Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision

TROY - SMITH AVENUE FORMER MGP SITE

Operable Unit No. 1, Former Plant Area

Troy, Rensselaer County, New York
Site No. 4-42-030

June 2007

New York State Department of Environmental Conservation
ELIOT SPITZER, *Governor* ALEXANDER B. GRANNIS, *Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

TROY - SMITH AVENUE FORMER MGP SITE
Operable Unit No. 1, Former Plant Area
Troy, Rensselaer County, New York
Site No. 4-42-030

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedy for Operable Unit No. 1 of the Troy Smith Avenue Former MGP Site, a Class 2 inactive hazardous waste disposal site. The selected remedial program was chosen in accordance with the New York State Environmental Conservation Law 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 Operable Unit No. 1 of the Troy Smith Avenue Former MGP Site, and the public's input to the Proposed Remedial Action Plan (PRAP) 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.

Assessment of the Site

Actual or threatened releases of hazardous waste constituents from this site, if not addressed by implementing the response action selected in this ROD, presents a current or potential significant threat to public health and/or the environment.

Description of Selected Remedy

Based on the results of the Remedial Investigation and Feasibility Study (RI/FS) for the Troy Smith Avenue Former MGP Site and the criteria identified for evaluation of alternatives, the Department has selected containment of grossly contaminated soil, removal of the contents of a former gas holder, capping and imposition of institutional controls to limit the use and development of the property and to restrict the use of groundwater. The components of the remedy are as follows:

1. A remedial design program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program. The remedial design program will also include an evaluation of potential soil vapor intrusion impacts from the site.

2. Removal of the contents of former gas holder No. 2. The removal will be conducted within an enclosed temporary structure, unless site conditions prohibit the feasible installation of

such a structure. The excavation will be dewatered and shored as needed to complete the removal.

3. Construction of a subsurface containment wall to fully enclose the area in the vicinity of former gas holders No. 1 and No. 2 as shown on Figure 10. The wall will key sufficiently into competent bedrock or till to form a seal that would prevent contaminant migration to the river. The wall material will consist of approximately 1,000 linear feet of sheet pile of sufficient corrosion resistant material or with cathodic protection. If the remedial design provides sufficient justification to eliminate the eastern segment of the wall, then a partially enclosed wall configuration may be accepted.

4. An engineered cap will cover the containment area. The engineered cap will consist of a low-permeability layer to prevent exposure to contaminants within the containment area, control potential odors and minimize infiltration. In addition, the engineered cap will include drainage and protective layers of sufficient thickness to manage precipitation, protect the low-permeability layer, and provide a base for vegetation or asphalt pavement. Backfill and cap materials will satisfy Part 375-6 regulations for imported backfill material for commercial use and for the protection of groundwater. The need for a gas collection and venting system will be evaluated during the remedial design.

5. Outside of the containment area the asphalt pavement will be restored to the approximate limits shown on Figure 10.

6. A NAPL recovery system will be installed in overburden materials. The collection wells, which will be designed to collect NAPL by gravity, will be placed both inside and outside the containment cell, in the general area as shown on Figure 10. A minimum of nine new collection wells will be provided. NAPL will be treated or disposed of off-site.

7. Imposition of an institutional control in the form of an environmental easement for the National Grid property and deed restriction or other agreement for the USACE property that will require (a) limiting the use and development of the property to commercial use, which will also permit industrial use and certain recreational uses; (b) compliance with the approved site management plan; (c) restricting the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by NYSDOH; and (d) National Grid to complete and submit to the Department a periodic certification of institutional and engineering controls.

8. Development of a site management plan which will include the following institutional and engineering controls: (a) management of the final cover system to restrict excavation below the engineered cap's low-permeability layer, pavement, or buildings. Excavated soil will be tested, properly handled to protect the health and safety of workers and the nearby community, and will be properly managed in a manner acceptable to the Department; (b) prohibition of penetrations through the engineered cap's low-permeability layer; (c) continued evaluation of the potential for vapor intrusion for any buildings developed on the site, including provision for mitigation of any impacts identified; (d) monitoring of groundwater; (e) identification of any use restrictions on the site; (f) fencing or other means

to control site access; (g) NAPL removal from the containment system; and (h) provisions for the continued proper operation and maintenance of the components of the remedy.

9. National Grid will provide a periodic certification of institutional and engineering controls for the site, prepared and submitted by a professional engineer or such other expert acceptable to the Department, until the Department notifies National Grid in writing that this certification is no longer needed. This submittal will: (a) contain certification that the institutional controls and engineering controls put in place are still in place and are either unchanged from the previous certification or are compliant with Department-approved modifications; (b) allow the Department access to the site; and (c) state that nothing has occurred that would impair the ability of the control to protect public health or the environment, or constitute a violation or failure to comply with the site management plan unless otherwise approved by the Department.

New York State Department of Health Acceptance

The New York State Department of Health (NYSDOH) concurs that the remedy selected 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.

JUN 29 2007

Date

Dale A. Desnoyers, Director
Division of Environmental Remediation

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SECTION 1: SUMMARY OF THE RECORD OF DECISION

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), has selected this remedy for the Troy - Smith Avenue Former MGP Site, Operable Unit No 1. The presence of hazardous waste has created significant threats to human health and the environment that are addressed by this remedy. As more fully described in Sections 3 and 5 of this document, former coal gasification processes have resulted in the disposal of hazardous wastes, including volatile organic compounds, and polycyclic aromatic hydrocarbons. These wastes have contaminated the soil and groundwater at the site, and potentially contaminated adjacent Hudson River sediments and have resulted in:

- a significant threat to human health associated with the potential exposure to contaminated groundwater and contaminated soil;
- a significant environmental threat associated with the current impacts of contaminants to groundwater and soil; and,
- a potential environmental threat associated with the release of contaminants to the sediments of the Hudson River.

To eliminate or mitigate these threats, the Department has selected containment of grossly contaminated soil, removal of the contents of a former gas holder, capping, and imposition of institutional controls to limit the use and development of the property and to restrict the use of groundwater.

The selected remedy, discussed in detail in Section 8, is intended to attain the remediation goals identified for this site in Section 6. The remedy must conform with officially promulgated standards and criteria that are directly applicable, or that are relevant and appropriate. The selection of a remedy must also consider guidance, as appropriate. Standards, criteria and guidance are hereafter called SCGs.

SECTION 2: SITE LOCATION AND DESCRIPTION

The Troy - Smith Avenue Former MGP Site is located at the western end of Smith Avenue in Troy, Rensselaer County, New York (Figure 1). The site is adjacent to the southern approach to the Troy lock on the Hudson River. The site occupies a total of approximately five acres and is comprised of two properties. One property is owned by National Grid and occupies the southern and eastern portions of the site. This property is currently in use as a natural gas distribution and service facility. The other property is owned by the United States Army Corps of Engineers (USACE) and occupies the northwestern portion of the site. This property serves primarily to operate and maintain the Troy Lock and Dam. The site is located in an urban setting with mixed residential and commercial land use areas in the vicinity.

The majority of the site is flat, except for a saddle-shaped depression that exists on the western edge of the site adjacent to the sheet-pile approach wall for the lock (Figure 2). The approach wall provides a tie-up area for vessels waiting to proceed through the lock. South of the approach wall a moderately sloped and heavily vegetated bank adjoins the site to the Hudson River. The site is located within the 100-year floodplain, but out of the regulatory floodway. The presence of the Troy Dam and the tidal nature of the river downstream of the dam provide for a relatively controlled surface water elevation adjacent to the site.

Much of the National Grid property is paved. An office building and maintenance buildings support the service facility. In contrast, much of the USACE-owned portion of the site is covered by grass lawn. A building on USACE property serves as an office.

During site investigations, shale bedrock was found from approximately 38 to 59 feet below the ground surface. A thin layer (less than one foot thick) of loose and broken weathered shale exists on top of the bedrock. Overlying the shale is a glacial till ranging from less than one foot to ten feet thick. The till is a dense clayey silt with shale fragments and some sand and gravel inclusions. Coarse material overlies the till; a fill layer of broken brick, ash, sand, gravel and cobbles is present at the surface to a depth of 10 to 34 feet. This is underlain by native sand and gravel glacial outwash at a thickness of 14 to 34 feet. Groundwater is present in both the bedrock and unconsolidated materials starting at a depth of approximately 16 feet. The water table aquifer flows west toward the Hudson River with a slight southern component. Although the river is tidally influenced, groundwater flow is not substantially influenced by surface water fluctuations.

The significance of the site geology is that the coarse fill and outwash material allow for the relatively easy migration of deposited or released wastes existing in these layers. However, the downward migration is impeded once the dense till material is reached. The man-made lock approach wall restricts horizontal contaminant movement from the coarse material into the Hudson River, however the integrity of this wall below the water surface is unknown.

The subject of this document is the former manufactured gas plant area, which comprises both the National Grid and USACE properties. The former manufactured gas plant area has been designated Operable Unit No. 1 (OU1). An operable unit represents a portion of the site remedy that for technical or administrative reasons can be addressed separately to eliminate or mitigate a release, threat of release or exposure pathway resulting from the site contamination. Manufactured gas plant

(MGP) waste was discovered in the City of Troy right-of-way at the western end of Ingalls Avenue, approximately 500 feet south of the site (Figure 3). A portion of the waste was removed in 1999, and the remaining waste was covered with gravel to reduce the potential for public exposure. Currently an investigation is proceeding to determine if there is any additional waste in the Ingalls Avenue area. Because the extent of the MGP contamination is not known at this area, a clean-up remedy for the Ingalls Avenue area cannot be selected at this time. The Department has therefore designated the Ingalls Avenue area as Operable Unit No. 2 of the site.

The Department has designated the Hudson River sediments as Operable Unit No. 3. As more fully described in Section 5, MGP contamination lies against the approach wall on the upland side. MGP contamination may have migrated past the approach wall, or MGP wastes may have been conveyed by piping to the river during MGP operation. An investigation is currently underway to determine if extensive sediment contamination exists.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

In 1886 the parcel immediately north of Smith Avenue was conveyed from Manufacturers National Bank of Troy to the Troy Fuel Gas Company, which later consolidated into the Troy Gas Company. By 1888, manufactured gas was being produced at the site. The plant used the carbureted water gas process to produce gas from coal for lighting, cooking and heating. At least seven additional parcels were purchased between 1889 and 1920, significantly increasing the site area. In 1928 the last gas was produced at the site. The site continued to be used for storing gas generated elsewhere for an undetermined time. In 1960 the last gas holder was removed from the site. While not part of the MGP operation, the Troy lock, dam and southern approach wall were constructed from 1913 to 1915, and thus were contemporary with the latter years of manufactured gas production.

It is not likely that waste disposal occurred at the site at predetermined periods. Rather, as operations required, wastes were removed from the system; the wastes may have been spilled or disposed of in the vicinity of the plant. As explained more fully in Section 5, from the data available, the Department concludes that a leaking gas holder foundation caused significant contamination of the subsurface.

3.2: Remedial History

There have been several environmental studies of the Troy Smith Avenue Former MGP Site over the last fifteen years. The following is a summary of those studies:

In 1991, without Department oversight, the USACE funded a study of the gas holder foundations adjacent to the approach wall on its property. An oily substance, consistent with manufactured gas production, was found within the subsurface foundation.

In 1992 Niagara Mohawk Power Corporation (Niagara Mohawk), currently a subsidiary of National Grid, entered into an Order on Consent with the Department for the investigation and, if necessary,

the remediation of 21 former manufactured gas plant sites, including the Troy Smith Avenue Former MGP Site.

In 1994 Niagara Mohawk conducted a preliminary site assessment (PSA). The primary objectives of the PSA were to confirm the presence of MGP impacts and evaluate the need for interim remedial measures or additional site studies. An interim remedial measure is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before completion of the environmental studies.

In 1997, based upon the information gathered in the PSA, the Department listed the site as a Class 2 site in the Registry of Inactive Hazardous Waste Disposal Sites in New York. A Class 2 site is a site where hazardous waste presents a significant threat to the public health or the environment and action is required.

In 1999 a multi-phase remedial investigation was initiated. Details of the investigation are described in Section 5.

SECTION 4: 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 PRP for the site, documented to date, is National Grid.

As noted above, the Department and Niagara Mohawk entered into a Consent Order in 1992. A revised Consent Order was mutually agreed to on November 7, 2003 (Index # A4-0473-0000). The Order obligates the PRP to implement a full remedial program.

SECTION 5: SITE CONTAMINATION

As mentioned in Section 3 a remedial investigation/feasibility study (RI/FS) has been conducted to evaluate the alternatives for addressing the significant threats to human health and the environment.

5.1: Summary of the Remedial Investigation

The purpose of the remedial investigation was to define the nature and extent of any contamination resulting from previous activities at the site. Niagara Mohawk conducted a remedial investigation from 1997 to 1999. The objective of the remedial investigation was to generate sufficient data to delineate the horizontal and vertical limits of hazardous materials at the site and the potential public health and environmental impacts as a consequence of those materials.

A supplemental remedial investigation was conducted from 1999 to 2005. The objective of the supplemental program was to provide further information resulting from questions generated during the review of the initial remedial investigation.

A Feasibility Study followed the Department's September 2005 approval of the Supplemental Remedial Investigation Report for OU1.

The field activities and findings of the investigation are described in the Remedial Investigation and Supplemental Remedial Investigation Reports, collectively referred to hereafter as the remedial investigation (RI).

"Nature of contamination" means the chemical and physical properties of the disposed or released wastes at the site. "Extent of contamination" means the limits, or area and vertical bounds of the contamination resulting from that waste.

To determine the extent of contamination, the RI utilized knowledge of the gas manufacturing process and historic plans to target probable areas of the site where MGP wastes could have been generated, disposed or released. From those plans, small areas of the site were excavated and tested for the presence of MGP wastes. Soil borings were taken to obtain knowledge of deeper areas, beyond the reach of excavation. Samples of soil were collected from the borings and excavated areas, and were analyzed to determine the nature of contamination. Monitoring wells were installed to determine groundwater quality and the extent of the contaminant migration.

