	1	4/18
Ethyl benzene	ND – 360	5	2/18
Toluene	ND – 950	5	1/18
Xylenes	ND – 800	5	2/18
Total BTEX	**ND – 7010**	**NA**	**NA**
SVOCs			
Total PAHs	**ND – 2704**	**NA**	**NA**
Acenapthene	ND – 32	20	1/18
Benzo(a)anthracene	ND – 0.60	.002	4/18

Benzo(a)pyrene	ND – 0.80	ND	5/18
Benzo(b)fluoranthene	ND – 1	.002	2/18
Benzo(k)fluoranthene	ND – 0.6	.002	1/18
Chrysene	ND – 0.5	.002	2/18
Fluorene	ND – 80	50	1/18
Indeno(1,2,3-cd)pyrene	ND – 0.6	.002	2/18
Naphthalene	ND – 2500	10	2/18
Phenanthrene	ND – 92	50	1/18
Phenol	ND – 2	1	1/18
2,4-Dimethylphenol	ND – 140	50	1/18
2-Methylphenol	ND – 21	1	1/18
4-Methylphenol	ND – 16	1	1/18
4-Nitronilane	ND – 7	5	1/18
Inorganics			
Cyanide	ND – 330	200	1/18

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).

Based on the findings of the RI, the disposal of hazardous waste 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 BTEX, and PAHs. See Figure 3.

Soil

Surface and subsurface soil samples (0-2 inches) were collected and analyzed for volatile, semivolatile, and metals compounds at the site during the RI. A total of 21 surface soil samples (see Figure 2) were collected and analyzed to assess direct human exposure. Fourteen of the surface soil samples were collected from on-site locations. The other seven surface soil samples were collected from seven locations that are unaffected by the site to evaluate the degree of contamination attributable to background conditions.

Seven of fourteen surface soil samples were shown to contain levels of constituents above commercial SCO's (see Table 2), with the highest concentration detected within the service center building footprint.

The primary contaminants in the subsurface soil are BTEX and PAHs, contamination associated with the operation of the former MGP. Soil contamination is prevalent in the areas near the former MGP structures where coal tar is present, including the gas holders and tar drip tank.

Based on the findings of the remedial investigation, the disposal of MGP related hazardous waste has resulted in the contamination of surface and subsurface soils at the site. 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, BTEX and PAHs.

Table 2 - On-site Surface Soils

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCO[b] (ppm)	Frequency Exceeding Unrestricted SCG	Commercial Use SCO[c] (ppm)	Frequency Exceeding Restricted SCG
SVOCs					
Benzo(a)anthracene	ND-69	1	7/14	5.6	4/14
Benzo(a)pyrene	ND-62	1	6/14	1	6/14
Benzo(b)fluoranthene	ND-88	1	7/14	5.6	4/14
Benzo(k)fluoranthene	ND-4.5	0.8	5/14	56	0/14
Chrysene	ND-66	1	8/14	56	1/14
Dibenz(a,h)anthracene	ND-10	0.33	8/14	0.56	7/14
Indeno(1,2,3-cd)pyrene	ND-33	0.5	8/14	5.6	3/14

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 Commercial Soil Cleanup Objectives.

Table 3 – On-Site Subsurface Soils

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCO[b] (ppm)	Frequency Exceeding Unrestricted SCO	Commercial SCO[c&d] (ppm)	Frequency Exceeding Restricted SCO
VOCs					
Benzene	ND-340	0.06	15/61	0.06[d]	15/61
Ethyl benzene	ND-110	1	8/61	1[d]	8/61
Toluene	ND-1800	0.7	11/61	0.7d	11/61
Xylenes	ND-2500	0.26	16/61	0.26d	16/61

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCO[b] (ppm)	Frequency Exceeding Unrestricted SCO	Commercial SCO[c&d] (ppm)	Frequency Exceeding Restricted SCO
Total BTEX	**ND-4800**	**NA**	**NA**	**NA**	**NA**
SVOCs					
Benzo(a)anthracene	ND-170	1	13/61	5.6	7/61
Benzo(a)pyrene	ND-120	1	13/61	1	8/61
Benzo(b)fluoranthene	ND-120	1	13/61	5.6	6/61
Benzo(k)fluoranthene	ND-57	0.8	13/61	56	2/61
Chrysene	ND-130	1	10/61	56	7/61
Dibenz(a,h)anthracene	ND-23	0.33	10/61	0.56	8/61
Indeno(1,2,3-cd)pyrene	ND-58	0.5	10/61	5.6	8/61
Naphthalene	ND-1700	12	10/61	12[d]	10/61
Total PAH*	**ND-4800**	**NA**	**NA**	**500***	**5/61**
Inorganics					
Cyanide	ND-125	27	3/61	40	2/61

