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Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision

Niagara Mohawk Rome - Kingsley Avenue Former Manufactured Gas Plant Site Operable Unit 1: Former Plant Site Rome (C), Oneida County, New York Site No. 6-33-043

March 2002

New York State Department of Environmental Conservation
GEORGE E. PATAKI, *Governor* ERIN M. CROTTY, *Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

Niagara Mohawk Rome - Kingsley Avenue
Former Manufactured Gas Plant Site
Operable Unit 1: Former Plant Site
Inactive Hazardous Waste Site
Rome (C), Oneida County, New York
Site No. 6-33-043

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedy for the Niagara Mohawk (NIMO) Rome - Kingsley Avenue Former Manufactured Gas Plant (MGP), Operable Unit No. 1 a Class 2 inactive hazardous waste disposal site which was chosen in accordance with the New York State Environmental Conservation Law. The remedial program selected is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300).

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the NIMO Rome - Kingsley Avenue Former MGP inactive hazardous waste disposal site and upon public input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. 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 release 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 the environment.

Description of Selected Remedy

Based on the results of the Remedial Investigation/Feasibility Study (RI/FS) for the Niagara Mohawk (National Grid) Rome - Kingsley Avenue Former MGP, Operable Unit No. 1 and the criteria identified for evaluation of alternatives, the NYSDEC has selected source area removal and containment. The components of the remedy are as follows:

- Excavation of approximately 21,100 cubic yards of contaminated source area soils. Excavated materials will be transported off-site for thermal treatment and/or disposal in accordance with applicable regulations;

- Removal of a tar well and manufactured gas distribution and relief holder foundations;

- Subsurface containment and removal of remaining on-site DNAPL and in-situ groundwater treatment, using a partially perforated cutoff wall, at the western property boundary adjacent to the Mohawk River;

- A soil cover over approximately 14 acres on the northern portion of the site;

- Removal of approximately 800 cubic yards of contaminated sediment in the backwater area and replacement with clean material, comparable to the native sediment;

- Excavation and off-site disposal of purifier waste not addressed by the purifier disposal area Interim Remedial Measure (IRM);

- Excavation of approximately 90 cubic yards of surface soil from three small areas on the Niagara Mohawk property outside the extent of the soil cover;

- A long term operation, maintenance and monitoring program to include; monitoring and removal of DNAPL along the cutoff wall, groundwater treatment at the gates of the cutoff wall; establishment of a groundwater monitoring well network, and inspection and repair of the soil cover.

- Institutional controls to limit future site development to commercial or industrial use and prevent future exposures to site contaminants. Annual certification to ensure that institutional controls are in place and effective.

New York State Department of Health Acceptance

The New York State Department of Health concurs with the remedy selected for this site as being 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.

3/27/2002
Date

Michael J. O'Toole, Jr., 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 (NYSDEC) in consultation with the New York State Department of Health has selected this remedy to address the significant threat to human health and/or the environment created by the presence of hazardous waste at Operable Unit No. 1 (OU1) of the Niagara Mohawk Rome - Kingsley Avenue Former Manufactured Gas Plant (MGP), a class 2 inactive hazardous waste disposal site. OU1 consists of the Former MGP site and the undeveloped state owned land adjacent to the site. As more fully described in Sections 3 and 4 of this document, operation of the former manufactured gas plant has resulted in the disposal of a number of hazardous wastes or substances at the site, including benzene and polycyclic aromatic hydrocarbons (PAHs), some of which were released or have migrated from the site to surrounding areas, including the sediment in the backwater area and soils in the state owned area adjacent to the site and groundwater. These disposal activities have resulted in the following significant threats to the public health and the environment:

- a significant threat to human health associated with the potential for exposure due to direct contact with contaminated surface or subsurface soils and sediments.

- a significant threat to human health from the potential for ingestion or contact with contaminated groundwater.

- a significant threat to human health from the potential for inhalation or contact with dust from the site.

- a significant environmental threat associated with contaminant levels in soil and sediment that have the potential to cause significant adverse acute or chronic effects to benthic organisms and other wildlife.

- a significant environmental threat associated with the migration of light and dense non-aqueous phase liquid (LNAPL/DNAPL) and dissolved phase contaminants in groundwater from the site.

In order to eliminate or mitigate the significant threats to public health and the environment that the hazardous wastes disposed at the Rome Kingsley Avenue Site have caused, the following remedy was selected:

- Excavation of approximately 21,100 cubic yards of source area soils heavily saturated with LNAPL and DNAPL for off-site thermal treatment and/or disposal in accordance with applicable regulations;
- Removal of a tar well and the manufactured gas distribution and relief holder foundations;
- Subsurface containment and removal of remaining on-site DNAPL and in-situ groundwater treatment, using a partially perforated cutoff wall, at the western property boundary adjacent to the Mohawk River;
- A soil cover over approximately 14 acres on the northern portion of the site;
- Removal of approximately 800 cubic yards of cyanide contaminated sediment in the backwater area and replacement with clean material, comparable to the native sediment;
- Excavation and off-site disposal of purifier waste not addressed by the purifier disposal area Interim Remedial Measure (IRM);
- Excavation of approximately 90 cubic yards of surface soil observed to have minor exceedances of Technical and Administrative Guidance Memorandum (TAGM) 4046 concentrations for metals in three small areas on the Niagara Mohawk Power Corporation (NMPC) property outside the extent of the soil cover;
- A long term monitoring program consisting of monitoring and removal of DNAPL along the cutoff wall, groundwater treatment at the gates of the cutoff wall, a groundwater monitoring well network, a monitoring program for sediments in the backwater area and inspection of the soil cover on a regular basis;
- Implementation of institutional controls to limit future site development and prevent future exposures to site contaminants and annual certification to ensure that institutional controls are in place and effective.

The selected remedy, discussed in detail in Section 8 of this document, is intended to attain the remediation goals selected for this site in Section 6 of this Record of Decision (ROD), in conformity with applicable standards, criteria, and guidance (SCGs).