The RI also included a study of the approach wall. The study found the steel sheeting appeared to be in good condition with only minor corrosion, however, the upper and lower tieback wales were generally in fair to poor condition. Holes and gaps up to four inches wide were observed in the wall, but no visible contamination was observed emanating from these breaches. A tight key of the wall into the bedrock was not confirmed.

5.1.1: Standards, Criteria, and Guidance (SCGs)

To determine whether the soil and groundwater contain contamination at levels of concern, data from the investigation were compared to the following SCGs:

- Groundwater SCGs are based on the Department's "Ambient Water Quality Standards and Guidance Values".

- Soil SCGs are based on the Department's "Technical and Administrative Guidance Memorandum [TAGM] 4046; Determination of Soil Cleanup Objectives and Cleanup Levels." and 6 NYCRR Subpart 375-6 (Remedial Program Soil Cleanup Objectives).

Based on the RI results, in comparison to the SCGs and potential public health and environmental exposure routes, certain media and areas of the site require remediation. These are summarized in Section 5.1.2. More complete information can be found in the RI reports.

5.1.2: Nature and Extent of Contamination

As described in the RI reports, many soil and groundwater samples were collected to characterize the nature and extent of contamination. The main categories of contaminants that exceed their SCGs are certain volatile organic compounds (VOCs) and certain semivolatile organic compounds (SVOCs). For comparison purposes, where applicable, SCGs are provided for each medium.

Chemical concentrations are reported in parts per billion (ppb) for water and parts per million (ppm) for waste and soil.

The manufactured gas was cooled and purified prior to distribution. Two principal waste materials were produced in this process: coal tar and purifier waste. Coal tar is a reddish brown oily liquid by-product which formed as a condensate as the gas cooled. Purifier waste was 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 was found during the on-site (OU1) remedial investigations, while purifier waste was found at Operable Unit No. 2, but not on-site.

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 more dense 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 sum of the italicized PAHs is referred to in this document as total carcinogenic PAHs (cPAHs).

Tars contain high levels of PAH compounds, often greater than 100,000 parts per million. Tars also exceed SCGs for BTEX by several orders of magnitude. In certain tar samples, enough benzene may be present to require that the material be managed as a hazardous waste.

Pesticides and metals were analyzed for in all media and determined not to be of concern. PCBs were not detected in any of the surface soil samples. PCBs were detected in two subsurface soil samples, but in concentrations below the SCG. Therefore, the Department concludes that PCBs are also not a contaminant of concern at this site.

As noted earlier, purifier waste was not found on-site, despite the finding of purifier waste south of the site. Cyanide was not found in soil in concentrations exceeding unrestricted use soil cleanup objectives (27 ppm). Also, cyanide in groundwater did not exceed SCGs. Therefore, cyanide is not a contaminant of concern for Operable Unit No. 1.

5.1.3: Extent of Contamination

This section describes the findings of the investigation for all environmental media that were investigated.

Waste Materials/Structures

The RI data support a conclusion that much of the tar presence resulted from leakage from former gas holder No. 2. Three tar settling tanks located adjacent to gas holder No. 2 existed at the time of the MGP, and may have contributed to the NAPL contamination.

NAPL in the overburden soils was found extensively in the area of gas holders No. 1 and No. 2. The RI data indicates that NAPL has migrated extensively to the north and south, generally on top of the till. The extent of NAPL contamination beneath the site at three depth intervals is shown on Figures 4, 5 and 6. Comparison of these figures shows that the NAPL is present only in the former holder area from zero to eight feet, has spread towards the river from 8 to 20 feet, and is present along approximately 700 feet of the shoreline at depths greater than 20 feet. NAPL migration to the east is limited (less than 80 feet from gas holder No. 2.). This may be due to the till and bedrock surface, which rises to the east in the area of the holders. NAPL migration to the west is restricted by the presence of the sheetpile approach wall (Figure 7). Some NAPL may be extending west into the Hudson River in the vicinity of wells MW-7D, MW-2A and MW-9D which are located south of the approach wall along the river, or under the approach wall; this hypothesis will be addressed during the Hudson River (OU3) investigation. The shallowest NAPL found outside of the foundation of gas holder No. 2 was nine feet below grade at soil boring SB-41.

Unlike gas holder No. 2, the foundations for gas holder Nos. 1 and 3 were slab-on-grade. No MGP contamination was found in the soil overlying the foundation of gas holder no. 1. Soil directly underneath the foundation of gas holder No. 1 was not investigated, but NAPL was found at depths greater than 20 feet in certain borings placed adjacent to the foundation (see Figure 6). The foundation for gas holder No. 3 lies three feet under a paved parking area. No contamination was found in soil sampled both above and below the foundation in concentrations exceeding soil cleanup objectives for either the protection of public health for restricted commercial use or protection of groundwater.

NAPL was not found in the bedrock. NAPL was found, however, in weathered and fractured shale during the installation of monitoring wells MW-13 and MW-14, approximately 60 feet and 600 feet south of gas holder No. 2, respectively. For the purpose of this document, the Department considers the weathered shale to be overburden material lying immediately above the bedrock.

In 1994, floating NAPL less than 0.10 inch thick was observed in monitoring well MW-4A approximately 30 feet downgradient of the fuel island on National Grid property. No NAPL was observed in the same well in December 2004.

A sample of sand and gravel saturated with coal tar that was collected from within the gas holder No. 2 foundation was found to contain 390 ppm of benzene, over three orders of magnitude greater than the SCG of 0.06 ppm. The sand and gravel was likely used to fill in the holder when it was dismantled. The highest PAH concentration of 36,566 ppm was also located within the holder foundation.

A NAPL gauging program was initiated in 2005. After approximately one year of observation, only one well has produced a measurable amount of NAPL. Three to four inches of dense NAPL was found in monitoring well MW-13.

Waste identified during the RI/FS will be addressed in the remedy selection process.

Surface Soil

Fifty-four surface soil samples were analyzed during the RI. Samples were collected from either zero to two inches in depth or zero to six inches in depth. BTEX concentrations did not exceed their respective individual SCG values.

PAH concentrations of on-site surface soil samples ranged from not-detected to 125 ppm. Several samples exceeded their respective individual SCG values. Higher concentrations of carcinogenic PAHs (greater than 10 ppm) were limited to the grass area adjacent to the approach wall, which, in the area of former gas holder No. 1 and No. 2, do not represent the MGP-era surface soils (approximately one acre). PAH concentrations in off-site surface soil samples were within the range of rural background values with the exception of one (chrysene) of the 17 PAHs tested for in one sample (see Figure 8). This sample was collected outside the site entrance.

The majority of the site is paved, and the investigation supports the conclusion that the areal extent of surface soil contamination is limited. However, where surface soil contamination was identified during the RI/FS, despite not representing the MGP-era surface, it will nonetheless be addressed in the remedy selection process due to the subsurface contamination in the identified area.

Subsurface Soil

Higher concentrations of BTEX (greater than 10 ppm) were found in the vicinity of gas holder No. 2.

Higher concentrations of PAHs (greater than 500 ppm) were found in the vicinity of gas holder No. 2. Higher concentrations of PAHs were also found in NAPL-containing samples at 44 to 46 feet below ground surface in borings MW-14 and MW-9D, to the south of gas holder No. 2 along the Hudson River.

Subsurface soil contamination identified during the RI/FS will be addressed in the remedy selection process.

Groundwater

Not unexpectedly, groundwater contamination was found in the area where NAPL was identified. The highest concentrations of BTEX and PAHs were found on the USACE property in the areas of former gas holder No. 1 and No. 2.

In early investigations (prior to 2000), BTEX contamination in groundwater was also found at monitoring well MW-4A. Associated with the fuel island were three underground storage tanks, two containing gasoline and one containing diesel, with a combined capacity of 20,000 gallons. In 1995, the BTEX concentration at this well was 2,159 ppb. The groundwater SCG for individual BTEX compounds is 5 ppb (except for benzene, which is 1 ppb). In 1997 the BTEX concentration was reported at 663 ppb. On August 16, 2000, the tanks and fuel island were removed. In 2004, BTEX concentrations had again diminished downgradient of the former underground storage tanks to less than 10 ppb.

BTEX concentrations ranged from not detected in several wells to 46,200 ppb in well USMW-1. However, this well is located within the foundation of gas holder No. 2 and likely represents waste material within the former holder.

Outside of the holder, BTEX concentrations were found to be as high as 2,159 ppb at MW-4A and 2,001 ppb at MW-13.

Although NAPL was not found in the bedrock, groundwater in bedrock wells MW-12 (approximately 60 feet north of former gas holder No. 1) and MW-13 exceeded the SCG for individual BTEX compounds, indicating that dissolved contamination has migrated into the bedrock aquifer.

Groundwater contamination identified during the RI/FS will be addressed in the remedy selection process.

Soil Vapor

A soil gas survey was performed on-site during the preliminary site assessment to investigate the potential presence of explosive gases during subsequent sample borings. Methane was not detected during the soil gas survey. Benzene was detected in two samples out of 24 samples analyzed.

Soil vapor has not been evaluated for the purpose of determining human health exposure at this site; therefore, the potential for exposures resulting from soil vapor intrusion into on-site or nearby off-site buildings is unknown. Since the majority of soil and groundwater contamination is on the western edge of the site bordering the Hudson River and the groundwater flow direction is towards the river, the potential for off-site migration of vapors to the east is not likely. In addition, the selected remedy identified in Section 8 is expected to eliminate or reduce the potential for vapor intrusion to occur. However, the soil vapor pathway will be investigated during the remedial design for the site.

5.2: Interim Remedial Measures

As noted earlier, an interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before completion of the RI/FS.

There were no IRMs performed at Operable Unit No 1 during the RI/FS.

5.3: Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the human exposure pathways can be found in Section 6 of the RI report. An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has five elements: [1] a contaminant source, [2] contaminant release and transport mechanisms, [3] a point of exposure, [4] a route of exposure, and [5] a receptor population.

The source of contamination is the location where contaminants were released to the environment (any waste disposal area or point of discharge). Contaminant release and transport mechanisms carry contaminants from the source to a point where people may be exposed. The exposure point is a location where actual or potential human contact with a contaminated medium may occur. The route of exposure is the manner in which a contaminant actually enters or contacts the body (e.g., ingestion, inhalation, or direct contact). The receptor population is the people who are, or may be, exposed to contaminants at a point of exposure.

An exposure pathway is complete when all five elements of an exposure pathway exist. An exposure pathway is considered a potential pathway when one or more of the elements currently does not exist, but could in the future.

The following exposure pathways are possible at the site:

- Trespassers and on-site workers could potentially come in contact with elevated PAHs in surface soil on a limited area of the USACE property.

- On-site workers and construction workers involved in sub-surface excavation may come in direct contact with MGP waste and may also inhale vapors and airborne particulates from these materials.

- The potential for future exposures to contaminants in on-site and off-site groundwater is unlikely due to the availability of a public water supply.

- People in on-site buildings could be exposed to MGP associated soil vapors in indoor air. However, this pathway has not been evaluated at this time but is planned during the remedial design.

5.4: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts include existing and potential future exposure pathways to fish and wildlife receptors, as well as damage to natural resources such as aquifers and wetlands.

The Fish and Wildlife Impact Analysis, which is included in the RI report, presents a detailed discussion of the existing and potential impacts from the site to fish and wildlife receptors.

Operable Unit No. 1 of the site is located within a highly developed and industrialized portion of the City of Troy, with buildings or pavement occupying the majority of the area.

The following environmental exposure pathways and ecological risks have been identified:

- The Hudson River sediments adjacent to the site are currently being investigated for the presence of MGP contamination as part of OU3. However, regardless of the conclusions of that investigation, the sediment quality depends in large part on the integrity of the existing sheetpile approach wall, which is an element of OU1. A current or future failure of the approach wall in terms of its ability to contain the land-side NAPL would create a potential for aquatic and benthic organisms to be exposed to MGP contamination.

- Site contamination has adversely impacted the groundwater resource in the overburden and upper bedrock so as to render the aquifer unuseable without treatment. In the absence of this contamination, the aquifer would be useable.

SECTION 6: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. At a minimum, the remedy selected must eliminate or mitigate all significant threats to public health and the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

The remediation goals for this site are to eliminate or reduce to the extent practicable:

- exposures of persons at or around the site to MGP contaminants in soil and groundwater;

- the release of contaminants from soil into groundwater that may create exceedances of groundwater quality standards; and

- the migration of contaminants from site soil and groundwater into the Hudson River water and sediment through NAPL flow, groundwater movement and surface soil erosion.

Further, the remediation goals for the site include attaining to the extent practicable:

- ambient groundwater quality standards

SECTION 7: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected 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. Potential remedial alternatives for the Troy - Smith Avenue Former MGP Site, Operable Unit No 1 were identified, screened and evaluated in the FS report, which is available at the document repositories established for this site.

A summary of the remedial alternatives that were considered for this site is discussed below. The present worth 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.

7.1: Description of Remedial Alternatives

The following potential remedies were considered to address the contaminated soil and groundwater at the site.

Alternative 1: No Action

Present Worth: $0
Capital Cost: $0
Average Annual Costs: $0

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. It would allow the site to remain in an unremediated state. This alternative would leave the site in its present condition and would not be protective of human health or the environment.