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 Public Health for Commercial Use, unless otherwise noted.
d - SCG: Part 375-6.8(b), Soil Cleanup Objectives for the Protection of Groundwater.
Note: the lower of the Protection of Public Health for Commercial Use and Protection of Groundwater SCG was used.
*- ref. Commissioner's Policy No. 51 (CP-51).

Surface Water

Surface water samples were collected and analyzed for volatile and semivolatile compounds during the RI from locations upstream, adjacent to the site and downstream in the Rio Grande Creek. The samples were collected to assess the surface water conditions in the Rio Grande Creek. The results indicate that contaminants in surface water adjacent to the site exceed the Department's SCG for four PAHs. The highest levels were in an upstream sample, indicating that the source was from an upstream location and not site related.

No site-related surface water contamination of concern was identified during the RI. Therefore, no remedial alternatives need to be evaluated for surface water.

Sediments

A total of 67 sediment samples were collected during the RI from locations upstream, adjacent to and downstream of the site along the Rio Grande Creek. The samples were collected to assess the potential for impacts to sediment from the site. The results indicate that sediment in an area adjacent to the site exceed the

Department's SCGs for sediments for PAHs. However, the highest level of impacted sediment was found at a location near the mouth of a 24-inch outfall that discharges into the Creek, indicating potential sources other than the site. The following ranges for total PAHs were identified:

Upstream - 2.2 to 160 mg/kg
Adjacent - 32 to 1,700 mg/kg
Downstream - 1.1 to 430 mg/kg

Based on the findings of the Remedial Investigation, contamination of sediment has been confirmed, but the elevated levels of contaminants are confined to the area in immediate proximity to the outfall adjacent the site. While upstream sediment shows elevated level of impacts, sediment at the mouth of the outfall which runs through the site shows the highest level of contaminants. The elevated sediment contamination at the mouth of the outfall could potentially be attributable to both site-related and other off-site sources. The contaminants that are considered to be the primary contaminants of concern which will drive the remediation of sediment to be addressed by the remedy selection process are PAHs.

Soil Vapor

The evaluation of the potential for soil vapor intrusion resulting from the presence of site related soil or groundwater contamination was evaluated by the sampling of soil vapor, sub-slab soil vapor under structures, and indoor air inside structures. At this site due to the presence of buildings in the impacted area, samples were collected to evaluate whether actions are needed to address exposure related to soil vapor intrusion.

Three sub-slab soil vapors samples were collected from beneath the slab of the current NYSEG service center building. Five indoor air and one outdoor air samples were also collected at this time. The sampling results show that naphthalene, an MGP-related contaminant, was detected, with the highest concentration in one sub-slab location. Other non-MGP related compounds were also detected, including petroleum hydrocarbons and halogenated hydrocarbons. However, an evaluation of the contaminant concentrations in the sub-slab samples in comparison to those detected in the indoor air samples indicates that soil vapor is not currently impacting indoor air in the current service center building.

The presence of MGP source areas beneath the site creates the potential for soil vapor intrusion within any existing or future buildings constructed on-site. Therefore, the potential for on-site soil vapor intrusion will be addressed by the remedy selection process through the implementation of institutional controls.

Exhibit B

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 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.

Soil

RAOs for Public Health Protection

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

RAOs for Environmental Protection

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

Sediment

RAOs for Public Health Protection

- Prevent direct contact with contaminated sediments.
- Prevent surface water contamination which may result in fish advisories.

RAOs for Environmental Protection

- Restore sediments to pre-release/background conditions to the extent feasible.

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 the site.

Exhibit C

Description of Remedial Alternatives

The following alternatives were considered based on the remedial action objectives (see Exhibit B) 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: NAPL Recovery, Groundwater Monitoring, and Institutional Controls

Under this alternative, potentially mobile NAPL will be collected and recovered via the installation of NAPL collection points. NAPL collection points could include wells, trenches, or other subsurface structures that will collect and contain mobile NAPL for off-site treatment/disposal. This alternative will include groundwater monitoring to document the extent of dissolved-phase impacts and the potential trends in contaminants of concern concentrations.