SECTION 2: SITE LOCATION AND DESCRIPTION

The Kingsley Avenue Site is located in the city of Rome, Oneida County, New York. The site is approximately 21.6 acres in area, all of which is owned by NMPC. A site location map is provided as Figure 1.

Manufactured gas plant operations formerly covered the northern half of the site. NMPC currently operates a natural gas regulator station on the northern parcel. The southern portion of the site is the location of two NMPC electric substations and a service building.

The site is located south of East Dominick Street, bordering a historic commercial and residential district, about 2,000 feet north of the confluence of the Mohawk River with the New York State Barge Canal. It is bounded by the Genesee and Mohawk Valley Railroad to the north and the Mohawk River forms the western boundary of the site. Whitesboro Street terminates near the southern boundary of the site. The city of Rome Department of Public Works facility is located to the east. Residential properties are near the site entrance on Kingsley Avenue.

Operable Unit No. 1 (OU1), which is the subject of this PRAP, includes the lands owned by NMPC, including the former MGP site, as well as the surface soils of a small contiguous area of undeveloped NYS owned land along the Mohawk River and sediments in a backwater area west of the site. An operable unit represents a portion of the site remedy which 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. The remaining operable unit (OU2) for this site is described in Section 3.2 below.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

A manufactured gas plant (MGP) was a facility where gas for lighting and heating homes and businesses was produced. The Kingsley Avenue MGP was constructed in 1917. Gas production began in 1917 and peaked in 1927. By 1930 production of gas at the Kingsley Avenue site was limited to emergency capacity, as the supply of gas for the City of Rome came from other facilities. Between 1938 and 1941 the retort house and relief holder were decommissioned. By 1949 gas manufacturing equipment had been removed from the central building. In 1959 the main gas holder was dismantled. The central building was demolished in 1994 as part of the concentrator house IRM.

Manufactured gas was produced at the site using the coal gas and water gas processes. Coal carbonization produced coal gas by heating coal in retorts or beehive ovens. The water gas process involved the passage of steam through burning coal. This formed a gaseous mixture that was passed through a super heater into which an oil feed stock was sprayed. In each process, the gas produced was condensed and purified prior to distribution.

The production of manufactured gas created many by-products, some of which remain on site. A dense, oily liquid known as coal tar would condense out of the gas at various stages during its production, purification and distribution. Although much of the tar produced was reused, recovery of the tar waste was incomplete. Substantial amounts of tar leaked from storage and processing facilities, contaminating surface and subsurface soils as well as groundwater. Another by product, purifier waste, was the discarded lime and/or wood chips treated with iron oxides to remove cyanide and sulfur from the gas. Purifier waste was often discarded on the site of a gas plant or used as a fill material.

3.2: Remedial History

The following is a chronology of the remedial history of the site:

1987		USEPA Preliminary Assessment
1992		Preliminary Site Assessment/ Interim Remedial Measures Work Plan (PSA/IRM)
May	1994	Concentrator House IRM
July	1994	Start of Remedial Investigation
Jan.	1995	Purifier Disposal Area IRM
July	1998	LNAPL Removal IRM initiated
Mar.	1999	Remedial Investigation Report
Dec.	2001	Off-site Remedial Investigation Report complete
Jan.	2002	Operable Unit 1 Feasibility Study complete

A separate operable unit for off-site contamination, Operable Unit No. 2(OU2), will address the subsurface DNAPL and groundwater contamination beyond the western boundary of the site. The approximate area to be addressed by OU2 is shown in Figure 1.

SECTION 4: SITE CONTAMINATION

To evaluate the contamination present at the site and to evaluate alternatives to address the significant threat to human health and the environment posed by the presence of hazardous waste, Niagara Mohawk has recently conducted and completed a Remedial Investigation/ Feasibility Study (RI/FS).

4.1: Summary of the Remedial Investigation

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site.

The RI was conducted in 2 phases. The first phase was conducted between July 1994 and October 1994 and the second phase in December 1996. A Supplemental RI was conducted in April 1997. A report entitled Remedial Investigation Report for the Rome (Kingsley Avenue) Site (March 1999) has been prepared which describes the field activities and findings of the RI in detail.

The RI included the following activities:

- Geophysical (Electromagnetic) Survey

- Excavation of test pits in the near surface soils for evaluation of physical properties of the soils.

- Collection and analysis of surface soil samples.

- Completion of soil borings for collection and analysis of subsurface soil samples.

- Installation of monitoring wells for collection and analysis of groundwater samples.

- Collection and analysis of sediment samples from the Mohawk River and the backwater area.

- Collection and analysis of surface water samples from the Mohawk River.

To determine which media (soil, groundwater, etc.) are contaminated at levels of concern, the RI analytical data was compared to environmental standards, criteria, and guidance values (SCGs). Groundwater, drinking water and surface water SCGs identified for the Rome Kingsley Avenue site are based on NYSDEC Ambient Water Quality Standards and Guidance Values and Part 5 of New York State Sanitary Code. For soils, NYSDEC Technical and Administrative Guidance Memorandum (TAGM) 4046 provides soil cleanup guidelines for the protection of groundwater, background conditions, and health-based exposure scenarios. In addition, for soils, site specific background concentration levels can be considered for certain classes of contaminants. Guidance values for evaluating contamination in sediments are provided by the NYSDEC "Technical Guidance for Screening Contaminated Sediments".

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 below. More complete information can be found in the RI Report.

Chemical concentrations are reported in parts per billion (ppb) for water and parts per million (ppm) for soil and sediment. For comparison purposes, where applicable, SCGs are provided for each medium.