Alternative 2: Institutional Controls

Present Worth: $200,000
Capital Cost: $18,000
Average Annual Costs: $12,000

This alternative would be a control of the site through institutional controls; no physical remediation would occur. Alternative 2 would include a deed restriction and environmental easement to restrict future use of the site to its current commercial or industrial use. A deed restriction would be placed on USACE property. An environmental easement would be placed on National Grid property. A site management plan (SMP) would be developed and implemented. The SMP would include the controls and procedures necessary to (i) manage contaminated soils that may be excavated from the site during future activities, including the procedures for soil characterization, handling, health and safety of the workers and the community as well as, disposal/reuse in accordance with applicable Department regulations and procedures, (ii) maintain use restrictions regarding site development or

groundwater use (iii) require the periodic certification that the above controls are in-place and effective. The groundwater would also be monitored as part of the SMP.

This alternative would immediately reduce the potential for human health exposure through the use of a deed restriction, environmental easement and a site management plan. However, because no effort would be made to physically remove, isolate or treat any contamination, a potential for exposure would exist if any provisions of these institutional controls were violated. Also, because no effort is made to physically remove, isolate or treat any contamination, this alternative would not meet the environmental goals identified in Section 6.

Alternative 3: Asphalt and Soil Cover

Present Worth: $1,000,000
Capital Cost: $320,000
Average Annual Costs: $50,000

This alternative would include the construction of a cover over approximately 2.5 acres of the western portion of the site. The existing grass area, approximately 3/4 acre, would be covered with a minimum two-foot thick soil cover. A demarcation layer would be installed, to identify the presence of the contaminated soil beneath the clean cover. An approximate 250 feet by 300 feet area on National Grid property would be paved with asphalt as shown in Figure 9. However, no consolidation of contaminated soil would occur nor would active measures to address groundwater contamination be undertaken. In addition, this alternative would include a deed restriction, environmental easement and site management plan as described in Alternative 2. Alternative 3 would take approximately six months to design and three months to construct.

Alternative 4: Containment, Cap and NAPL Recovery

Present Worth: . . . . . $4.4 million
Capital Cost: . . . . . $3.5 million
Average Annual Costs: $68,000

With the exception of the soil cover, this alternative would include all the components of Alternative 3 as well as the construction of a containment area around gas holders No. 1 and No. 2. NAPL recovery wells would also be installed.

Alternative 4 includes a 4-sided, fully enclosing sheet pile wall driven into bedrock or till, extending approximately 350 feet parallel with the Hudson River with a perimeter length of approximately 1,000 feet, at an average depth of 50 feet. The sheet pile would be constructed of sufficiently corrosion resistant material or have cathodic protection. The FS recommended a containment wall but did not specify whether the wall would be partially (three-sided) or fully enclosing, leaving that detail to be determined during the remedial design. The Department believes a fully enclosing containment wall is required to prevent a build-up of groundwater within the cell that could potentially drive NAPL and dissolved contaminants through the bedrock under the wall, into the river. Additional measures such as groundwater extraction may be necessary to maintain an inward gradient across the wall.

The containment cell would isolate nearly all of the NAPL, with the exception of the thin lenses of NAPL which extend to the north and to the south of the approach wall at depths greater than twenty feet. The cell would also isolate the bulk of contaminated groundwater. A small area (approximately one-half acre) of groundwater exceeding the SCGs would exist outside of the cell.

The design of the containment area would be coordinated with the USACE to minimize impacts to lock operations, as well as any plans to rehabilitate the existing approach wall. If the remedial design provides justification to support a partially enclosed wall, then the system could be modified accordingly.

Recovery wells would be placed within the containment cell and south of the cell to provide a means of removing NAPL that accumulates behind the barrier and monitoring groundwater quality.

An engineered cap would be used over the containment area. The engineered cap would consist of a low-permeability layer to prevent exposure to contaminants within the containment area, mitigate potential odors and minimize infiltration. In addition, the engineered cap would include drainage and protective layers of sufficient thickness to manage precipitation, protect the low-permeability layer, and provide a base for vegetation or asphalt pavement. Asphalt pavement would be used to restore the site surface to the approximate limits shown in Figure 10.

Alternative 4 would take approximately 18 months to design and 18 months to construct. This alternative would also include the SMP requirements for Alternative 2 including additional provision for the operation/monitoring of the NAPL recovery wells and maintenance of the cap/cover.

Alternative 5: Removal of Gas Holder Contents, Containment, Cap and NAPL Recovery

Present Worth: . . . . . $6.3 million
Capital Cost: . . . . . $5.3 million
Average Annual Costs: $68,000

This alternative would include all the components of Alternative 4 plus provide for the removal of all material within the foundation of former gas holder No. 2. Removed material would be disposed or treated off-site. The volume of material within the foundation is approximately 3,500 cubic yards (cy). The excavation would be dewatered and shored as needed to complete the removal. The foundation bottom is approximately 12 feet below grade, but could vary as the shape of the bottom has not been ascertained. The removal of the gas holder contents would be conducted within an enclosed temporary structure unless site conditions prohibit the feasible installation of such a structure. Prior to capping, the removal area would be backfilled with clean soil. This alternative would require a deed restriction, environmental easement and similar site management requirements as identified in Alternative 2.

Alternative 5 would take approximately 18 months to design and 2 years to construct, which includes coordination with lock navigation.

Alternative 6: Removal of Gas Holder Contents and Shallow Soil, Containment, Cap and NAPL Recovery

Present Worth: . . . . . $11 million
Capital Cost: . . . . . $10 million
Average Annual Costs: $65,000

This alternative would include all of the components of Alternative 5 plus the removal of all soil exceeding TAGM 4046 recommended soil clean-up values within and in the vicinity of the approach wall to a depth of 16 feet, which is the approximate water table depth in this area. An estimated 18,000 cy would be removed and disposed at an approved off-site facility. The removal area would be backfilled with soil that meets TAGM 4046 requirements.

Alternative 6 would take approximately 18 months to design and one year to construct. Contaminated soil below the water table would remain.

Alternative 7: Remove All Soil Exceeding Recommended Soil Clean-up Objectives

Present Worth: . . . . . $64 million
Capital Cost: . . . . . $64 million
Annual Costs: . . . . . $0.

This alternative would restore the site to pre-disposal soil and groundwater conditions. All soil with contaminants exceeding individual TAGM 4046 recommended soil clean-up objectives would be removed and disposed off-site. The site would be brought back to the existing contour with soil that satisfies TAGM 4046. Weathered shale bedrock containing NAPL would be included in the removal.

Under this alternative approximately 210,000 cy of soil would be removed. Excavation would reach 57 feet in depth. The existing sheetpile wall would be used in conjunction with a temporary sheet pile wall approximately 1,300 feet in length to provide excavation stability and construction dewatering control. The gas regulator station would be relocated.

The groundwater would not be specifically addressed. However, overburden groundwater would be expected to meet SCGs through time as most of the contaminated groundwater would be removed from the site through construction dewatering. Bedrock groundwater which exceeds SCGs would be expected to exceed groundwater SCGs initially after the removal, but would also be expected to meet SCGs over time, as the source of the contaminants would be removed.

Alternative 7 would take an estimated four years to design and seven years to construct. This alternative would satisfy all of the remediation goals described in Section 6.

7.2 Evaluation of Remedial Alternatives

The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375, which governs the remediation of inactive hazardous waste disposal sites in New York 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 five "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Short-term 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.

4. 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.

5. 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.

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-Effectivness. Capital costs and annual operation, maintenance, and monitoring costs are estimated for each alternative and compared on a present worth basis. Although cost-effectiveness is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the other criteria, it can be used as the basis for the final decision. The costs for each alternative are presented in Table 1.

This final criterion 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.

8. Community Acceptance - Concerns of the community regarding the RI/FS reports and the PRAP have been evaluated. The Responsiveness Summary (Appendix A) presents the public comments received and the manner in which the Department addressed the concerns raised.

In general, the public expressed support for the proposed remedy. Some comments requested a more extensive clean-up than that proposed, yet a similar number of comments which desired a less

extensive remedy due to concerns for short-term impacts during construction. Many comments were received which expressed interest in the details of the remedy construction, in particular, methods that would be employed to prevent releases of site contaminants into the neighborhood during soil and waste handling.

To address the public's concern for potential short-term impacts to the neighboring community, specifically the potential for dust, volatile organic compounds and nuisance odors during excavation of the former holder contents, the ROD was modified from the PRAP to include a temporary enclosed structure during the removal. The temporary structure is included as an engineering control to ensure compliance with the approved community air monitoring plan and corresponding action levels. The feasibility of installing this structure depends on several engineering considerations, including the sloping ground surface, proximity to the Hudson River approach wall, and the presence of an underground gas main and regulator station.

SECTION 8: SUMMARY OF THE SELECTED REMEDY

Based on the Administrative Record (Appendix B) and the discussion presented below, the Department has selected **Alternative 5: Removal of Gas Holder Contents, Containment, Cap and NAPL Recovery** as the remedy for this site. The elements of this remedy are described at the end of this section.

Alternative 5 was selected because, as described below, it satisfies the threshold criteria and provides the best balance of the primary balancing criteria described in Section 7.2. It will achieve, to the extent practicable, the remediation goals for the site by removing the easily accessible coal tar from the former gas holder No. 2 foundation, and containing most of the deeper NAPL that is present outside of the foundation. Alternatives 4, 6 and 7 would have complied with the threshold selection criteria but to either a lesser degree (Alternative 4) or with a disproportionately higher cost (Alternatives 6 and 7).

Alternative 1 (no action) and Alternative 2 (institutional controls) would not produce any results that are physically different from the current conditions. While the existing approach wall retards the movement of upland contamination into the Hudson River, it is not designed specifically for contaminant containment, and its lifetime is limited. If the approach wall is not maintained, or if the remedial action is not undertaken, then contaminant migration into the river would be expected to increase over time. Thus, the presence of uncontrolled contamination that currently threatens human health and the environment would continue uncontrolled into the future. Therefore, Alternatives 1 and 2 would not be protective of human health or the environment and were rejected as candidates for a potential remedy.

Alternative 3 (asphalt and soil cover) would reduce human health exposures with more certainty than Alternatives 1 and 2. However, placement of a cover would offer little environmental improvement: the prevention of NAPL migration into the Hudson River would rely primarily on the condition of the existing 90 year-old approach wall, with no guarantee that breaches in the wall would be repaired in an environmentally sound manner. Further, Alternative 3 does not address the deteriorated groundwater state. For these reasons, Alternative 3 would not be protective of the environment, and was thus rejected from further consideration.

Alternatives 4 through 7 would undertake active measures which, to varying degrees, would be protective of human health and the environment. In addition, Alternatives 4 through 7 would comply with the SCGs to the extent practicable. Because Alternatives 4 through 7 satisfy the threshold criteria, the five balancing criteria were particularly important in selecting a remedy for the site.

Alternative 4 would immediately satisfy the remediation goals of eliminating or reducing to the extent practicable human and environmental exposures. In addition, through the provision of a containment wall, this Alternative would immediately reduce the migration of contaminants into the Hudson River. However, Alternative 4 would only provide minimal improvement in groundwater quality because the contaminant source would remain.

Alternatives 5 through 7 would undertake increasingly more rigorous measures to address the contamination at the site as compared to Alternative 4 (cap and containment). Specifically, Alternative 5 (removal of holder contents, cap and containment) will remove a spatially pre-defined and known hot-spot source of contamination, which will provide further assurance that the containment system would prevent NAPL migration to the Hudson River. Alternative 5 is expected to provide a slight improvement to groundwater quality over a period of time, as NAPL within the foundation will be removed. Alternative 6 (shallow soil removal, cap and containment) builds upon Alternative 5 by removing contaminated soil in addition to the coal tar source within the holder foundation. Alternative 7 (remove soil exceeding SCGs) would restore the site to pre-disposal condition by removing all MGP-related contaminants.

Not surprisingly, Alternative 7 would provide the greatest reduction of toxicity, mobility, and volume of contaminants, followed by Alternatives 6, 5 and 4. Alternative 7 would remove approximately 210,000 cy of contaminated soil, as compared to the next greatest removal alternative, Alternative 6, with an estimated removal of 18,000 cy. In addition, Alternative 7 would provide the greatest long term effectiveness and permanence because there would be no containment cell, cap or recovery wells to monitor and maintain, and no land use restrictions.

However, Alternative 7 would have significant short term impacts. By removing approximately eleven times the volume of soil from over three times the depth as compared to Alternative 6, Alternative 7 would impose a significant disruption of the current service station operations, and relocation of the gas regulator substation.

The short-term impacts would be increasingly severe with the volume of soil removed, due to the increasing length of the construction season and the number of trucks needed to be driven over public streets to remove contaminated soil and import clean soil. Thus, there is increasingly potential short term adverse impacts with Alternatives 5, 6 and 7 as compared to Alternative 4.

Alternatives 4, 5, and 6 would all involve construction of a sheet pile wall along approximately 350 feet of the Hudson River as the western wall of the containment cell . Conceptually, this wall would be installed to the west (outside) of the lock approach wall, which would enable it to be installed without significant disturbance of the approach wall's tiebacks. However, the specific design of this wall would have to be closely coordinated with the USACE.

The implementation of the excavation components of Alternatives 5, 6 and 7 would be increasingly difficult as compared to Alternative 4. Alternatives 6 and 7 would require the demolition of the existing gas holder foundation to access deeper soil. The demolition of the foundation at the site would be more difficult as compared to the demolition of typical subgrade holder foundations because: a) of tiebacks in the vicinity of the holder, b) the topography (ten foot elevation change) and proximity (approximately 50 feet) to the approach wall could preclude the use of heavy equipment on a portion of the circumference, c) the foundation footer could exist at a depth of 15 feet or more, at the water table. Alternatives 6 and 7 would require bracing of the existing approach wall and potentially hand removal of contaminated soil near the tie backs to the wall. Alternative 7 would require extensive dewatering over several construction seasons as excavations up to 40 feet below the water table would occur adjacent to the Hudson River. Due to structural limitations, the feasibility of excavating to this depth along the river is questionable.