This alternative also includes institutional controls, in the form of an environmental easement and a site management plan, necessary to protect public health and the environment from any contamination identified at the site. The environmental easement will restrict the use of the site to commercial use (which would allow industrial use and restrict the use of site groundwater), require compliance with the site management plan, and require NYSEG to periodically certify that the institutional controls are still effective. The site management plan will identify requirements for intrusive activities in the project area, handling and disposal of potentially contaminated materials that may be encountered during subsurface activities, notifications and reporting. The plan will also require an evaluation of the potential for vapor intrusion for any buildings that may be constructed on the site.

This alternative will require approximately 2 months to design and 2 months to implement.

Present Worth: $1,200,000
Capital Cost: $200,000
Annual Costs: $60,000

Alternative 3 – MGP Source Material ISS, MGP Structures and UST Removal, NAPL Recovery, Soil Cover, Groundwater Monitoring, and Institutional Controls

This alternative, in addition to those remedial elements described for Alternative 2, will include in-situ stabilization/solidification (ISS) of accessible MGP source material, and removal of the former MGP structures. The alternative will also include removal of an underground storage tank (UST) located south of former Gas Holder #2. The excavated area will be backfilled with off-site clean material that meets Part 375 -6.7(d) requirement for commercial use.

Under this alternative, ISS treatment areas would be excavated to a depth up to 5 feet below grade to clear subsurface obstructions (i.e., former building foundations and utilities). ISS would then be completed to address MGP source material (approximately 2,600 cy of soil) to depths ranging from 12 feet below grade to the top of the till, located at approximately 28 feet below grade. The ISS area will subsequently be backfilled to grade, including a minimum of one-foot of clean soil cover over the entire site. The cover soils must meet NYCRR Part 375-6.7(d) requirements for commercial use. In addition, the balance of the site (i.e., areas not subject to ISS) will be covered a minimum of one foot of soil meeting the SCOs for cover material, as set forth in 6 NYCRR Part 375-6.7(d) for commercial use.

This alternative will also include a hotspot removal of impacted sediment where elevated PAHs were detected near the mouth of the 24-inch outfall that discharges into the Rio Grande Creek adjacent to the site. Clean material suitable for benthic habitat will be imported to replace the impacted sediment removed from the Creek. The limits of sediment removal are shown in Figure 3. Alternative 3 will also include the NAPL collection/recovery, groundwater monitoring, and institutional control components specified in Alternative 2.

This alternative will require approximately 6 months to design and 5 months to implement.

Present Worth: $3,400,000
Capital Cost:..... $2,400,000
Annual Costs:..... $60,000

Alternative 4 – MGP Source Material Removal; MGP Structures and UST Removal; NAPL Recovery; Soil Cover; Groundwater Monitoring; and Institutional Controls

This alternative includes excavation and removal of approximately 3,400 cubic yards of MGP source material on the site located above the till unit that can be removed without demolishing or compromising the structural integrity of the existing service center building. The remedy will also include removal of the former MGP structures, the UST and sediment mentioned in alternative 3. The excavated area will be backfilled with off-site clean material that meets Part 375 -6.7(d) requirement for commercial use. A one-foot soil cover meeting commercial use criteria will be placed over the remediated areas. In addition, this alternative will include NAPL collection/recovery system, groundwater monitoring and institutional controls discussed in alternative 2.

This alternative will require approximately 6 months to design and 7 months to implement.

Present Worth: $5,100,000
Capital Cost:..... $4,100,000
Annual Costs:..... $60,000

Alternative 5 – Soil Removal and replacement to Unrestricted Use SCOs, Existing Service Center Building, MGP Structures, and UST Removal, Groundwater Monitoring, and Institutional Controls

This alternative will achieve all of the SCGs discussed in Section 6.1.1 and meets the unrestricted soil cleanup objectives listed in Part 375-6.8 (a). This alternative will include: excavation and off-site disposal of all waste and soil contamination above the unrestricted soil cleanup objectives on the site. The volume of this excavation is currently estimated to be 9,200 cubic yards. The excavated area will be backfilled with off-site clean material that meets Part 375 -6.7(d) requirement for unrestricted use. It would also require the removal and permanent relocation of the service center building. Groundwater monitoring will be performed for a period of two years to ascertain the effectiveness of the removal.