4.1.1: Site Geology and Hydrogeology

The logs from the soil boring and monitoring well installations indicate that nearly all surficial soils have been altered due to historic operations at the site. This fill unit consists of a reworked and regraded brown silty sand mixed with miscellaneous debris including coal, ash, bricks, mortar and concrete. The thickness of the unit is approximately 8 feet across much of the site. Below the fill is a unit of alluvial sand and gravel consisting of fine to coarse gravel and cobbles mixed with fine to coarse sand. The thickness of this alluvial deposit ranges from 4.5 to 32 feet, with the thickest deposits found in an abandoned north-south riverbed west of the central portion of the site. A lacustrine silt, sand and clay unit of thickness ranging from 47 to 58 feet was found throughout the site below the alluvial sand and gravel. This unit can be divided into subunits consisting of silt and sand; silt, sand and clay; and red clay. The red clay is an apparent confining layer and was found extensively in the central and western portions of the site. Till consisting of poorly sorted, dense silt, sand, clay and gravel is present at the site below the lacustrine unit. Bedrock was not encountered in any borings, however a black fissile shale is know to exist in the site vicinity below the glacial till.

The depth to groundwater ranges from 5 to 10 feet below grade. Shallow groundwater on-site is subject to seasonal vertical fluctuations of up to 5 feet and generally flows radially toward the Mohawk River. Deep groundwater lies above the red clay throughout much of the site, or on the till unit. Both act as barriers to vertical groundwater migration. Deep groundwater flow is to the west.

4.1.2: <u>Nature of Contamination</u>

As described in the RI report, many surface and subsurface soil, groundwater, sediment and surface water samples were collected at the Rome Kingsley Avenue Site to characterize the nature and extent of contamination.

The main categories of contaminants which exceed their SCGs are volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs). Specific volatile organic compounds of concern in soil, sediment and groundwater are: benzene, toluene, ethylbenzene and xylenes. The summation of these compounds is referred to as BTEX. The specific semivolatile organic compounds of concern in soil and groundwater are the following polycyclic aromatic hydrocarbons (PAHs):

acenaphthene	*chrysene*
acenaphthylene	fluoranthene
anthracene	fluorene
benzo(a)anthracene	*indeno(1,2,3-cd)pyrene*
benzo(a)pyrene	2-methylnaphthalene
benzo(b)fluoranthene	naphthalene
benzo(g,h,i)perylene	phenanthrene
benzo(k)fluoranthene	pyrene
dibenzo(a,h)anthracene	

PAH concentrations referred to in this plan are the summation of the individual PAHs listed above (i.e. total PAHs or tPAHs). The italicized PAHs are probable human carcinogens. The summation of the italicized PAHs is referred to in this document as cPAHs.

Two major types of waste materials are typically present at former MGP sites, coal tar and purifier waste. Coal tars are reddish brown to black, oily liquids which do not readily dissolve in water. Materials such as this are commonly referred to as a non-aqueous phase liquid, or NAPL. Although most tars are slightly more dense than water (DNAPL), the difference in density is slight. Consequently, they typically sink when in contact with water. Tars were disposed, spilled or leaked from tanks, gas holders and other structures at several locations throughout the site, and have moved away from these locations through the subsurface. This migration results in tar contamination over large areas of the site. The areas of NAPL were found to saturate the unconsolidated deposits and/or exist in scattered, discontinuous globules.

Tars contain high levels of PAH compounds, often greater than 100,000 parts per million. Tars also may 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. The tar is a source of the BTEX and PAHs identified in various media at the site and discussed in section 4.1.3.

A petroleum based light non-aqueous phase liquid (LNAPL) is another form of contamination known to exist at this site. LNAPLs in the form of various petroleum products were used as a feedstock in the water gas process at former MGPs and frequently leaked into the subsurface. LNAPL plumes exist on the water table in several areas at the site. The LNAPL also has high concentrations of BTEX and PAH compounds.

The main inorganic contaminant of concern at this site is cyanide. Elevated levels of cyanide have been found in an area of known purifier waste disposal, as well as in the sediment in a small backwater area near the western boundary of the site.

Purifier waste is a mixture of wood chips and iron filings which was used to remove sulfur and other compounds from the manufactured gas before distribution to the public. Purifier waste which no longer was capable of removing the impurities was often disposed on-site. It contains high concentrations of sulfur and cyanide and has a characteristic blue color from ferric/ferrocyanides. Cyanides from this waste can impact site soils, groundwater or sediments.

Certain metals were found in excess of either TAGM guidance value or background concentrations. Levels of arsenic, lead, mercury and zinc were elevated in samples taken from various media at the site. The locations of metal exceedances coincide with areas of elevated PAHs/BTEX.

4.1.3: <u>Extent of Contamination</u>

The following are the media which were investigated and a summary of the findings of the investigation.

Tables 1A through 1D summarize the extent of contamination for the contaminants of concern in surface and subsurface soil, sediment and groundwater, respectively, and compare the data with the SCGs for the site.

<u>Surface Soil</u>

The surface of the site consists of a brown silty sand mixed with fill materials such as coal, ash, bricks, mortar and concrete. Twenty-four surface soil samples were collected and analyzed.

Twenty samples were analyzed for BTEX compounds, total BTEX exceeding SCGs was only detected in two of the samples, at a maximum concentration of 47.5 ppm. Twenty four samples were analyzed for total PAHs. Concentrations ranged from not detected to 6,846 ppm. Total carcinogenic PAH concentrations ranged from not detected to 4,346 ppm. Four out of twenty-four samples had total cPAH concentrations in excess of 10 ppm.

Cyanide concentrations ranged from not detected to 107 ppm in twenty surface soil samples. The highest concentrations of cyanide were found in the northwest corner of the site near the perimeter of the purifier waste IRM area. Surface runoff, which transported contaminated soils from this area, appears to be the source of the cyanide in the backwater sediment.

Twenty surface soil samples were analyzed for metal concentrations. Concentrations of arsenic ranged from not detected to 31 ppm. The background value of 9 ppm was exceeded by 3 of the samples. Concentrations of lead ranged from 2.2 to 409 ppm. The guidance value of 400 ppm was exceeded by one sample. Concentrations of mercury ranged from not detected to 21.7 ppm. The standard value of 0.1 ppm was exceeded by eleven of the samples. Concentrations of zinc ranged from 10.7 to 9,670 ppm. The background value of 777 ppm was exceeded by two of the samples.