A remedy is cost-effective if its costs are proportional to its overall effectiveness. Alternative 7 would cost approximately six times Alternative 6. The majority of the Alternative 7 cost however, is associated with the removal of soil that, while exceeding SCGs, is not a source of significant groundwater contamination, or contaminant mobility, such as those soils containing NAPL. Alternative 7 would also require a significant cost (greater than $5 million) just in removing the active gas infrastructure and providing temporary shoring, which provides no environmental benefit. Thus, the cost to remediate to a pre-disposal condition would be excessive compared to the limited additional environmental benefit gained. Therefore, Alternative 7 was not selected as the remedy.

Alternative 5 will require an additional $1.2 million, or approximately 25% of additional cost compared to Alternative 4. Alternative 5 will remove the bulk of accessible NAPL in the shallow subsurface, and in doing so will assure greater success of the containment system by reducing the NAPL quantity and overall depth, which contribute to NAPL mobility. The cost of Alternative 6 is approximately double the cost of Alternative 5. Yet, Alternative 6 would not provide much additional environmental benefit as compared to Alternative 5 since the additional 14,500 cy of soil removed would contain little additional NAPL or contaminant mass.

In summary, Alternatives 1, 2 and 3 were not selected because they would not be protective of public health or the environment. Alternative 7 was not selected because it would not be cost effective and it would have significant short-term impacts. Alternative 6 was not recommended, primarily due to the high proportional cost of implementing an excavation proximate to the USACE's active lock approach wall and tiebacks, with little additional contaminant mass removed. Alternative 4 was not recommended because it does not provide for the reduction of toxicity, mobility and volume, nor provide for optimum long term effectiveness which will result from the removal of the holder contents included in Alternative 5.

The estimated present worth cost to implement the remedy is $6.3 million. The cost to construct the remedy is estimated to be $5.3 million and the estimated average annual costs for 30 years is $68,000.

The elements of the selected remedy are as follows:

1. A remedial design program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program. The

remedial design program will also include an evaluation of potential soil vapor intrusion impacts from the site.

2. Removal of the contents of former gas holder No. 2. The removal will be conducted within an enclosed temporary structure, unless site conditions prohibit the feasible installation of such a structure. The excavation will be dewatered and shored as needed to complete the removal.

3. Construction of a subsurface containment wall to fully enclose the area in the vicinity of former gas holders No. 1 and No. 2 as shown on Figure 10. The wall will key sufficiently into competent bedrock or till to form a seal that would prevent contaminant migration to the river. The wall material will consist of approximately 1,000 linear feet of sheet pile of sufficient corrosion resistant material or with cathodic protection. If the remedial design provides sufficient justification to eliminate the eastern segment of the wall, then a partially enclosed wall configuration may be accepted.

4. An engineered cap will cover the containment area. The engineered cap will consist of a low-permeability layer to prevent exposure to contaminants within the containment area, control potential odors and minimize infiltration. In addition, the engineered cap will include drainage and protective layers of sufficient thickness to manage precipitation, protect the low-permeability layer, and provide a base for vegetation or asphalt pavement. Backfill and cap materials will satisfy Part 375-6 regulations for imported backfill material for commercial use and for the protection of groundwater. The need for a gas collection and venting system will be evaluated during the remedial design.

5. Outside of the containment area the asphalt pavement will be restored to the approximate limits shown on Figure 10.

6. A NAPL recovery system will be installed in overburden materials. The collection wells, which will be designed to collect NAPL by gravity, will be placed both inside and outside the containment cell, in the general area as shown on Figure 10. A minimum of nine new collection wells will be provided. NAPL will be treated or disposed of off-site.

7. Imposition of an institutional control in the form of an environmental easement for the National Grid property and deed restriction or other agreement for the USACE property that will require (a) limiting the use and development of the property to commercial use, which will also permit industrial use and certain recreational uses; (b) compliance with the approved site management plan; (c) restricting the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by NYSDOH; and (d) National Grid to complete and submit to the Department a periodic certification of institutional and engineering controls.

8. Development of a site management plan which will include the following institutional and engineering controls: (a) management of the final cover system to restrict excavation below the engineered cap's low-permeability layer, pavement, or buildings. Excavated soil will be tested, properly handled to protect the health and safety of workers and the nearby community, and will be properly managed in a manner acceptable to the Department; (b)

prohibition of penetrations through the engineered cap's low-permeability layer; (c) continued evaluation of the potential for vapor intrusion for any buildings developed on the site, including provision for mitigation of any impacts identified; (d) monitoring of groundwater; (e) identification of any use restrictions on the site; (f) fencing or other means to control site access; (g) NAPL removal from the containment system; and (h) provisions for the continued proper operation and maintenance of the components of the remedy.

9. National Grid will provide a periodic certification of institutional and engineering controls for the site, prepared and submitted by a professional engineer or such other expert acceptable to the Department, until the Department notifies National Grid in writing that this certification is no longer needed. This submittal will: (a) contain certification that the institutional controls and engineering controls put in place are still in place and are either unchanged from the previous certification or are compliant with Department-approved modifications; (b) allow the Department access to the site; and (c) state that nothing has occurred that would impair the ability of the control to protect public health or the environment, or constitute a violation or failure to comply with the site management plan unless otherwise approved by the Department.

Since the remedy results in untreated hazardous waste remaining at the site, a long-term monitoring program will be instituted. This program would allow the effectiveness of the containment structure, cap, and NAPL recovery system to be monitored and will be a component of the site management plan.

SECTION 9: HIGHLIGHTS OF COMMUNITY PARTICIPATION

As part of the remedial investigation process, a number of Citizen Participation activities were undertaken to inform and educate the public about conditions at the site and the potential remedial alternatives. The following public participation activities were conducted for the site:

- Repositories for documents pertaining to the site were established.
- A public contact list, which included nearby property owners, elected officials, local media and other interested parties, was established.
- On July 8, 1997 National Grid issued a fact sheet announcing the start of the remedial investigation.
- A fact sheet announcing the availability of the PRAP and the public's opportunity to comment was mailed on February 20, 2007.
- A public meeting was held on March 12, 2007 to present and receive comment on the PRAP.
- On March 21, 2007 the public comment period was extended an additional 31 days, at the City of Troy's request.
- A second public meeting was held on April 16, 2007, at the City of Troy's request.

- A responsiveness summary (Appendix A) was prepared to address the comments received during the public comment period for the PRAP.

TABLE 1

REMEDIAL ALTERNATIVE COSTS

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
1 No Action	0.	0.	0.
2 Institutional Controls	18,000.	12,000.	200,000.
3 Asphalt and Soil Cover	320,000.	50,000.	1.0 million
4 Cap and Containment	3.5 million	68,000.	4.4 million
5 Remove Holder Contents, Cap and Containment	5.3 million	68,000.	6.3 million
6 Remove Holder Contents and Shallow Soil, Cap and Containment	10 million	65,000.	11 million
7 Remove Soil > Recommended Soil Clean-Up Objectives	64 million	0.	64 million

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY
TROY - SMITH AVENUE FORMER MGP SITE
Operable Unit No. 1, Former Plant Area
Troy Rensselaer County, New York
Site No. 4-42-030

The Proposed Remedial Action Plan (PRAP) for the Troy - Smith Avenue Former 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 20, 2007. The PRAP outlined the remedial measure proposed for the contaminated soil and groundwater at the Troy - Smith Avenue Former MGPSite site.

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

Public meetings were held on March 12, 2007 and April 16, 2007, which included a presentation of the Remedial Investigation (RI) and the Feasibility Study (FS) as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens 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 was to have ended on March 23, 2007, however it was extended to April 23, 2007, at the request of the City of Troy.

This responsiveness summary responds to all questions and comments raised during the public comment period. The following are the comments received, with the Department's responses. Many comments were similar and are grouped together to provide a response.

The following comments were received during the Department's PRAP public meeting held on March 12, 2007 and during an information meeting sponsored by the City of Troy on April 16, 2007 in which the Department participated. The NYSDOH provided assistance in both meetings.

<u>Comments concerning soil and groundwater quality in the surrounding neighborhood</u>

Comment 1: Where is the eastern limit of contamination?

Response 1: Based on the information provided by the National Grid remedial investigation, it can be concluded that site-related coal tar contamination does not extend east of a north-south line located about 200 feet west of National Grid's Smith Avenue gate. Also, with the exception of a one-inch thick layer of NAPL found at monitoring well MW-9D at a depth of 45 feet, the contamination is within the National Grid and USACE properties. Monitoring well MW-9D is located at the top of the Hudson River bank approximately 40 feet south of National Grid's southern property line. Sample results did not indicate that site-related contamination is present in soil on nearby residential properties and is not expected to be present in groundwater beneath these properties.

Comment 2: I believe contamination from the MGP site exists all over the neighborhood.

Response 2: From Response 1, the Department believes that there is sufficient information to conclude that manufactured gas plant soil and groundwater contamination has not affected residential properties in the area.

Comment 3: National Grid did not do much testing in the neighborhood.

Response 3: Samples were collected and analyzed both on-site and off-site (in the neighborhood) with the objective of determining the extent of MGP contamination. The Department and the NYSDOH conclude that objective has been met, and that the scope of the sampling and analysis program was sufficient.

Comment 4: As homeowners, can we request that you test our soil again?

Response 4: There are no plans to collect additional samples of soil from residential yards. As noted in Response 3, soil samples were collected from off-site properties near the site and were found to contain contaminant levels that are consistent with rural background and compliant with residential cleanup guidelines. Only one sample, located adjacent to the street just outside the site entrance, contained an exceedance of those cleanup guidelines, and only for one of the compounds tested.

Comment 5: Was there any additional testing of neighborhood - particularly on Eighth Street?

Response 5: Please refer to Response 3.

Comment 6: Is eating fruit from trees in the area or digging in a garden safe?

Response 6: Sample results did not indicate that site-related contamination is present in soil on nearby residential properties and is not expected to be present in groundwater beneath these properties. Therefore, there is no potential for nearby residents to be exposed to site related contaminants through ingestion of fruit or vegetables grown on their properties or through direct contact with soil when gardening in yards.

Comment 7: A worker told me that if the groundwater was used for drinking, then [the area would not be suitable for living].

Response 7: Water is supplied to residences in the area through the City of Troy's public water supply. The City of Troy's public water supply is routinely monitored and required to meet all NYS Department of Health Drinking Water Supply standards. The City obtains its water from the Tomhannock Reservoir, which is not affected by contaminants from this site.

Comment 8: Will more soil or groundwater testing be done? The samples collected did not cover all of the homes in the neighborhood. Can my water be tested so I know whether or not I can drink it? My wife died of lung cancer.

Response 8: Please refer to Response 4 regarding more soil testing and Response 1 regarding the extent of groundwater contamination. As identified in Response 7, water is supplied to homes by the City of Troy through a public water supply reservoir, not through local groundwater.

Comment 9: There was drilling behind my house. I was unable to get any information regarding the drilling, not even the drilling company name. I do not know the results of sampling. This occurred at President St. off Smith Ave.

Response 9: No soil borings or groundwater monitoring wells were installed in or along President Street as part of this project. One surface soil sample was collected from the edge of President Street near Douw Street, but this did not involve a drill rig. The location of all borings and wells, along with the results of samples taken from them, are presented in the Remedial Investigation and Supplemental Remedial Investigation Reports, which are available in the project document repositories.

. . . . . .

Comments concerning air monitoring during construction

Comment 10: Can you describe the air monitoring procedures that would occur during remediation in more detail? I am concerned about dust being generated during the cleanup. The excavation will be practically at my back door and the wind comes from the [excavation] direction. I don't want have to dust my house every night because of the remediation.

Response 10: Air monitoring to protect the surrounding community will be performed under a site-specific Community Air Monitoring Plan (CAMP) that will be developed during the remedial design. This CAMP must be consistent with the NYSDOH guidance for air monitoring at contaminated sites, which requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when all ground intrusive activities, such as soil excavation and handling, are in progress and during the demolition of contaminated or potentially contaminated structures. The location of such monitor(s) will vary based on wind direction and the location of the work, and the monitors are expected to be placed within the site. Air monitoring is required at all former manufactured gas plant sites undergoing remediation in New York State. Based on the Department's experience at other sites, air exceedances at the site perimeter are not common. However, intermittent odors associated with manufactured gas plant waste excavations are more common, but because many people can detect MGP-related odors at very low concentrations, the presence of odors in the nearby properties does not necessarily indicate there is an emission exceedance of VOCs or particulates. Regardless of air emission concentrations, odor control measures will be in place to limit the generation of nuisance odors.

The CAMP will also include measures to minimize dust generation and action levels which require additional steps to control dust, odor and/or VOCs, including work stoppage. In addition to monitoring work performed in contaminated areas, dust monitoring will also be applied to activities conducted in non-contaminated areas, to control nuisance dust.

Also, a temporary enclosed structure will be provided during the removal of the gas holder contents, unless site conditions prohibit the feasible installation of such a structure. The structure is intended to limit dust and odors to within the structure, further limiting the potential for exposures to the community. Feasibility factors include the sloping site topography, proximity of the lock approach wall, and the presence of gas mains and regulators.

Comment 11: I want the air reaching my house to be monitored. Can you monitor at my house? My kids have asthma. There are a lot of asthma cases in the area. Inhalation exposure is possible from residue and dusts. How are we to prevent this exposure?

Response 11: As part of the community air monitoring plan (see Response 10), air monitoring stations will be positioned downwind of the work area, to measure potential dust and VOCs. By placing stations on the site closer to the work, dust and VOCs, if emitted, would be in higher concentrations as compared to off-site residential areas. Thus, if contaminant levels are below health-based levels directly downwind of the work area, then levels requiring action are not expected for the rest of the neighborhood.

Comment 12: What size particulates will be monitored?

Response 12: Monitoring will be conducted for particulates that are 10 microns or less, consistent with federal air quality standards.

Comment 13: Will individual houses be monitored during construction?

Response 13: See Response 11.

Comment 14: Should we be evacuated if there is an odor or dust exceedance?