This alternative will require approximately 9 months to design and 14 months to implement.

Present Worth: $9,300,000
Capital Cost: $9,200,000
Annual Costs: $36,000

Exhibit D

Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
Alternative 1: No Action	0	0	0
Alternative 2: NAPL Recovery, Groundwater Monitoring, and Institutional Controls	$200,000	$60,000	$1,200,000
Alternative 3: MGP Source Material ISS, MGP Structures and UST Removal, NAPL Recovery, Groundwater Monitoring, and Institutional Controls	$2,400,000	$60,000	$3,400,000
Alternative 4: MGP Source Material Removal, MGP Structures and UST Removal, NAPL Recovery, Groundwater Monitoring, and Institutional Controls	$4,100,000	$60,000	$5,100,000
Alternative 5: Soil Removal to Unrestricted Use SCOs, MGP Structures and UST Removal, Groundwater Monitoring, and Institutional Controls	$9,200,000	$36,000	$9,300,000

Exhibit E

SUMMARY OF THE PROPOSED REMEDY

The Department is proposing Alternative 3 as the remedy for this site. The elements of this remedy are described in Section 7.2. The proposed remedy is depicted in Figure 3.

Basis for Selection

The proposed remedy is based on the results of the RI and the evaluation of alternatives.

Alternative 3 is being proposed because, as described below, it satisfies the threshold criteria and provides the best balance of the balancing criteria described in Section 7.1. It will achieve the remediation goals for the site by reducing the toxicity and mobility of contaminated soil due to ISS of source material and the surrounding contaminated soil. The proposed remedy will greatly reduce the source of contamination to groundwater, which will allow natural attenuation to restore groundwater quality to the extent feasible based upon DER's experience at other sites, including MGPs. The proposed remedy will be protective of public health and the environment.

Alternative 1 (No Action) does not provide any additional protection to public health and the environment with the existing conditions and will not meet the SCGs nor satisfy the RAOs. Alternative 2 (NAPL recovery, groundwater monitoring and institutional controls) will not meet the SCGs nor satisfy the RAOs in a reasonable time as impacted material not easily recoverable will be left on-site. Therefore, Alternatives 1 and 2 will not be evaluated further.

Alternative 3 meets the threshold criteria by removing or treating all source material that may contaminate other media, particularly groundwater, and by providing a soil cover and institutional controls to prevent public exposure. Alternative 4 will also comply with these criteria and will protect public health and the environment as source material will be removed. Alternative 5 will protect public health and the environment to a greater degree by removing all contaminated material from the site. Because Alternatives 3, 4 and 5 satisfy the threshold criteria, the remaining criteria are particularly important in selecting a final remedy for the site.

Alternatives 3, 4 and 5 will all have short-term impacts to the community and workers due to construction activities. Alternative 3 will have the lowest level of short-term impacts followed by Alternative 4. The short-term impacts of Alternatives 3 and 4 will both be significantly less than impacts from Alternative 5 due to the smaller volume of contaminated soil to be addressed under these alternatives. Alternative 4 will take slightly longer time to implement compared to Alternative 3 as a result of the logistic in accomplishing soil removal including dewatering and trucking requirements. Alternative 5 will have the highest short-term impact, since extensive excavation will disturb the soil and more excavated material will need to be transported through residential areas for off-site disposal.

Long-term effectiveness is best achieved by Alternative 5, since all contamination will be removed from the site to achieve the unrestricted use SCOs. Alternatives 3 and 4 will effectively protect public health and the environment through ISS treatment or removal of source areas and adjacent contaminated soil. The site management and institutional control provisions of Alternatives 3 and 4 will reliably prevent potential exposures.

Alternative 3 will reduce the toxicity and mobility of on-site source material by ISS process and removal of some impacted material to an approved off-site facility for disposal. Alternative 4, similar to Alternative 3

(except for volume), will permanently reduce the toxicity, mobility and volume of source material by removal and off-site disposal. Alternative 5 will permanently reduce the toxicity, mobility and volume of all contamination at the site.