Subsurface Soil

Concentrations of total BTEX compounds ranged from not detected to 3,128 ppm in subsurface soils. Twenty-two out of 136 samples had total BTEX concentrations in excess of 10 ppm. Elevated total BTEX concentrations were detected in the center of the site near the former tar well and in the former canal area. Total PAH concentrations ranged from not detected to 30,110 ppm. Thirty-eight out of 314 samples had total PAH concentrations greater than 500 ppm. Similar to BTEX results, higher concentrations of PAHs were found in borings near the tar sumps, the aboveground storage tank pad, gas holders and canal area.

Cyanide concentrations ranged from not detected to 41.0 ppm. Shallow subsurface soils contaminated with cyanide were identified in the vicinity of the purifier waste disposal area.

Thirty-five surface soil samples were analyzed for metal concentrations. Concentrations of arsenic ranged from not detected to 10.1 ppm. The background value of 9 ppm was exceeded by two of the samples. Concentrations of lead ranged from 2.7 to 691 ppm. The guidance value of 400 ppm was exceeded by three samples. Concentrations of mercury ranged from not detected to 0.75 ppm. The standard value of 0.1 ppm was exceeded by two of the samples. Concentrations of zinc ranged from 6.3 to 96.2 ppm. The background value of 777 ppm was not exceeded by any samples.

Sediments

Fifty-seven sediment samples were taken from the Mohawk River, including a backwater area located above the spillway west of the site. Total BTEX concentrations in sediments ranged from not detected to 0.003 ppm. Concentrations of individual BTEX compounds did not exceed the background values for any of the samples. Total PAH concentrations ranged from not detected to 25.59 ppm.

Cyanide concentrations ranged from not detected to 66.8 ppm. The highest concentrations of both total PAHs and cyanide were in sediments from the backwater area shown on Figure 2.

Sixteen sediment samples were analyzed for metal concentrations. Concentrations of arsenic ranged from 1.6 to 7.4 ppm. The guidance value of 6 ppm was exceeded in two of the samples. Concentrations of lead ranged from 8.8 to 685 ppm. The guidance value of 31 ppm was exceeded in ten of the samples. Concentrations of mercury ranged from not detected to 0.19 ppm. The guidance value of 0.15 ppm was exceeded in one sample. Concentrations of zinc ranged from 51.7 to 2,320 ppm. The guidance value of 120 ppm was exceeded in thirteen of the samples. Exceedances were concentrated in the backwater area on the western boundary of the site.

Groundwater

Eighty groundwater samples were analyzed for BTEX and PAH concentrations. Total BTEX concentrations ranged from not detected to 110,400 ppb. Benzene concentrations ranged from not detected to 72,000 ppb with forty-five samples in excess of the 0.7 ppb standard. Total PAH

4.2: Interim Remedial Measures

An Interim Remedial Measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before completion of the RI/FS. The following IRMs were conducted at this site:

Concentrator House IRM: An IRM was completed in June of 1994 adjacent to the east foundation wall of the concentrator house. Approximately 100 gallons of NAPL seeped into the demolition debris in the concentrator house basement. Impacted material was removed from the excavation and placed into rolloff containers and drums for off-site disposal. The concrete floor was cleaned before being filled with bank run gravel to grade.

Purifier Disposal Area IRM: In January 1995, an IRM was performed in the purifier waste disposal area, in the northwest corner of the site adjacent to the Mohawk River. During the IRM, 972 tons of purifier waste was removed from the site and treated thermally. The average depth of excavation was less than 3 feet. The area was then filled with bank run gravel.

LNAPL Removal IRM: Beginning in July of 1998 and continuing until February 1999, LNAPL was removed from MW-15 using a product recovery system. A pilot test was also conducted using a technique known as bioslurping, to assess the effectiveness of this technology for LNAPL removal. Liquids were containerized prior to treatment off-site. Results of this pilot test were not satisfactory for the efficient removal of LNAPL. An LNAPL plume remains on the water table near MW-7, MW-12 and MW-15.

4.3: 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 health risks can be found in Section 6.1 of the RI report.

An exposure pathway is the manner by which an individual may come in contact with a contaminant. The five elements of an exposure pathway are 1) the source of contamination; 2) the environmental media and transport mechanisms; 3) the point of exposure; 4) the route of exposure; and 5) the receptor population. These elements of an exposure pathway may be based on past, present, or future events.

Current pathways which are known to or may exist at the site include:

- Incidental ingestion and dermal contact with sediment and surface soil are potential exposure pathways.
- Inhalation of volatile vapors and fugitive dust from soils is also a potential exposure pathway.

concentrations in groundwater ranged from not detected to 272,000 ppb. Naphthalene concentrations in groundwater ranged from not detected to 120,000 ppb. Thirty-two of eighty groundwater samples had naphthalene concentrations in excess of the 10 ppm standard.

Cyanide concentrations in groundwater in the northeast corner ranged from not detected to 630 ppb. Concentrations exceeded the guidance value of 200 ppb in eleven out of 87 samples. These samples were collected within, or in close proximity to, the purifier waste disposal area or source areas.

Thirty four samples were analyzed for metals. Arsenic concentrations ranged from not detected to 79.1 ppb. The groundwater standard of 25 ppb was exceeded by four of the samples. Lead concentrations ranged from not detected to 66.8 ppb. The groundwater standard of 25 ppb was exceeded by nine of the samples. Mercury concentrations ranged from not detected to 1.8 ppb. The groundwater standard of 0.7 ppb was exceeded by two of the samples. Zinc concentrations ranged from not detected to 521 ppb. The groundwater standard of 2000 ppb was not exceeded by any samples.