Response 14: The action levels to be specified in the Community Air Monitoring Plan will be conservative enough such that an exceedance of the level(s) at the site perimeter would not require evacuation.

Comment 15: Will residents be notified of an air emission exceedance?

Response 15: The New York State Department of Health will be informed if any Community Air Monitoring Plan action levels are exceeded on National Grid or USACE property during the project. The Department and NYSDOH will make a decision, based on the duration, concentration and location, as to whether residents will be notified. Because the action levels are conservative, a short-term exceedance that is promptly addressed does not restrict any activities of neighboring residents. Air monitoring results can also be provided to interested individuals upon request.

Nearby residents and property owners will be informed when excavation work is expected to begin. Contact names and phone numbers will be made available, either posted on the site fences or included in an informational fact sheet, so that residents can report any concerns they have with dust, odors, truck traffic or other related issues.

Comments concerning remedy selection and future land use

Comment 16: As residents, do we have options as to what is proposed? Can we disagree with the proposed clean-up plan?

Response 16: The Department is required to consider the community's acceptance when it selects a remedy for a site. The Department evaluates comments received during the public comment period, addresses them in the responsiveness summary, and modifies the selected remedy from the proposed remedy as appropriate.

Comment 17: Why doesn't the State propose the full cleanup at $64 million? Why doesn't National Grid clean to mixed zoning requirements? We live in mixed, commercial, industrial, residential zone. Is it because of dollars or is there another good reason?

Response 17: The goal of the remedial program for New York State inactive hazardous waste disposal sites is restoration of the site to pre-disposal conditions, to the extent feasible. A pre-disposal condition would allow unrestricted use of the site, however, as explained in Section 8 of the ROD, the Department concludes that Alternative 7 has questionable feasibility, would have severe short-term impacts to the community and Hudson River, and is not cost effective. The site is currently zoned for industrial use, with reasonable certainty the USACE lock will remain and the National Grid service center will remain. As identified in 6 NYCRR 375-1.8(f)(9), the Department may consider land use in the superfund program, where cleanup to pre-disposal conditions is determined not to be feasible.

To remove all the contamination would require an excavation to 57 feet in depth. Excavation would be adjacent to the Hudson River, and up to 25 feet below the surface water elevation. The shoring required to isolate the excavation from the river and keep the excavation dry would be a huge undertaking at a cost disproportionate to the benefit gained through removal. Also, as illustrated by Figures 4, 5 and 6, much of the contamination existing below 20 feet is overlain by soil that is not contaminated. This makes deeper excavations cost prohibitive, as extensive removal and staging of non-contaminated material would be required in order to access the deeper NAPL. On the other hand, recovery wells can be, and will be, placed at this depth with relative ease, with minimal disturbance to the soil. While the wells will not remove all the NAPL, the wells will remove flowable NAPL and prevent NAPL from building-up against the containment wall. The flowable NAPL can be cost effectively removed from the ground through the proper placement and maintenance of collection wells.

Comment 18: I am in favor of Alternative 6.

Response 18: The Department carefully compared Alternative 6 to the remaining alternatives using the criteria required by regulation, which are identified in Section 7.2. While considering public comment, such as the comment provided here, the Department concludes that the selected remedy provides a better trade-off of advantages and disadvantages as compared to Alternative 6. As explained in Section 8, the major disadvantage of Alternative 6 would be the required removal of the gas holder foundation and subsequent deep excavation adjacent to the Hudson River, approach wall and tiebacks, while not removing NAPL to any substantial degree greater

than the selected remedy. Alternative 6 would still require containment, land use restrictions and long term monitoring comparable to the selected remedy.

Comment 19: If there is no exposure to MGP contamination then why not leave the contamination where it is?

Response 19: As identified in Section 5.3, there are potential exposure pathways for those persons at the site. In the absence of remediation, the potential for exposures would continue to exist as well as the environmental threat associated with the contaminants remaining in groundwater and soil, and the environmental threat associated with the release of contaminants to the sediments of the Hudson River. The selected remedy best addresses these threats through removal of the contamination, where feasible. The risks of short term exposure and short-term negative impacts posed by the construction were weighed along with the other remedial selection factors. The selected remedy provides the best balance of short term construction impacts, and the long term benefits of removing the shallow contamination.

Comment 20: Digging up the soil will cause more problems than leaving the contamination where it is.

Response 20: See Response 19.

Comment 21: Why don't you remove the contamination down to 50 feet?

Response 21: See Response 17.

Comment 22: Since you are digging and disturbing the soil, why can't you get the deep soil at lock tiebacks? There will still be contaminated soil, and National Grid is not cleaning it all up just because of costs and difficulty. Are there methods that can get all the contamination? Are there methods that won't disturb the soil by digging it up?

Response 22: The tiebacks are buried cables that help to keep the approach wall from collapsing. Soil can be removed, but, the cables must either be left undisturbed, or additional support must be provided to the wall. In addition, the underground foundation of gas holder No. 2 occupies a substantial area near the approach wall which would require demolition and removal to access soil underneath the foundation. These two items escalate the excavation cost comparative to an excavation with no tiebacks. In addition, much of the near-surface soil, that would need to be removed to access the deeper soil, is not contaminated. Alternatives 1, 2 and 3 (No Action, Institutional Controls, and Asphalt/Soil Cover) would not require a containment wall. However, none of these alternatives would prevent the further migration of coal tar into the bedrock and Hudson River. Also, Alternative 7 (Full Excavation) would require a temporary, rather then permanent, containment system to perform the excavation. There are other methods which would minimize excavation, such as in-situ solidification and chemical oxidation, but these methods do not provide the advantages of the selected remedy at this site.

Comment 23: Can the site be used for recreational use?

Response 23: The selected remedy is protective of public health for commercial/industrial land use, which includes passive recreational use. However, the selection of this remedy does not represent

approval of a specific land use within these categories. Passive recreational uses are those with limited potential for soil contact. The properties that comprise the site will be restricted to these uses through an environmental easement, or, for the USACE property, a deed restriction or other agreement, regardless of zoning changes. An environmental easement is created under and subject to the provisions of Article 71, Title 36 of the New York State Environmental Conservation Law. The law specifically provides that any future development or land use must be consistent with the terms of the environmental easement.

Comment 24: The site should be cleaned up to residential standards.

Response 24: Please refer to Responses 17 and 18 regarding a cleanup to residential standards.

Comment 25: The City overly promotes waterfront parks. We don't want a park.

Response 25: The decision to construct a park is outside the scope of remedy selection for this Record of Decision.

Comment 26: Alternatives 5 or 6 are selected for a partial cleanup to mixed use criteria, but what if future use changes or zoning changes? Will National Grid be responsible for meeting new zoning standards? Can zoning ever change?

Response 26: Any future development or land use must be consistent with the environmental easement. Please also refer to Response 23.

Comment 27: Are there other options that don't involve a containment wall?

Response 27: There are other options, as identified in Response 22. However, these options do not provide the advantages of the selected remedy.

Comment 28: How deep will the containment system be and what will it be made of?

Response 28: Conceptually, the containment system will consist of interlocking steel sheets installed to an average depth of 50 feet. The details of the containment system, including alternative materials, will be developed during the design of the remedy.

Comment 29: I want to know if the property will be safe before I accept the proposed remedy.

Response 29: The remedy will protect public health for future commercial/industrial use of the site and continued residential use of neighboring properties.

Comment 30: Do you empty the NAPL recovery wells?

Response 30: Yes, the recovery wells are monitored for NAPL accumulation and the NAPL is removed as needed to facilitate continued collection. Removed NAPL will be appropriately treated or disposed of off-site.

Comment 31: What would the easement require?

Response 31: The environmental easement will limit the use and development of the property to commercial/industrial and certain recreational uses, will require compliance with an approved site management plan; will restrict the use of groundwater at the site; and will require National Grid to periodically certify to the Department that the institutional and engineering controls at the site are in place and are effective.

Comment 32: Can you extract the coal tar by pumping? Is pumping too costly?

Response 32: Initially, the coal tar will be periodically removed though pumping or bailing as it collects in the well bottom. Methods for optimum recovery from the NAPL recovery wells will be further evaluated once the wells have been installed.

Comment 33: Who makes the decision as to what remedy is selected?

Response 33: The Department of Environmental Conservation, in consultation with the Department of Health makes the decision as to what remedy is selected.

Comment 34: On behalf of the City, I [Mayor Tutunjian] would like to see the site cleaned up to improve the quality of the neighborhood. The remediation is a step in the right direction.

Response 34: The Department appreciates the City of Troy's support of this Record of Decision.

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<u>Comments concerning the former auto salvage property and Ingalls Avenue right-of-way</u>

Comment 35: What about the Prussian blue color material at Ingalls Avenue? Is that some migration of site contamination to the south?

Response 35: Purifier box waste, or purifier waste, was a common waste stream at manufactured gas plants. This purifier waste often has a Prussian blue color due to the presence of ferric ferrocyanide, which is a low-toxicity form of cyanide that was generated during the gas purification process. No purifier waste was found on the site. However, purifier waste was found approximately 600 feet to the south, at the Ingalls Avenue area near the Hudson River. Purifier waste was a solid material that was often used as fill for low lying areas. The Department believes that the purifier waste was placed in the Ingalls Avenue area, and is not the result of migration from the site. The Department is addressing the cleanup of this material as part of Operable Unit 2 of the site.

Comment 36: What about the Junkyard/Scrapyard? Who is cleaning it up? The City owns it and wants to make a park there.

Response 36: Potential contamination resulting from salvage operations at the former Cox property, now owned by the City of Troy, is not the subject of this Record of Decision. The southern portion of the Troy property, adjacent to Ingalls Avenue, may contain purifier waste material. The

extent of this material along the southern boundary of the property will be better known when the City constructs the boat launch at Ingalls Avenue.

Comment 37: How does the future use of the junkyard affect this cleanup?

Response 37: The future use of the former junkyard property does not affect implementation of the selected remedy.

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Comments concerning the remedial construction duration

Comment 38: There are 195 total MGP sites, 28 under negotiation and the rest under consent order. How many have been cleaned up? What is the turn around time for cleanup? We are guinea pigs for this process because not many MGP sites have been cleaned up.

Response 38: Twenty-two former MGP sites in New York State including one MGP tar processing plant and one MGP gas holder site have been substantially remediated. In addition, 487 inactive hazardous waste disposal sites have been remediated in New York State. The remedial plans will be reviewed by the Department and the NYSDOH and the construction will be monitored by Department personnel to ensure the health of the neighboring community is not adversely impacted by MGP remedial operations.

Presently, the Department estimates that the remedial design will require 18 months to complete, and construction will begin in 2010. Approximately one year of buffer has been added to account for potentially unexpected delays. Construction is expected to take two years to complete.

Comment 39: How many sites have been cleaned up? How many remediation success stories are there?

Response 39: See Response 38.

Comment 40: Why is this cleanup being done now? Is the Mayor of Troy addressing this now because the City wants to redevelop? Does the City want to cleanup now because property became valuable?

Response 40: The Smith Avenue site is one of fifty former MGP sites National Grid is responsible to investigate and remediate. The Department-approved schedule for cleanup is prioritized based on a number of factors, including the completeness of the investigation, the degree to which public health and the environment are threatened and the level of on-going activity at each site.

Comment 41: When will the cleanup start at this site? How long will this take?

Response 41: See Response 38.

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Comments concerning a temporary structure

Comment 42: Can you perform the excavation inside a temporary structure?

Response 42: Yes. Excavation and removal of contaminated soil have been conducted at other MGP sites within a temporary structure.

Comment 43: Would construction take longer with the dome?

Response 43: Construction could take slightly longer if a temporary enclosure is used

Comment 44: A dome should be used for the construction.

Response 44: To address the public's concerns, the PRAP has been modified to require an enclosed temporary structure for the removal of gas holder No. 2 contents, unless site conditions prohibit the feasible installation of such a structure (see also Response 10).

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Comments concerning the Registry listing of the site

Comment 45: Were neighbors notified of the site and contamination? Who is responsible for the notification? Should residents have been notified when site was listed on the Registry [of Inactive Hazardous Waste Disposal Sites]?

Response 45: When the Troy -Smith Avenue Former MGP Site was added to the Registry of Inactive Hazardous Waste Disposal Sites in 1997, the Department notified the County and City Clerks, and property owners adjacent to the site.

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Comments concerning hauling and disposal

Comment 46: I believe trucks [associated with the remedation project] may leak and spread contamination.

Response 46: Trucks removing contaminated material will have gasketed tail gates or will be lined with polyethylene sheeting. The truck box or box trailer will be covered with an impervious material once the loading is completed and before the truck enters the public roadway. The trucks and tires and will be cleaned off prior to entering a public street. Excessively wet material will not be allowed to be loaded.

Comment 47: Where you going to take the contaminated soil and fluids?

Response 47: All coal tar, contaminated soil and contaminated water to be disposed off-site will be transported by a Department permitted hauler and disposed at an appropriately permitted

disposal facility. The specific disposal facility is usually determined at the time of remedial construction contract award.

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Comments concerning the lock approach wall

Comment 48: Does the bulkhead have a useful life?

Response 48: The life of the new bulkhead will depend on the material and corrosion protection measures specified in the design, but the Department expects the useful life to be between 50 and 100 years. National Grid will be responsible for monitoring the condition of the wall and repairing or replacing it as necessary.

Comment 49: Does the approach wall need to be replaced?

Response 49: The approach wall needs to be rehabilitated or replaced. The existing approach wall cannot be relied upon as a containment structure. Gaps exist in the approach wall and the integrity of the seal at the base of the approach wall is unknown. The USACE has requested that the approach wall be incorporated into the containment system as the wall provides a tie-up area for vessels waiting to proceed through the lock.

Comment 50: Why is the wall necessary? There is already a wall by the river.