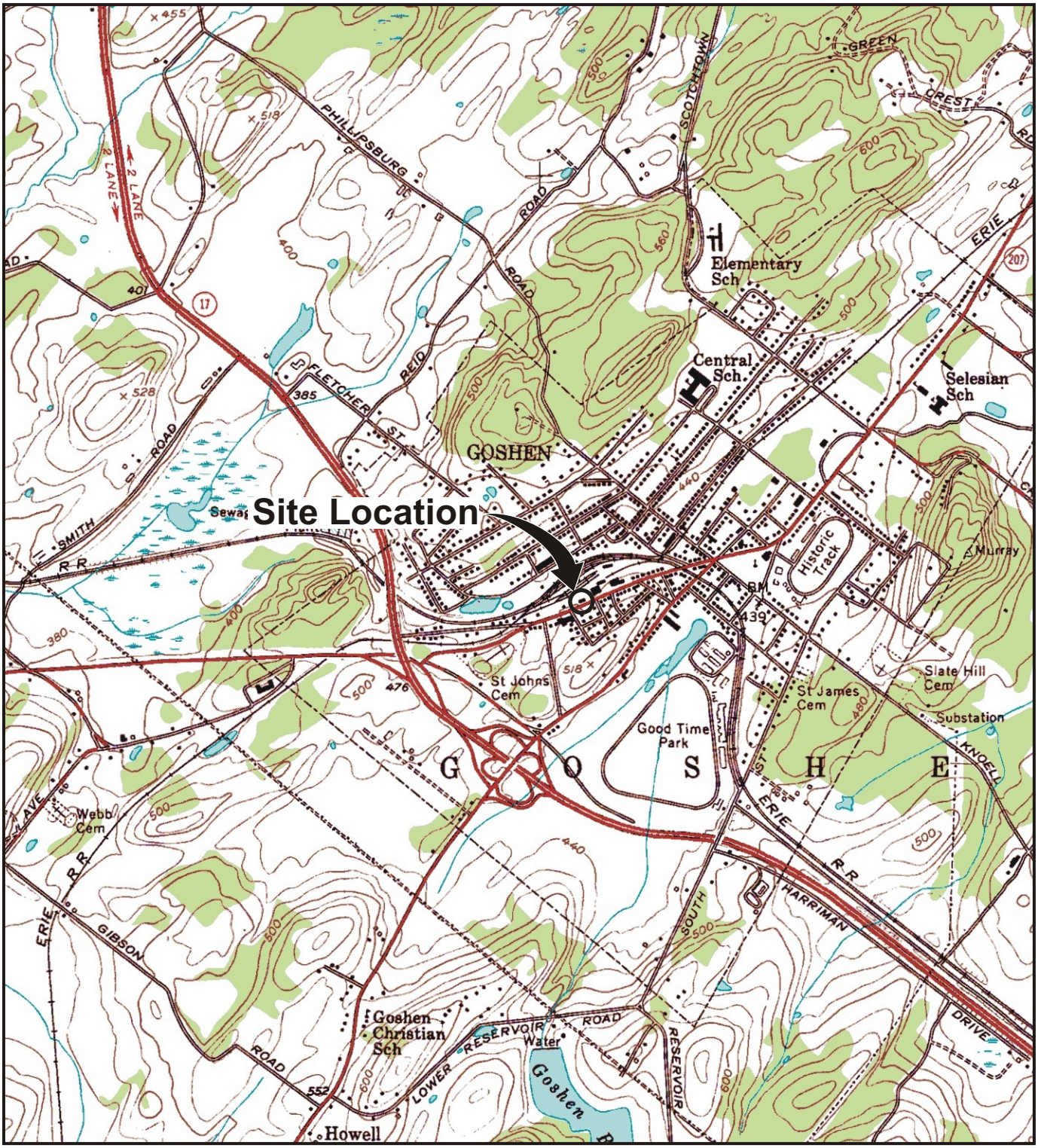
Alternatives 3 and 4 are readily implementable. Alternative 5 is less implementable, since the volume of soil excavated under this alternative is significantly higher that the volume of soil to be addressed under Alternatives 3 and 4, thus making Alternative 5 significantly more difficult and complex to perform. Alternative 3 will be the most implementable of all because source material will be treated in-place, significantly reducing the short-term impacts to the community as a result of lesser truck traffic. Alternative 5 will result in increased level of noise, odor and heavy truck traffic to the community. Alternative 5 will require a significant amount of time to implement compared to Alternatives 3 and 4. Though this alternative will result in greater reduction in the volume of contaminated soil, it will result in greater short-term disruption on nearby residents during construction and will only provide minimal additional protection of human health and the environment.