Surface Water

Surface samples were collected from the Mohawk River adjacent to the site and analyzed. Neither BTEX, PAHs nor cyanide were detected in any of the surface water samples. Metals associated with the manufactured gas process were not detected above Class C standards in surface water samples collected from the Mohawk River.

Waste Materials

The source of much of the BTEX and PAH contamination found on site is the coal tar/NAPL found in and around the various subsurface structures or other source areas. Analysis of the NAPL reveals that it contains BTEX and PAHs several orders of magnitude greater than the SCGs for these compounds. The NAPL was found to saturate the unconsolidated deposits and/or exist in scattered, discontinuous globules. Any of these conditions could coincide with high BTEX and PAH concentrations in soils and typically results in significant impact to the groundwater as well. Areas of waste disposal have been termed "source areas" and are defined as those identified locations at the site where former MGP structures containing waste and/or significant volumes of soil have been found to be saturated with NAPL, or have visually observable separate phase product. Soils exhibiting odors, staining and/or sheens are not included in the definition of "source areas". In addition to the NAPL, a purifier waste disposal area was identified in the northwest corner of the site adjacent to the Mohawk River.

Air

The air quality was measured during soil disturbing investigation activities, when volatilization might generate unfavorable environmental conditions. Air monitoring with a photoionization detector during all aspects of the field work did not indicate the presence of volatile organic compounds in the breathing zone above the action levels specified in the project health and safety plan.

Currently, no drinking water or irrigation wells have been identified in the impacted area, therefore potential exposure to contaminated groundwater and subsurface soils is limited to future installation of wells or during intrusive activities on the site.

4.4: Summary of Environmental Exposure Pathways

This section summarizes the types of environmental exposures and ecological risks which may be presented by the site. The Fish and Wildlife Impact Assessment, included in Section 6.2 of the RI, presents a more detailed discussion of the potential impacts from the site to fish and wildlife resources. The following pathways for environmental exposure and/or ecological risks have been identified:

- Direct contact with surface soil by terrestrial wildlife and vegetation.
- Direct contact with subsurface soil by burrowing wildlife.
- Direct contact with sediment by aquatic organisms and plants.

SECTION 5: ENFORCEMENT STATUS

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

The NYSDEC and the Niagara Mohawk Power Corporation (NMPC) entered into a multi-site Consent Order (#D0-0001-9210) on December 7, 1992. The Order obligates NMPC to implement a full remedial program for this site.

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 375-1.10. The overall remedial goal is to meet all standards, criteria and guidance (SCGs) and be protective of human health and the environment. At a minimum, the remedy selected must eliminate or mitigate all significant threats to public health and/or the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

The goals selected for this site are:

- Eliminate, to the extent practicable, the potential for ingestion of impacted groundwater that does not attain Part 5 of the New York State Sanitary Code Drinking Water Standards.
- Eliminate, to the extent practicable, off-site migration of groundwater that does not attain NYSDEC Class GA Ambient Water Quality Criteria.

- Eliminate, to the extent practicable, migration of LNAPL and DNAPL in groundwater and subsurface soils.

- Eliminate, to the extent practicable, the potential for exposures to cyanide in soil and sediment.

- Eliminate, to the extent practicable, human, flora and fauna contact with contaminated surface and subsurface soils.

- Eliminate, to the extent practicable, the potential for inhalation of volatile vapors and fugitive dust from soils.

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 laws and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. Potential remedial alternatives for the Rome Kingsley Avenue site were identified, screened and evaluated in the report entitled Feasibility Study Report for the Rome (Kingsley Ave.) Site (January 2002).

A summary of the detailed analysis follows. As presented below, the time to implement reflects only the time required to implement the remedy, and does not include the time required to design the remedy or procure contracts for design and construction.

7.1: Description of Remedial Alternatives

The potential remedies are intended to address the contaminated soils, groundwater and sediments present on the site.

Alternative 1: No Action

Present Worth:	$	166,800
Capital Cost:	$t	0
Annual O&M:	$	11,000
Time to Implement:		none

The No Action alternative is evaluated as a procedural requirement and as a basis for comparison. This alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment. Costs are associated with continued monitoring and periodic reviews of the site to evaluate whether remedial action would be required in the future.

Alternative 2: Soil Cover

Present Worth:	$ 7,196,825
Capital Cost:	$ 3,147,225
Annual O&M:	$ 256,200
Time to Implement	3 to 6 months

This alternative would provide a soil cover across the majority of the site, to include all areas in the northern portion that contain surface soil contamination above SCGs. Also included would be excavation of purifier waste, sediment removal, LNAPL removal, isolated soil removal beyond the cover, a survey of storm sewers and institutional controls. The major components of this alternative would be as described below and illustrated in Figure 3:

- A two foot soil cover would be placed over approximately 14 acres of the former plant site and surrounding areas. The soil cover material would be determined based on planned future uses for the site. Areas planned for buildings would be capped by the structure, areas planned for parking or road use would be capped with asphalt and all other areas would be covered with a minimum of two feet of clean soil. The soil cover would have to maintain existing grades within the floodway/floodplain boundary. The limits of the cover are shown on Figure 3 and the floodway/floodplain boundary on Figure 7.

- Purifier waste which remained in the northwest corner of the site following the purifier waste IRM would be removed. The limits of the purifier waste excavation would be established based on visual indication of purifier waste, defined as blue-stained soils, and excavation would be limited to the depth of the water table.

- Approximately 800 cubic yards of cyanide and PAH contaminated sediment, to a depth of 4 feet, would be removed from the backwater area identified on Figure 2. The sediment would be replaced with material comparable to the native sediment. The imported soil would act as a cover over any residual contamination left in place below 4 feet. The surface soils surrounding the backwater would be included in the area of the soil cover.

- The area impacted by LNAPL would be removed by excavating soil to the water table. Excavation of approximately 4,700 cubic yards of soils would be required to depths of 8-10 feet. If appropriate, LNAPL would be removed by a vacuum truck or a similar technology. The limits of the excavation would be defined as part of a pre-design soil boring program. The approximate limits of this excavation are shown on Figure 3.