Response 50: The containment system will be provided to contain the MGP waste in the vicinity of former gas holder No. 1 and gas holder No. 2. Please also refer to response 49.

Comment 51: How will the wall stop the coal tar from moving through the bedrock?

Response 51: Coal tar was not found in the competent (solid) bedrock, but rather in the weathered and fractured shale that lies on top of it. The remedial design will address the movement of coal tar through the provision of a sufficiently deep wall and NAPL recovery wells placed into the weathered shale. These measures will ensure that NAPL does not accumulate at the top of the bedrock in a sufficient thickness to allow it to enter the bedrock.

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Comments regarding potential past exposures

Comment 52: I am concerned about the past air quality and coal dust generated during past plant operations.

Response 52: The data does not indicate that residents living near the site are currently being exposed to site-related contaminants. However, the NYSDOH has no way to determine if people were exposed to these contaminants at the time coal gas was manufactured or during the period prior to the remedial investigation due to lack of analytical data for these periods. Air quality during the plant's operational period is beyond the scope of this investigation and the site remedy.

Comment 53: I tried to get contamination addressed in the 1980s, 1990s. We have [or are aware of] neurological problems, children with birth defects, and liver problems. We have asthma. We should let dead dogs lie and leave the contaminated soil where it is.

Response 53: Please refer to Responses 11 and 19.

Comment 54: Benzene causes neurological and lung problems. What about exposure to contamination that existed in the 1950s and 1960s? My family has [incidences of] lung cancer, liver problems, and birth defects. I live next to Niagara Mohawk and the Federal locks and dams. I want my soil tested. You will be digging it up, causing Turner St. to be contaminated during remediation. Children will be affected if the soil is not properly stored, and by trucks moving contamination.

Response 54: As noted in Response 52, the NYSDOH has no way to determine if people were exposed to MGP contaminants at the time coal gas was manufactured or during the period prior to the remedial investigation due to lack of analytical data for these periods. Thus, the NYSDOH is unable to compare the health concerns mentioned as possibly being related to past site-related exposures. Please refer to Response 4 regarding additional soil testing. Contaminated soil hauling is discussed in Response 46. The project is anticipated to be a direct-load out, meaning contaminated soil is placed directly into the truck from the point of excavation, and thus not stored. If soil is stored temporarily, it will be covered.

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<u>Comments concerning National Grid's responsibilities</u>

Comment 55: Who is paying for this remediation?

Response 55: Niagara Mohawk Power Corporation, a subsidiary of National Grid, is obligated to remediate the site. Niagara Mohawk may, however, seek recovery of its costs from other potentially responsible parties as allowed by law.

Comment 56: I heard National Grid wants to sell the property to the City for $1. This will put the residents on the hook for future cleanup.

Response 56: See Response 55.

Comment 57: Is National Grid going to be staying here (in Troy Smith Ave. facility)?

Response 57: On page 1-3 of the Feasibility Study, National Grid states their intention to continue use of its property as a service center.

Comment 58: National Grid will just pass the cost of the remediation on to us.

Response 58: The source, or ultimate source, of the money used to fund the cleanup is not a factor in the selection of a remedy.

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Comments regarding compensation

Comment 59: We want a tax break for living next to a contaminated site. We want compensation for the noise, trouble, and odor of the cleanup. We mow National Grid's lawn. We want a break on our National Grid bill for being a good neighbor.

Response 59: The Department's authority is limited to requiring parties to remediate inactive hazardous waste disposal sites for which they are responsible. The Department does not have authority to compensate neighboring property holders, or to compel responsible parties to do so.

Comment 60: Give me a fair price for my house. I think most people want that.

Response 60: Please see Response 59.

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Comment 61: National Grid has been dumping contaminated soil from this site. National Grid excavated dirt from gas leaks and stockpiled it on the property. Where was it disposed? Why [was it all removed] just before this meeting? It smells. National Grid excavated dirt from gas leaks and stockpiled it on the property.

Response 61: National Grid's on-going operation at their property includes the collection of soils from excavation projects, including gas main leaks, in the region serviced by this center. The recently (March 2007) stockpiled soil at the Smith Avenue facility was from current gas line maintenance operations, not from historical MGP activities. National Grid reports that the stockpile removed in March 2007 was transferred by a private hauler to Empire Mulch in Halfmoon New York.

Comment 62: Should cats hunting on the site be tested for contaminants?

Response 62: The majority of the site is paved, and the highest levels of contaminants are present in soils beneath the surface of the site. It is therefore unlikely that cats or their prey would come into enough contact with contaminated soil to cause unacceptable exposures.

Comment 63: They should put in a green power - hydroelectric plant - in, similar to what exists on the west side of the Hudson River.

Response 63: The decision to construct a hydroelectric plant is outside of the scope of remedy selection for this Record of Decision.

Comment 64: If I want to sell my house do I have to disclose the contamination?

Response 64: Disclosure requirements are outside the scope of this ROD. Property Condition Disclosure Statements are the jurisdiction of the New York State Department of State (NYSDOS).

Property owners should consult with the NYSDOS or legal counsel concerning disclosure requirements for this circumstance.

Comment 65: Can we talk to neighbors of completed MGPs?

Response 65: Yes. Upon further request the Department can identify interest groups that may be able to provide additional contacts.

Ms. Kieley Michasiow and Mr. Donald Snell of the Nature Conservancy submitted a letter dated March 21, 2007 which included the following comments:

Comment 66: Remediation Alternatives. We urge that all potential future uses be considered when deciding the level of remediation. This is a one-of-a-kind riverfront site, located right at the northern end of the Hudson River Estuary. Clean-up to the level needed to continue the present use of the site by the Army Corps and National Grid is not adequate. Although a more expensive option as detailed in Aternative 7, the site should be made suitable for all future uses, including the possibilities for residential housing, a public park or a children's playground or other alternatives. The city of Troy is working to revitalize their waterfront. Future plans should not be thwarted due to insufficient remediation along the riverfront.

Response 66: With the exception of residential housing, or an active recreational use such as a sport field or playground where repeated contact with the ground surface is likely, the selected remedy will allow for the potential future uses identified in the comment. The presence of the relatively deep (generally 8 to 50 feet below ground surface), flowable waste (coal tar liquid), adjacent Hudson River and the navigational need for an approach wall support the selection of a cap and containment system as a major remedial component. With reasonable certainty, the federal lock and dam, as well as the gas regulator station, will be used and maintained into the future. These uses would be expected to preclude residential housing regardless of the selected remedy. The Record of Decision's cleanup components are protective of public health and the environment and are the result of a deliberative process involving several factors, among them reduction of contaminant volume, community acceptance and implementability. (See also the response to comments concerning remedy selection and future land use).

Comment 67: Junkyard clean-up. It was stated that the site of the former junkyard was most likely used as a dump site for purifier waste, as was the case at Ingalls Avenue. However, this cannot be explored until concrete is removed from this site. Before proceeding with the Smith Avenue site, DEC and the City of Troy should work together to have the concrete removed, the soil testing accomplished and a plan established to conduct the Smith Avenue and junkyard clean-up the same time. Collaboration of this nature will alleviate the possibility of neighborhood residents dealing with repeat massive remediation projects.

Response 67: As discussed in the response to comments concerning the Ingalls Avenue right-of-way, the remedy for purifier waste located at Ingalls Avenue and the Troy LDC property will be determined in a separate PRAP and ROD. The City of Troy is currently planning the

construction of a boat launch at the Ingalls Avenue location later this year that will require the removal of the majority of the purifier waste at this location. Currently available data indicates that the purifier removal will not be a "massive" project.

Comment 68: Approach wall. It was stated that the Army Corps may need to replace a 70-year old approach wall along the river. This work was not covered in the proposed plan. A decision needs to be made in this and the work incorporated as part of the overall plan because this would add extensive excavation to the project and should occur at the same time as the proposed remediation.

Response 68: The Department expects that construction of the containment cell will be integrated with the replacement of the approach wall. See also the response to comments concerning the lock approach wall.

Ms. Cathy Geraci of National Grid submitted an email dated April 23, 2007, which included the following editorial comments:

Comment 69: Section 3.2 (Remedial History) stops at the listing of the site (1997) and should identify the RI/FS, or Section 5 should not identify that the RI/FS is mentioned in Section 3.

In several places (e.g., page 5, 5th paragraph; and bottom page 8), the PRAP identifies that a soil vapor investigation was not considered or performed at the site. In 1994 a soil gas survey was conducted and the results were presented in the RI Report. As stated in the FS Report, that soil gas survey, however, does not fulfill the NYSDOH's current recommended protocol for evaluating the potential for soil vapor intrusion.

Page 7, last paragraph, states that approximately 22 surface soil samples have been analyzed. Including the SRI, 54 surface soil samples have been analyzed.

The FS did not recommend a three-sided wall as stated on page 12, 2nd and 4th paragraphs. Throughout the FS Report (e.g., pages ES-5, 4-11, and 6-1), it is stated that the details for the wall, including whether it's three-sided or fully enclosing, would be determined during the remedial design.

The elements of the remedy (page 17) should reiterate the provision of the containment wall remedy identified on page 12 "if the remedial design provides justification to support the three-sided containment system…the system could be modified accordingly".

Response 69: The text of the ROD has been modified from the PRAP to reflect the comment.

APPENDIX B

Administrative Record

Administrative Record

TROY - SMITH AVENUE FORMER MGP SITE
Operable Unit No. 1, Former Plant Area
Troy Rensselaer County, New York
Site No. 4-42-030

1. Order on Consent, Index No. DO-0001-9210, between the Department and Niagara Mohawk Power Corporation, executed on December 7, 1992

2. "Initial Submittal", Troy (Smith Ave.) MGP Site, January 15, 1994

3. Letter dated September 24, 1996, John Spellman (Department) to William Petronis, USACE re: Preliminary Site Assessment Report transmittal

4. Letter dated January 6, 1997, Michael W. Sherman (Niagara Mohawk) to John Spellman (Department), re: Preliminary Site Assessment Report

5. Letter dated January 7, 1997, Robert L. Marino (Department) to Niagara Mohawk re: Registry of Inactive Hazardous Waste Disposal Sites

6. Letter dated January 7, 1997, Robert L. Marino (Department) to USACE re: Registry of Inactive Hazardous Waste Disposal Sites

7. Letter dated April 11, 1997, John Spellman (Department) to Douglas A. Mayer (Niagara Mohawk) re: PSA Work Plan Addendum

8. Letter dated May 21, 1997, Michael W. Sherman (Niagara Mohawk) to John P. Cahill (Department), dated May 21, 1997 re: Petition to Delist

9. Letter dated May 28, 1997, Douglas A. Mayer (Niagara Mohawk) to John Spellman (Department) re: Remedial Investigation Work Plan

10. Letter dated July 2, 1997, G. Anders Carlson (NYSDOH) to Earl Barcomb (Department) re: Petition to Delist

11. Letter dated June 25, 1997, Douglas A. Mayer (Niagara Mohawk) to John Spellman (Department) re: Remedial Investigation Work Plan

12. Letter dated July 8, 1997, John Spellman (Department) to Douglas A. Mayer (Niagara Mohawk) re: Remedial Investigation Work Plan

13. Letter dated September 29, 1997, Michael J. O'Toole, Jr. (Department) to David H. King (Niagara Mohawk) re: Petition to Delist

14. Letter dated May 14, 1998, Daniel Miller (Foster Wheeler Environmental Corporation) to John Spellman (Department) re: draft Remedial Investigation Report transmittal

15. "Remedial Investigation Report for the Troy (Smith Avenue) Site" Foster Wheeler Environmental Corporation, May 1998

16. Letter dated July 6, 1999, Douglas A. Mayer (Niagara Mohawk) to Amen Omorogbe (Department) re: Remedial Investigation

17. Letter dated August 27, 1999, Amen Omorogbe (Department) to Douglas A. Mayer (Niagara Mohawk) re: July 6, 1999 letter

18. Letter with attachments dated March 13, 2001, Douglas A. Mayer (Niagara Mohawk) to Jeffrey Edwards (Department) re: Underground Storage Tank Closure Report

19. Memorandum dated April 24, 2001, John Potenza (Foster Wheeler Environmental Corporation) to Jeffrey Edwards (Department) re: monitoring well at Troy Recycling

20. Letter dated October 31, 2001, Douglas A. Mayer (Niagara Mohawk) to Jeffrey Edwards (Department) re: operable units

21. Letter dated November 9, 2001, Jeffrey Edwards (Department) to Douglas A. Mayer (Niagara Mohawk) re: operable units

22. Letter dated May 6, 2002, Douglas A. Mayer (Niagara Mohawk) to John Spellman (Department) re: Bulkhead Investigation

23. Letter dated August 12, 2002, John Spellman (Department) to Douglas A. Mayer (Niagara Mohawk) re: RI Report Addendum

24. "Supplemental Data Package", Tetra Tech FW, Inc., April 14, 2005

25. "Sheet Pile Depth Investigation Report", Enviroscan Inc., transmitted by Tetra Tech FW, Inc, May 11, 2005

26. Memorandum dated January 16, 2006, Jeffrey R. Caputi (Brown and Caldwell) to William R. Jones (National Grid) re: meeting with USACE

27. Email dated March 15, 2006, Robert Cantagallo (Tetra Tech EC, Inc.) to John Spellman (Department) re: NAPL monitoring

28. Letter dated July 24, 2006, William Petronis, (USACE) to Robert C. Cantangello (sic) (Tetra Tech EC, Inc) re: Feasibility Study

29. Letter dated October 6, 2006, Robert C. Cantagallo (Tetra Tech EC, Inc.) To John Spellman (Department) re: Feasibility Study comments

30. “Final Feasibility Study Report for the Troy (Smith Avenue) Site - OU1", Tetra Tech EC, Inc., January 2007

31. Letter dated February 15, 2007, Steven M. Bates (NYSDOH) to Dale Desnoyers (Department) re: Proposed Remedial Action Plan