The costs of the alternatives vary significantly, as presented in Exhibit D. Alternative 4 will have an additional cost of greater than 35 percent of the amount to implement Alternative 3 without providing additional protection to human health and the environment. With its large volume of soil to be handled, Alternative 5, restoration to unrestricted use, will have the highest present worth cost with a minimal increase in the overall protectiveness of the remedy over Alternatives 3 and 4. The incremental cost of over $5 million and significant increase in community disruption associated with Alternative 5 over Alternatives 3 and 4 are not justified by the marginal increase in protection.

Alternatives 3 and 4 will both provide equal amount of protection to public health and the environment, but each alternative will achieve this protection by different means resulting in varying costs. Because the existing service building is being considered an historic structure, in order to maintain its structural integrity, excavation under Alternative 4 would leave a significant amount of untreated soil close to the building during excavation. The volume of material to be treated under Alternative 3 will be greater than the volume under Alternative 4 as ISS will be performed to a greater depth and will extend to the top of the till layer. ISS under Alternative 3, in addition to solidifying the impacted material, will act as a barrier or containment wall to prevent potentially mobile material that cannot be excavated under the building from impacting the treated area.

Since the anticipated use of the site is commercial, Alternative 3 will be the most desirable because it treats and removes contaminated materials at reasonable costs and will achieve commercial SCOs. Also, any remaining contamination associated with Alternative 3 will be controlled with implementation of institutional controls and a site management plan.

On the basis of the above evaluations, Alternative 3 offers the most balanced and cost effective remedy without sacrificing protection.



REFERENCE: BASE MAP USGS 7.5 MIN. QUAD., GOSHEN, NY, 1957.