- Isolated areas of surface soils which exceed TAGM 4046 levels for metals, located beyond the limits of the soil cover, would be excavated and either disposed of off-site or incorporated under the soil cover. Approximately 90 cubic yards of soil would be removed, to a minimum depth of two feet, from the areas shown on Figure 6. These soils would be replaced by clean soil to restore the existing grades.

- A survey of storm sewers passing through the site would be performed during the design period to determine if existing lines have been impacted by MGP residuals or have the potential to act as a conduit for off-site transport of MGP residuals. Identification of these conditions would require additional remedial measures to isolate or remove any contaminants.

- Institutional controls limiting future site development and activities would be implemented to prevent future exposures to remaining site contaminants. These would include: (a) a prohibition of land development for residential use; (b) worker notification if utility or other excavation work was planned; (c) notification to the NYSDEC prior to any action which could jeopardize the integrity of the remedy; (d) proper management of any contaminated soil or waste removed from below the soil cover; and, (e) prohibition of the development of water supply wells.

- A long term monitoring program would be required for the contamination left on- site following implementation of the remedy. This would include monitoring and periodic sampling of groundwater throughout the site and sediments in the backwater area for BTEX and PAHs. Inspection of the soil cover would be conducted on a regular basis and yearly certification of the continued effectiveness of the engineering controls would also be required.

Alternative 3: Removal of Soils Above TAGM 4046 Cleanup Levels

Present Worth:	$ 111,716,525
Capital Cost:	$ 111,716,525
Annual O&M:	$ 0
Time to Implement	12 to 18 months

This alternative would require the removal of all soils which exceed TAGM 4046 levels. Excavation of an estimated volume of 580,000 cubic yards of soils would be necessary. The volume to be excavated would begin as the entire on-site area to be covered by Alternative 2 (see Figure 3) and proceed downward until reaching soils with contaminant levels below TAGM 4046 concentrations for the individual contaminants. Soil handling under a structure with an air treatment system would be required if vapor emissions exceed acceptable levels. Deep excavations would require shoring and/or sheet piling. Dewatering would be necessary below the water table with treatment of water to appropriate limits before disposal. The contaminated soil would be taken off site for thermal treatment and disposal. The site would be restored to existing grade with clean backfill.

In addition, this alternative would require the removal of the contaminated sediment in the backwater, purifier waste removal and storm sewer survey as described in Alternative 2.

Deed restrictions and long term monitoring would not be required since all soils above TAGM 4046 levels would be removed.

Alternative 4: Source Removal and Containment

Present Worth:		$ 16,342,350
Capital Cost:		$ 10,586,950
Annual O&M:	Years 0-5	$ 394,600
	Years 6-30	$ 308,800
Time to Implement		9 to 12 months

In addition to the soil cover and other elements described in Alternative 2, this alternative would also include removal of contaminated source areas and related MGP structures on the site and construction of a DNAPL cutoff wall. The major components of this alternative would be as described below and illustrated in Figure 4:

- Excavation and off-site thermal treatment and/or disposal of approximately 21,100 cubic yards of source material. "Source areas" are defined as those identified locations at the site where significant volumes of soil have been found to be saturated with NAPL, or have visually observable separate phase product. Soils exhibiting odors, staining and/or sheens will not to be considered for removal as "source areas" In DNAPL source areas associated with the tar well and former gas holders, this would include full removal of the structures and associated contaminated soils above and below the water table. In other source areas, not associated with MGP structures, soil removal would be limited to the depth of the water table. A pre-design boring program would be used to delineate the extent of the excavation. This excavation volume would include the LNAPL contaminated soil removal described in Alternative 2. The approximate limits of the source area excavations are shown in Figure 4.

- The tar well and former distribution and relief holder foundations would be demolished and removed as part of the source area excavation. Deep excavations required to remove DNAPL source areas associated with these structures would continue to depths below the water table. Shoring and/or sheet piling would be required to stabilize the deep excavations. The soils removed from below the water table and sediments would be dewatered and the water would be treated prior to discharge.

- A partially perforated sheet pile cutoff wall would be installed along the west side of the site near the Mohawk River, as shown in Figure 4. The perforated areas or "gates" would be discrete areas of the upper wall which would serve as collection and treatment points for contaminated groundwater, while the lower portion of the wall would be solid and provide a subsurface containment and capture mechanism to prevent DNAPL remaining on-site from migrating off-site. DNAPL would be collected from behind the wall for off-site treatment/disposal. Details of this wall are shown on Figure 5.

This alternative would also require the soil cover of approximately 14 acres, the removal of the contaminated sediment in the backwater, purifier waste removal, the isolated TAGM 4046 exceedance soil removal beyond the limits of the cover and storm sewer survey as described in Alternative 2.

In addition, institutional controls would be required which would consist of each of the elements detailed in Alternative 2 as well as the monitoring and maintenance associated with the cutoff wall. This would include groundwater treatment at the gates of the cutoff wall for site related constituents. DNAPL monitoring and removal would be conducted on a regular basis at wells or sumps installed along the cutoff wall. The DNAPL would be sent off-site for disposal.

Alternative 5: In-Situ Treatment

Present Worth:	$ 23,377,850
Capital Cost:	$ 19,365,050
Annual O&M:	$ 253,800
Time to Implement	6 months

In-situ treatment would be utilized to treat all source areas above and below the water table as well as all other LNAPL/DNAPL impacted areas. A soil cover as described in Alternative 2 would be constructed across the northern portion of the site to protect against contact with untreated contamination. Also, as included in Alternative 2, would be sediment removal, purifier waste removal, isolated TAGM 4046 exceedance soil removal, a storm sewer survey and institutional controls. The major components of this alternative are described below:

- In-situ steam stripping would be applied to an area of approximately 3 acres of the site to depths up to 48 feet. Treatment would be applied to source areas above and below the water table, shown on Figure 3, as well as LNAPL/DNAPL impacted areas shown on Figure 2. Source areas are defined as in Alternative 4.