32. Proposed Remedial Action Plan for the Troy - Smith Avenue Former MGP Site, Operable Unit No. 1, Former Plant Area, dated February 20, 2007, prepared by the Department

33. Letter dated March 19, 2007, Harry J. Tutunjian (Mayor of The City of Troy) to John Spellman (Department) re: extension of comment period

34. Letter dated March 21, 2007, Kieley Michasiow and Donald Snell (The Nature Conservancy) to John Spellman (Department) re: PRAP comments

35. Email dated April 23, 2007, Catherine M. Geraci (National Grid) to John Spellman (Department) re: comments on PRAP

36. Email dated May 17, 2007, Catherine M. Geraci (National Grid) to George Heitzman (Department) re: soil from gas main operations

FIGURE 1 SITE LOCATION

Troy Smith Ave. MGP Site Site No. 4-42-030

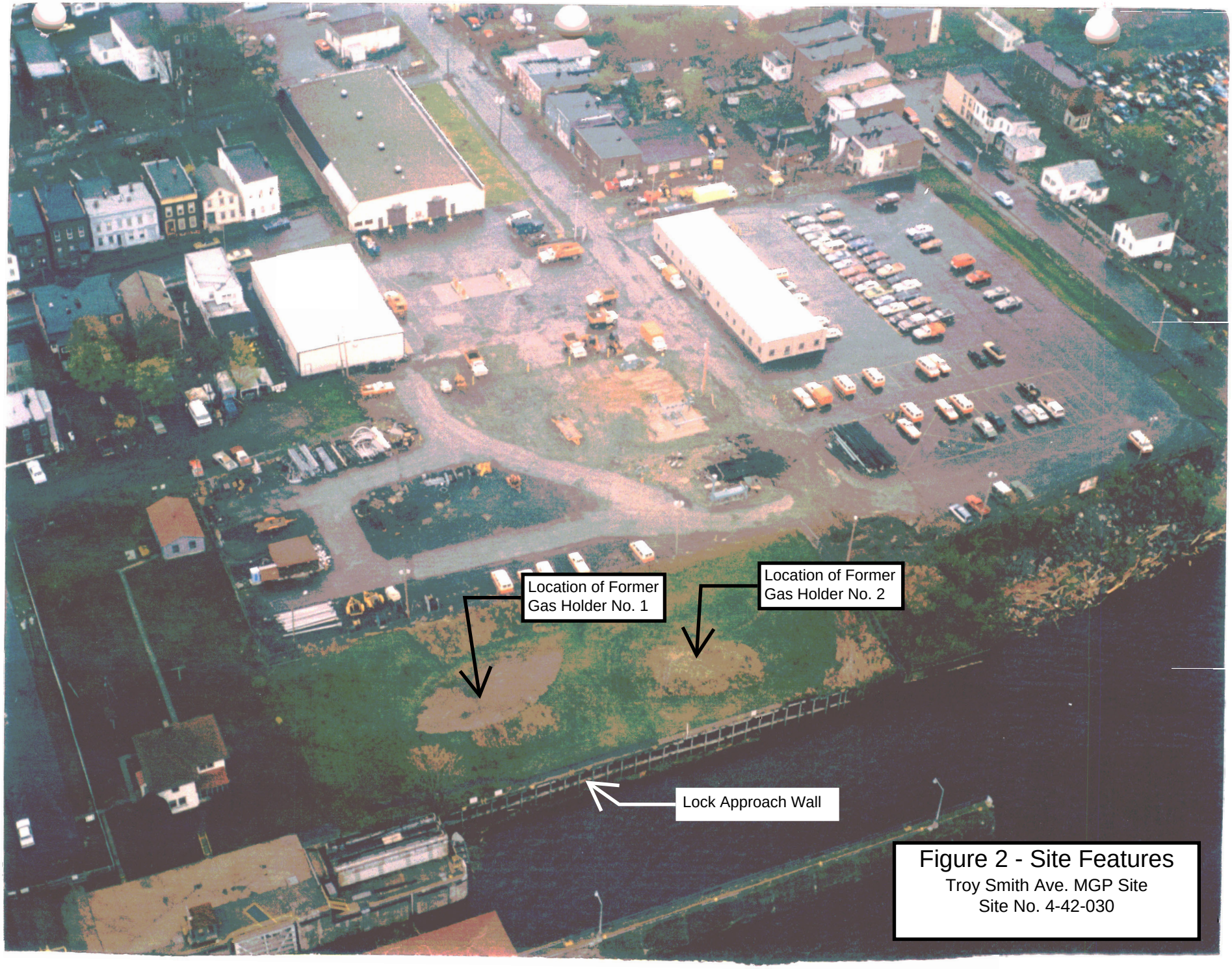


Figure 2 - Site Features
Troy Smith Ave. MGP Site
Site No. 4-42-030

Figure 3 - Upland Operable Units

Troy Smith Ave. MGP Site
Site No. 4-42-030


Gas Holder 1
Tar Settling Tanks
Gas Holder 2
Oil Tank
Gas Holder 3
N
W
E
S
0 50 100 200 Feet
Legend
NAPL 0 - 8 Feet
Yes
No
Former Structures
Figure 4 - NAPL 0 - 8 Feet Below Ground Surface
Troy Smith Ave. MGP Site
Site No. 4-42-030