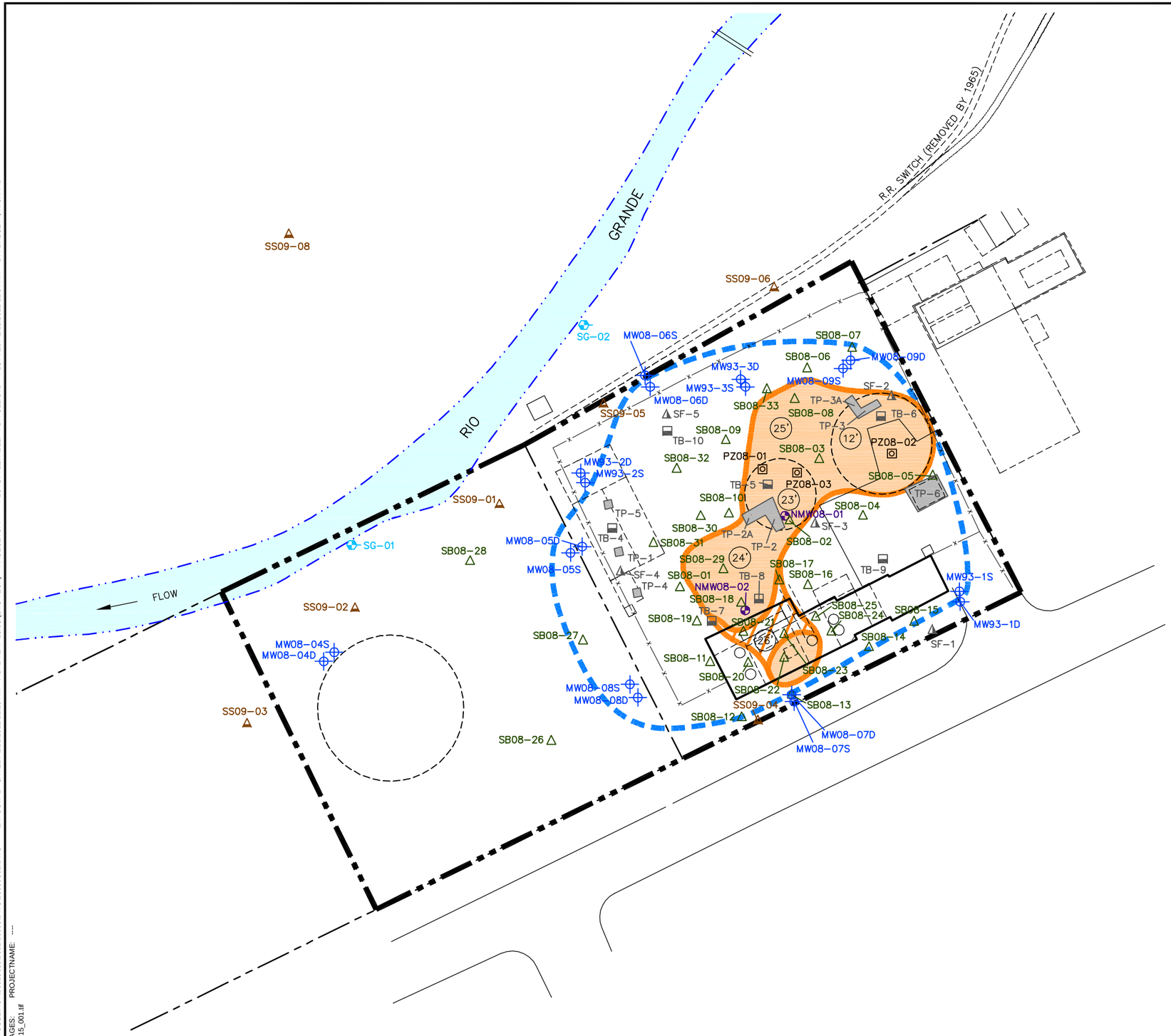
NYSEG
GOSHEN FORMER MGP SITE
GOSHEN, NEW YORK
FEASIBILITY STUDY

SITE LOCATION MAP

ARCADIS

FIGURE
1

09/09/2010 SYRACUSE, NY-ENV/CAD-DJHOWES
B0013080/0001/00003/CDR/13080N01.CDR



LEGEND:

- MW08-05D — MONITORING WELL LOCATION
- NMW08-01 — NAPL MONITORING WELL LOCATION
- SB08-04 — SOIL BORING LOCATION
- PZ08-02 — PIEZOMETER LOCATION
- SG-01 — STAFF GUAGE LOCATION
- SS09-06 — SURFACE SOIL SAMPLING LOCATION
- TB-9 — PREVIOUS TEST BORING LOCATION
- TP-6 — PREVIOUS TEST PIT LOCATION
- SF-3 — PREVIOUS SURFACE SOIL SAMPLE LOCATION
- NYSEG PROPERTY LINE (SITE)
- PROPERTY LINE
- FENCE LINE
- APPROXIMATE EXTENT OF SOIL CONTAINING MGP-RELATED SOURCE MATERIAL (HATCHED WHERE INFERRED)
- (12') APPROXIMATE MAXIMUM DEPTH TO SOURCE MATERIAL
- INFERRED EXTENT OF GROUNDWATER CONCENTRATIONS ABOVE NYSDEC CLASS GA GROUNDWATER STANDARDS AND GUIDANCE VALUES

NOTES:

1. ALL LOCATIONS ARE APPROXIMATE.
2. LOCATIONS OF FORMER STRUCTURES ARE BASED ON SANBORN FIRE INSURANCE MAPS FROM 1889 THROUGH 1939.

0 40' 80'