- Dynamic underground stripping would be used for much of the contaminated zones, however, other technologies could be chosen for portions of the site if determined more practical during the remedial design.

- Dynamic underground stripping is a combination of technologies targeted to remediate soil and ground water contaminated with organic compounds. Steam injection would be applied to the periphery of contaminated areas to heat permeable subsurface areas, vaporize volatile compounds bound to the soil, and drive contaminants to centrally located vacuum extraction wells. Electrical heating would be used in the less permeable clays and fine-grained soils to vaporize contaminants and drive them into the steam zone.

Additionally, this alternative would require institutional controls including land use restrictions and operation and maintenance to ensure the long term effectiveness of this alternative.

7.2 Evaluation of Remedial Alternatives

The criteria used to compare the potential remedial alternatives are defined in the regulation that directs the remediation of inactive hazardous waste sites in New York State (6 NYCRR Part 375). For each of the criteria, a brief description is provided, followed by an evaluation of the alternatives against that criterion. A detailed discussion of the evaluation criteria and comparative analysis is included in the Feasibility Study.

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

1. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether or not a remedy will meet applicable environmental laws, regulations, standards, and guidance.

Alternative 3 is the only alternative that would fully comply with SCGs. Alternatives 4 and 5 would achieve groundwater SCGs after an extended period of time. Alternatives 1 and 2 would not likely achieve the SCGs. The MNA component of Alternative 2 would also not comply with the United States Environmental Protection Agency "Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action and Underground Storage Tank Sites" (OSWER Directive Number 9200.4-14-17P) dated April 21, 1999, where MNA is considered as a groundwater contamination remedy, without source area removal, treatment or containment. Compliance with the requirements of regulations governing floodplain management would be necessary for construction of the soil cover required for Alternatives 2, 4 and 5 as well as portions of the excavation described in Alternative 3.

2. 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.

Under Alternative 1, the no action alternative, no measures would be taken to eliminate or mitigate the potential for exposure that currently exists to humans and wildlife from contaminated soil and sediment. Persons would continue to be exposed to contaminants of concern at concentrations above state guidance levels.

Alternative 3 would be the most protective of human health and the environment as it is the only option which would remove all soils that exceed SCGs.

Alternatives 2, 4 and 5 would also be protective as they would effectively reduce human health risks and environmental impacts by eliminating direct contact exposure with soils containing contaminants of concern through a combination of applicable removal and cover. Alternatives 4 and 5 would provide additional protection as they address heavily contaminated areas and prevent exposure to contamination left in place. Alternative 5 would remove or treat in-situ, MGP contamination on-site. The soil cover would mitigate potential exposures to residual contamination following treatment. The removals, barrier wall and placement of a cover as presented in Alternative 4 would reduce significant migration of site contaminants off-site in the direction of the Mohawk River. Alternative 2 would reduce the potential for exposure at the site but would not significantly reduce migration of contaminants or exposure resulting from the migration.

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.

Potential adverse impacts would be expected to be greater with increasing contaminated soil movement. Thus, Alternative 1 would be the most effective in the short term since no on-site activities or construction would be performed. The implementation of Alternative 2 would also result in few short term adverse impacts. The construction of a soil cover would be completed in a short period of time(less than six months) and potential exposures would be minimal as construction would only disturb surface contaminants.

Alternative 5 would result in increased short-term adverse impacts. In addition to the construction of a soil cover as in Alternative 2, in-situ steam stripping would disturb the surface contamination and transport subsurface contaminants to the surface for treatment. To minimize potential short term adverse impacts, a health and safety plan would be developed and appropriate engineering controls would be implemented when necessary. Construction activities associated with this alternative would take six months. Alternative 4 would create potential for adverse impacts as it involves excavation of a large quantity of contaminated materials. Handling of this material would increase risk to workers and the public, however these risks would be mitigated using proper engineering controls. This alternative would take approximately one year to implement.

Alternative 3 would involve significantly more excavation and handling of contaminated soils. This alternative would require excavation of a large volume of contaminated soils to depths below the water table and would take the longest time to complete. Although risks could be mitigated, this alternative would have the greatest potential for adverse short term impacts. The time to implement this alternative would be approximately 18 months.

4. <u>Long-term Effectiveness and Permanence.</u> 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 controls intended to limit the risk, and 3) the reliability of these controls.

When evaluated against the other alternatives, Alternative 3 would provide the best long term effectiveness. Removal of all soils above the guidance values would also eliminate the need for long term maintenance.

Alternative 5 would provide long-term effectiveness and permanence as it is designed to treat all contaminated source area soils. However, following application of this treatment technology, residual contamination would be left in source areas as well as areas outside the treatment zones. As a result, a soil cover requiring monitoring and maintenance would be required as part of the alternative. Alternative 4 would reduce the most heavily impacted soils through excavation, however, contamination would be left in place. To ensure the long term effectiveness and permanence of this alternative, other components would be implemented. Subsurface contamination would be prevented from leaving the site at the sheet pile cutoff wall. Groundwater would be treated and DNAPL would be contained, removed and treated. This alternative would also provide a soil cover. Each of these elements would require monitoring and maintenance.

Alternative 2 would be a much less effective long-term remedy as all of the contamination would remain at the site. Construction of a soil cover would not provide a permanent remedy due to the continued migration of site contamination. A periodic inspection and maintenance program would be required of the soil cover to minimize health exposures. Ecological risk would not be significantly reduced.

Alternative 1 would not be effective in the long term as no remedial action would be taken to address contamination found on-site. Monitoring would be required to assess on-site conditions over a long period of time.

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.

Alternative 3 would effectively reduce the toxicity, mobility and volume through removal and treatment of all soils in exceedance of the guidance values. This alternative achieves the greatest reduction in the toxicity, mobility and volume of impacted material and results in the least amount of hazardous substances remaining at the site.