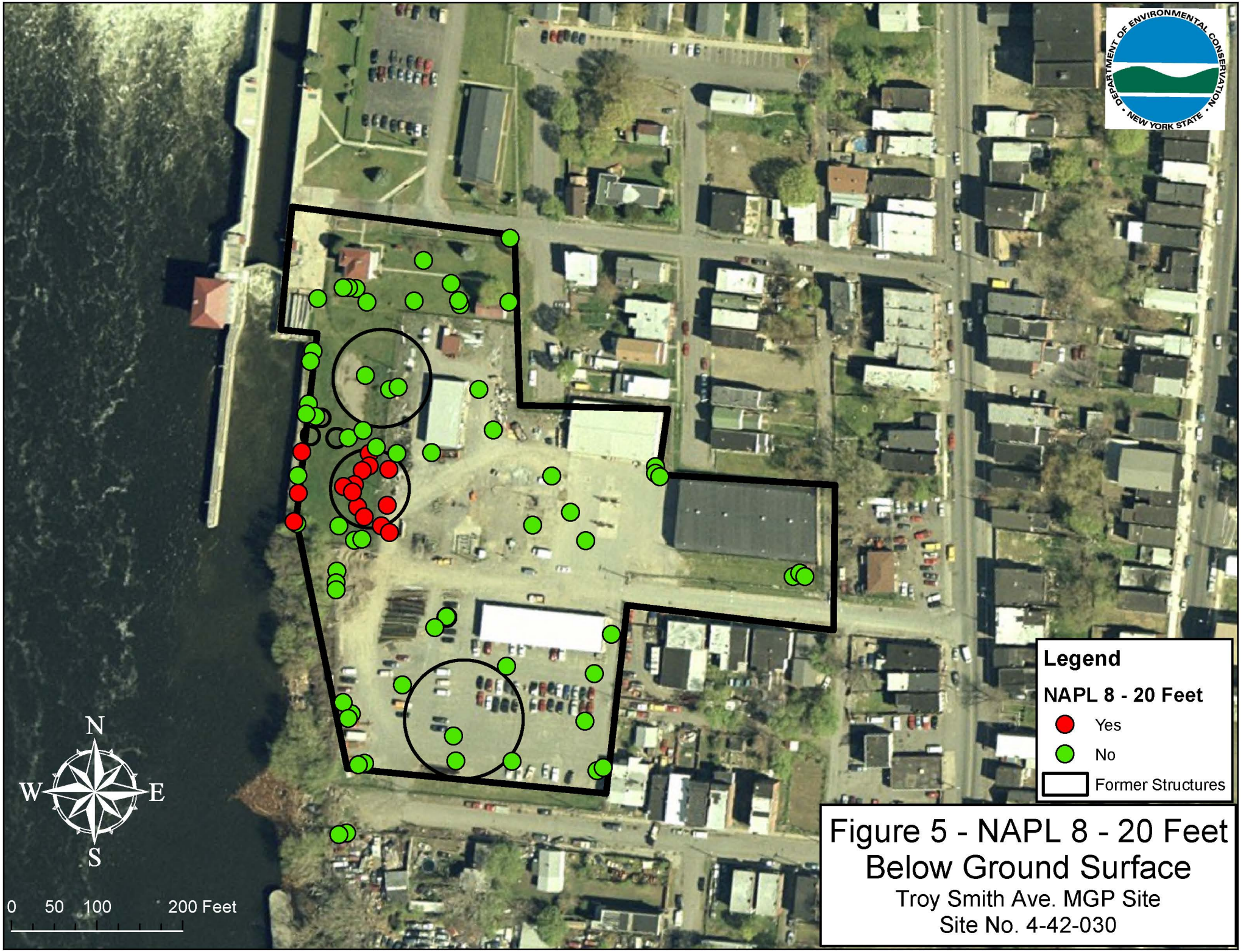


Figure 5 - NAPL 8 - 20 Feet Below Ground Surface

Troy Smith Ave. MGP Site
Site No. 4-42-030

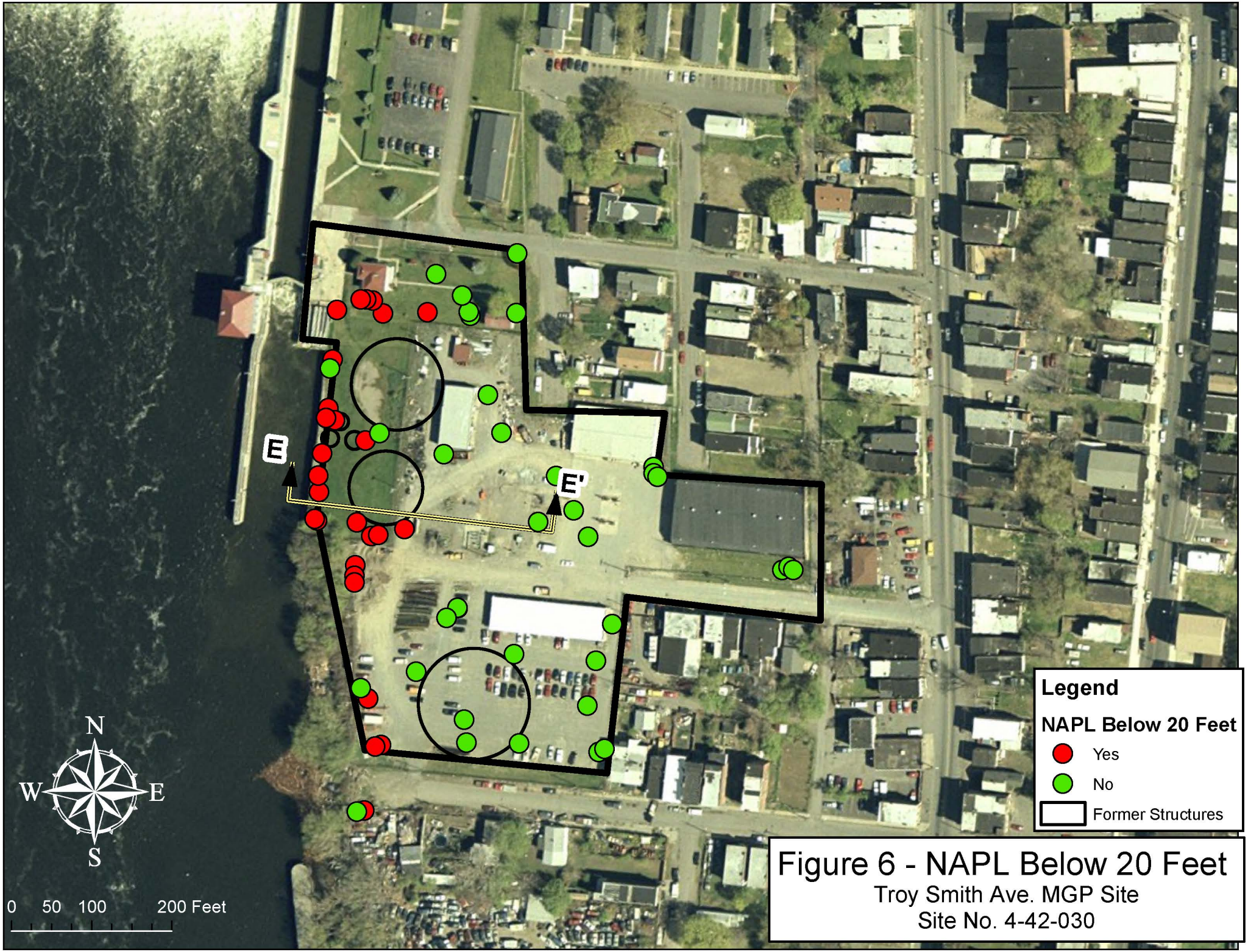


Figure 6 - NAPL Below 20 Feet

Troy Smith Ave. MGP Site
Site No. 4-42-030

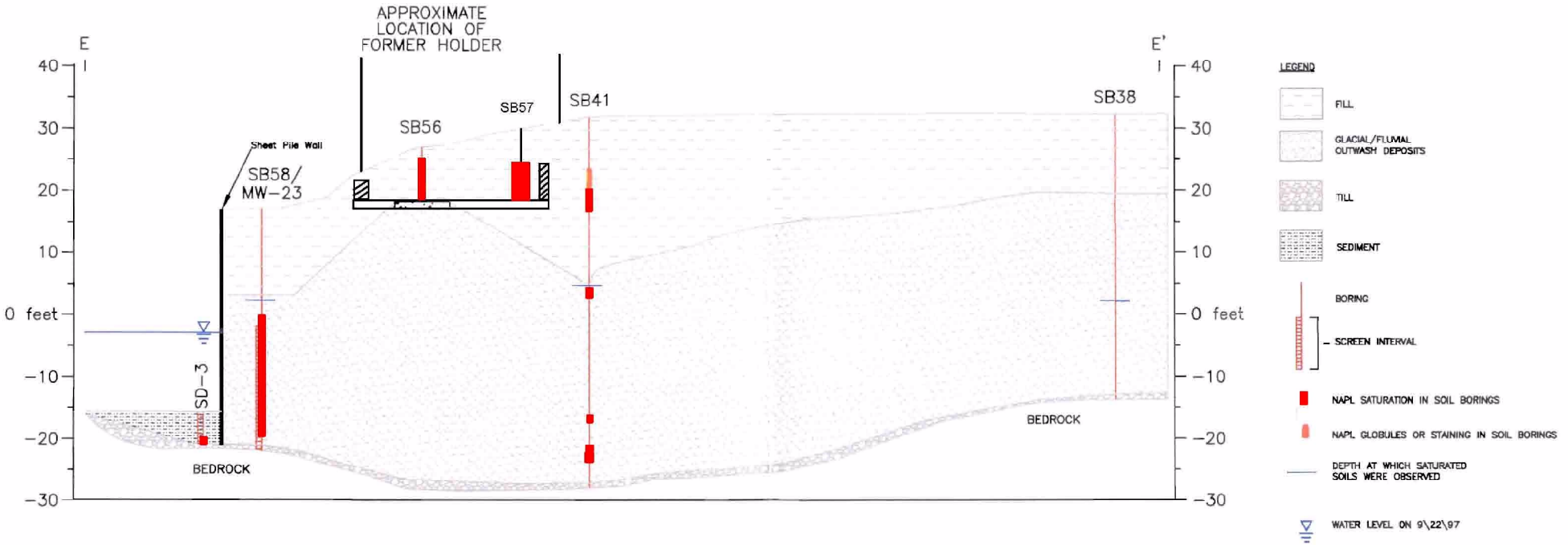
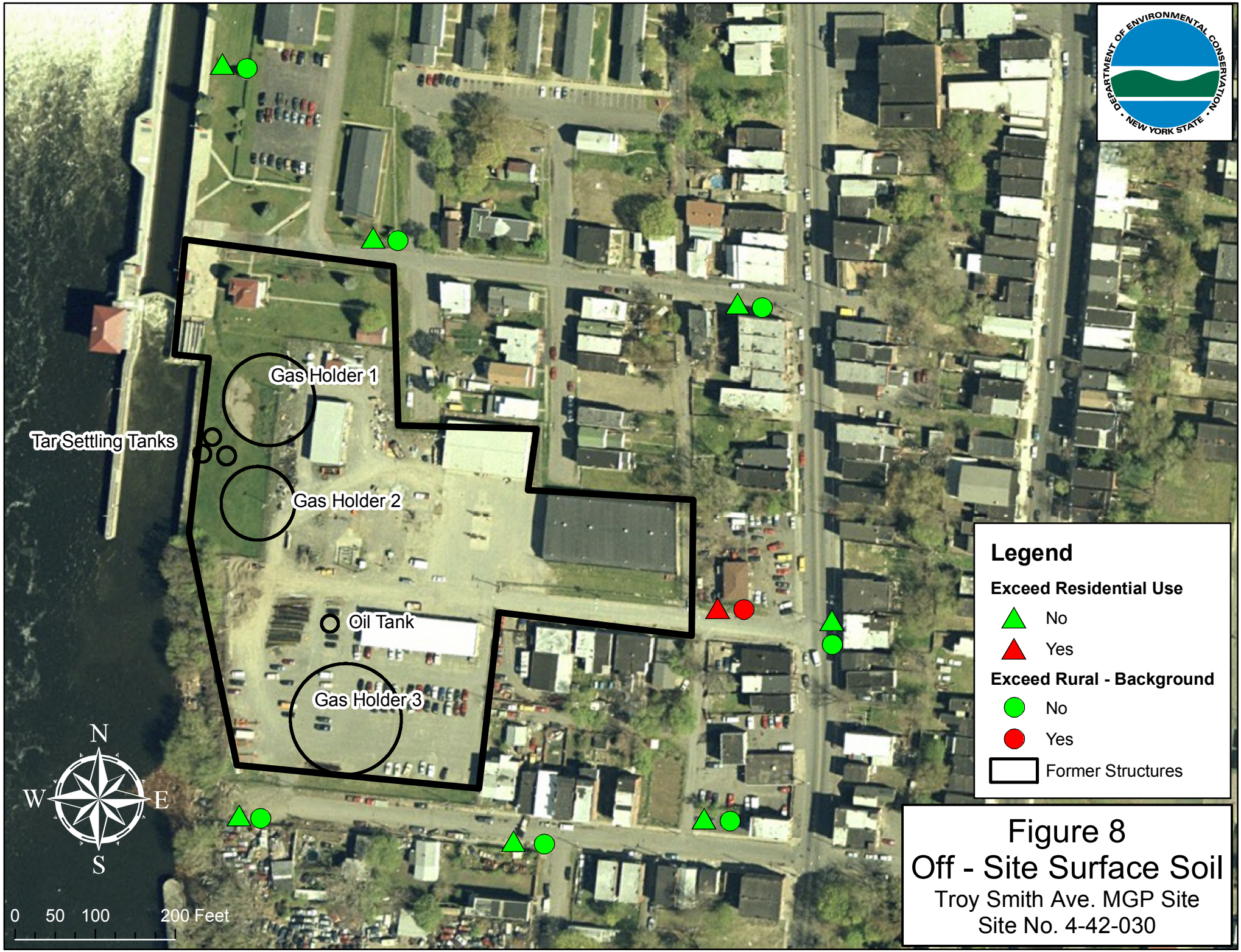


Figure 7 - Cross Section E-E

Troy Smith Ave. MGP Site
Site No. 4-42-030


Gas Holder 1
Tar Settling Tanks
Gas Holder 2
Oil Tank
Gas Holder 3
N
W
E
S
0 50 100 200 Feet
Legend
Exceed Residential Use
No
Yes
Exceed Rural - Background
No
Yes
Former Structures
Figure 8
Off - Site Surface Soil
Troy Smith Ave. MGP Site
Site No. 4-42-030

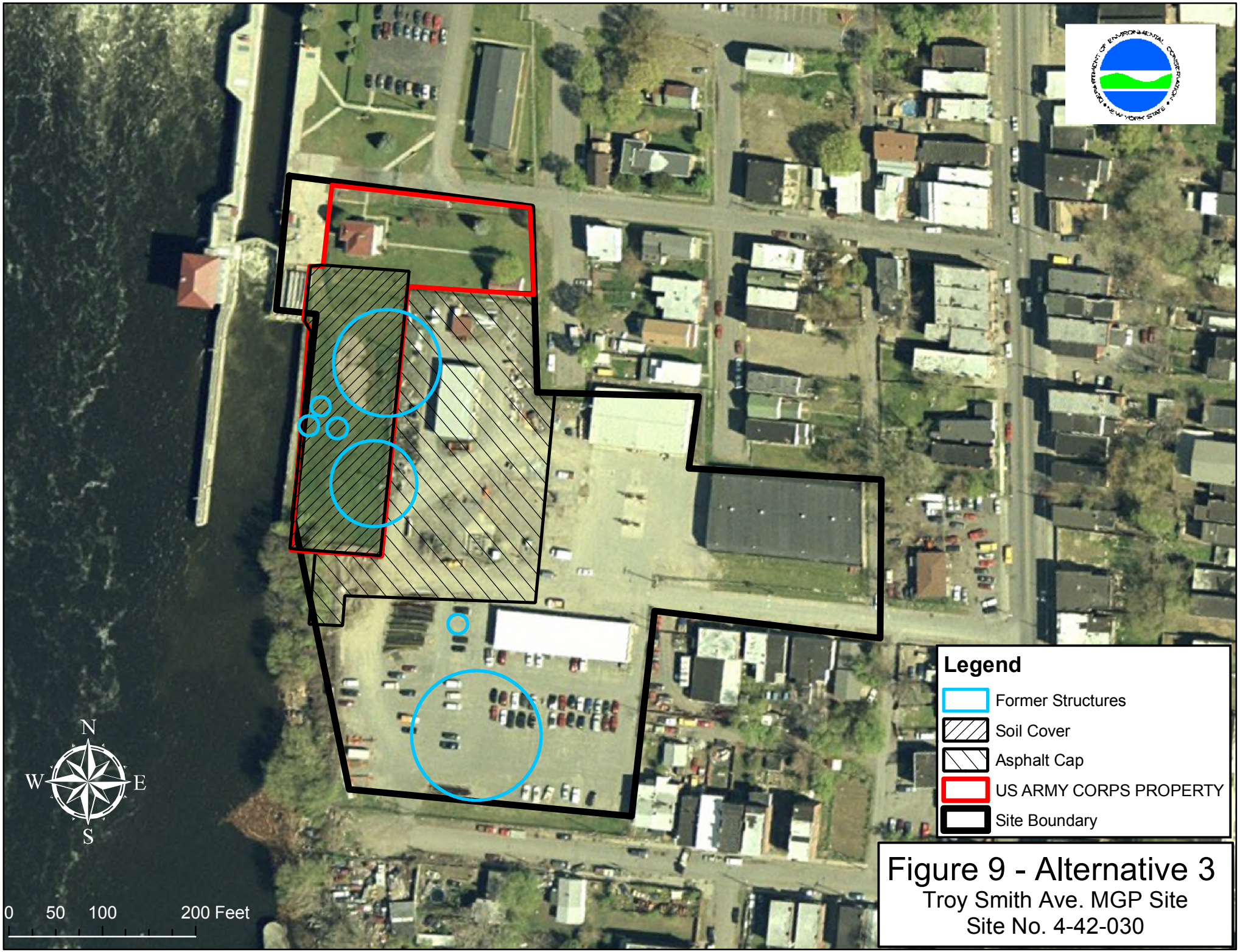


Figure 9 - Alternative 3

Troy Smith Ave. MGP Site
Site No. 4-42-030

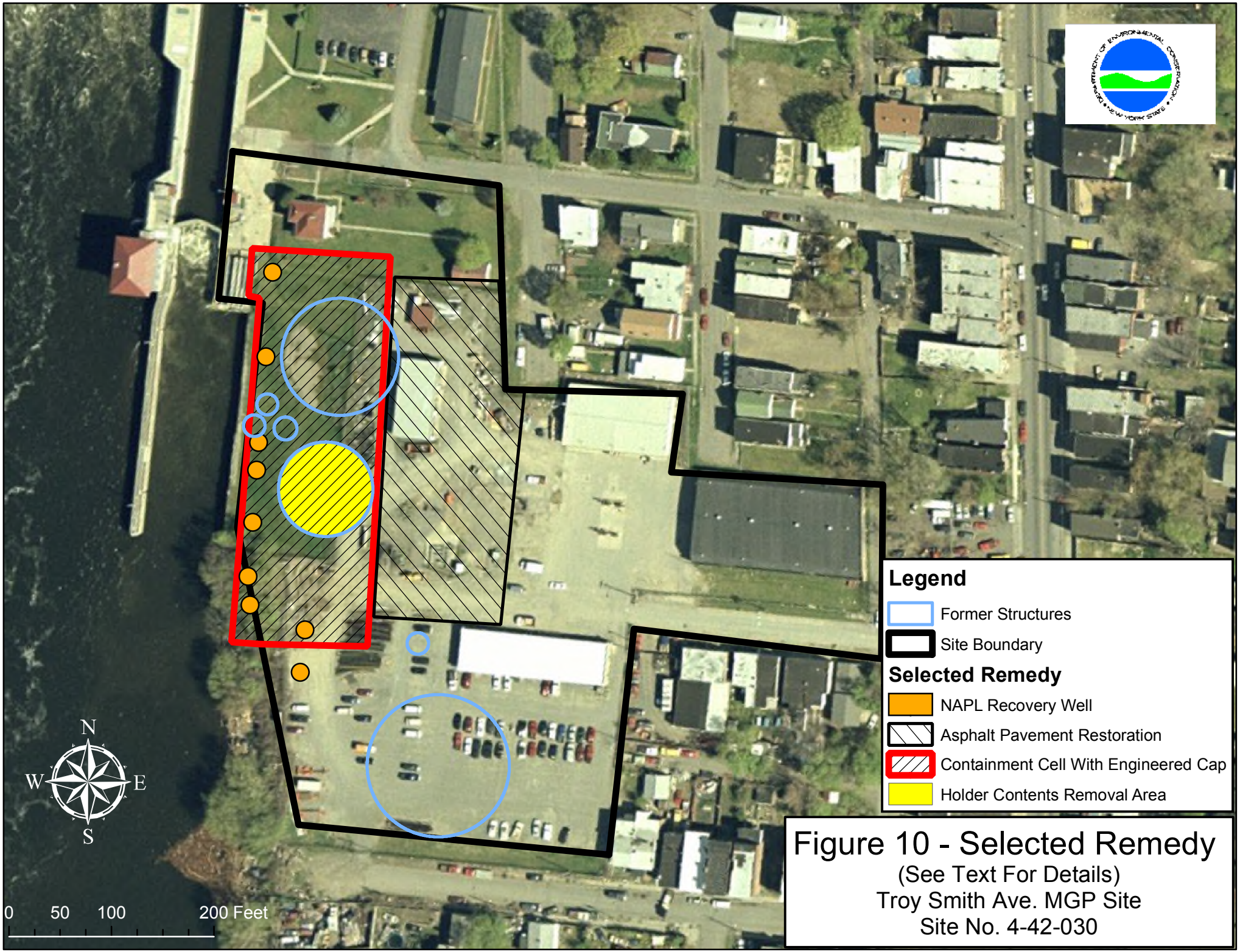


Figure 10 - Selected Remedy

(See Text For Details)
Troy Smith Ave. MGP Site
Site No. 4-42-030