GRAPHIC SCALE

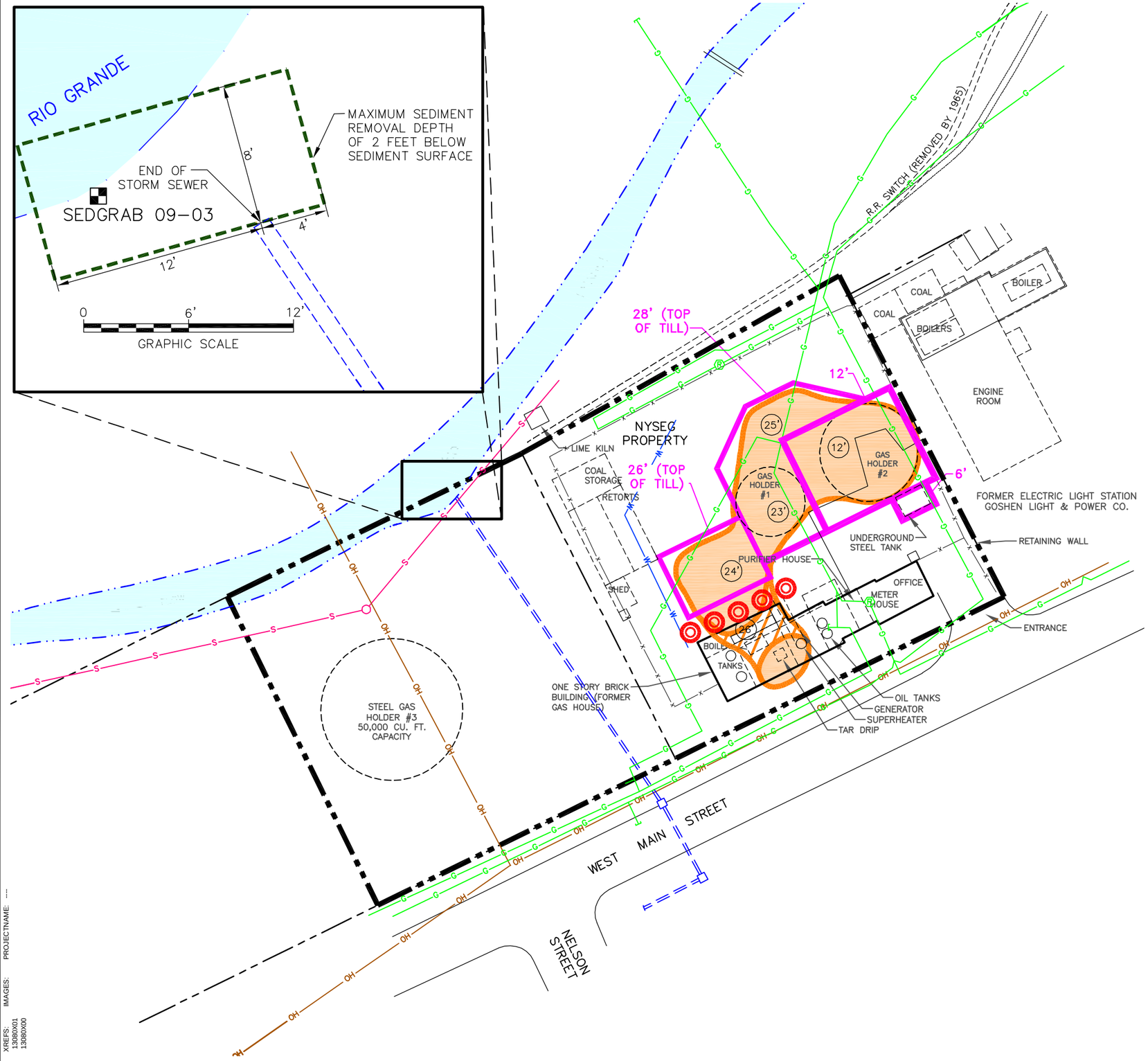
NYSEG
GOSHEN FORMER MGP SITE
GOSHEN, NEW YORK

PROPOSED REMEDIAL ACTION PLAN

EXTENT OF MGP - RELATED IMPACTS

ARCADIS

FIGURE 2



LEGEND:

- FORMER STRUCTURE (1889–1945)
- NYSEG PROPERTY LINE (SITE)
- GAS LINE
- WATER LINE
- SEWER LINE
- OVERHEAD ELECTRIC LINE
- STORM LINE
- PROPERTY LINE
- FENCE LINE
- APPROXIMATE EXTENT OF SOIL CONTAINING MGP–RELATED SOURCE MATERIAL (HATCHED WHERE INFERRED)
- (12') APPROXIMATE MAXIMUM DEPTH TO SOURCE MATERIAL
- APPROXIMATE EXTENT OF ISS TREATMENT
- 12' APPROXIMATE DEPTH OF ISS TREATMENT
- PROPOSED NAPL COLLECTION WELL

NOTES:

1. ALL LOCATIONS ARE APPROXIMATE.
2. LOCATIONS OF FORMER STRUCTURES ARE BASED ON SANBORN FIRE INSURANCE MAPS FROM 1889 THROUGH 1939.

0 40' 80'

GRAPHIC SCALE

NYSEG
GOSHEN FORMER MGP SITE
GOSHEN, NEW YORK

PROPOSED REMEDIAL ACTION PLAN

PREFERRED REMEDY

ARCADIS

FIGURE 3