Alternative 5 would reduce the toxicity, mobility and volume of the highly contaminated soils using in-situ treatment technologies over time. Residual contamination would remain on-site following implementation of the remedy, however migration would be greatly reduced. A soil cover would help to mitigate migration of site contaminants. Alternative 4 would require the removal and ex-situ treatment of the most heavily contaminated material, effectively reducing the toxicity and volume of a significant portion of the contaminants at the site. To prevent the off-site migration of remaining contamination, this alternative would also require, in addition to a soil cover, construction of a perforated sheet pile cut-off wall to contain/remove/treat contamination migrating downgradient.

Alternative 2 would offer less reduction of toxicity, mobility and volume of the contaminants of concern present at the site. Although the contaminants of concern would be isolated by the cover, the mass of contaminated soils would continue to remain at the site, mobile in the environment.

Alternative 1 would not provide any reduction in toxicity, mobility or volume as no treatment, removal or containment is proposed.

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

Alternative 1 would be the easiest to implement, as no remedial activity is proposed at the site.

Alternative 2 would also be rather easy to implement, both technically and administratively. The major component of this alternative would be construction of a soil cover across the entire northern portion of the site. The cover would consist primarily of soil, however if areas of the site are proposed for structures, these areas would be capped by the structure and areas planned for roadways or parking use would be capped by asphalt. Coordination would be necessary for the transport of a significant volume of material to the site, through the city of Rome. An access agreement would be required between NMPC and the state ofNew York for the construction of a soil cover on a small parcel of undeveloped state land adjacent to the site.

Alternative 4 would be more involved as excavation of the most heavily impacted areas would be performed. This alternative would also require the construction of a perforated DNAPL cut-off wall with collection points. A soil cover would be installed over the entire northen portion of the site. The excavation would be relatively straightforward to implement. Difficulties could arise with deeper excavations which would require shoring or sheet piling. This alternative would also present potential construction challenges associated with the installation of a partially perforated sheet pile DNAPL cutoff wall with collection points along the western boundary of the site.

Alternative 5 would be somewhat more challenging technically and administratively as it would require a pilot test, in-situ monitoring and process equipment for the stream stripping process in addition to construction of a soil cover. Dynamic underground stripping (DUS) is a combination of several technologies targeted to remediate soil and groundwater contaminated with organic compounds. DUS is effective both above and below the water table and would be suited for sites with interbedded sand and clay layers. This treatment technology would be required at depths of nearly fifty feet. To ensure that contaminants would not be mobilized outside the capture zones to unimpacted areas, intensive monitoring would be required. Services and materials for this treatment process exist, but would not necessarily be readily available.

Alternative 3 would be most difficult to implement. Excavation would extend to depths of over 40 feet to include all soils found to be in exceedance of the TAGM 4046. Removal of contaminated soils at a depth of over 40 feet would present a significant technical challenge. Much of the excavation would be below the water table. Shoring of the excavation would be required as would dewatering and treatment of a significant volume of groundwater. Coordination would be necessary to manage an extremely large volume of soils and a significant number of trucks required to enter and exit the site. In addition, the availability of sufficient capacity to treat this volume of material could result in significant delays in the implementation of this alternative.

7. Cost. Capital and operation and maintenance costs are estimated for each alternative and compared on a present worth basis. Although cost is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the remaining criteria, cost effectiveness can be used as the basis for the final decision. The costs for each alternative are presented in Table 2.

Alternative 1 would have no capital cost, only operation and maintenance costs for 5 year reviews.

Alternative 2 would have a comparatively low capital cost. Operation and maintenance costs would be associated with the soil cover and groundwater monitoring.

Alternative 4 would have higher capital costs due to an expanded excavation and construction of a sheet pile cutoff wall. Operation and maintenance costs would be associated with the soil cover, DNAPL monitoring and collection, and groundwater monitoring and treatment.

Alternative 5 would have the second highest cost due to the increased costs associated with the in-situ steam stripping process. Operation and maintenance costs would be associated with the soil cover and groundwater monitoring. This alternative would be less cost effective as it provides little additional remedial effectiveness at a greater cost.

Alternative 3, the most expensive alternative, would have a prohibitive capital cost associated with the large volume of material to be treated and the extensive excavations performed to much greater depths.

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 Proposed Remedial Action Plan have been evaluated. The "Responsiveness Summary" included as Appendix A presents the public comments received and the Department's response to the concerns raised. In general the public comments were supportive of the selected remedy.

SECTION 8: SUMMARY OF THE SELECTED REMEDY

Based upon the results of the RI/FS and the evaluation presented in Section 7, the NYSDEC is selecting Alternative 4: Source Removal and Containment as the remedy for this site.

Alternative 4 will remove the most heavily impacted soils on-site and associated MGP structures. These soils will be taken off-site for thermal treatment. A cutoff wall with areas of perforations, in a funnel and gate configuration in the upper portion, will allow for the passage and treatment of groundwater, while the lower wall will serve to contain DNAPL from the site so it can be removed for treatment/disposal.

This proposed remedy will achieve the remedial action goals while remediating to the extent practicable. Alternative 1 has been rejected as a remedy as it would not satisfy the threshold criterion of being protective of public health and the environment. Alternative 2 was not selected as it would not effectively reduce the toxicity, volume and mobility of the contaminants of concern and would be less effective in the long-term. Alternative 3 was not chosen as it would be cost prohibitive in terms of the overall effectiveness of the remedy and would have the highest short term impacts. Alternatives 5 was not selected because it would provide no additional satisfaction of the remedial goals yet would be more costly and less easily implemented.

Alternative 4 will provide cost-effective protection of human health and the environment through the elimination of direct contact exposure to the existing surface soils as well as long-term permanence of the remedial action through removal of a significant quantity of source area material. Source Removal and Containment will remove and treat the most heavily contaminated material, reducing the toxicity and volume of a significant portion of the contaminants at the site. This alternative will eliminate the off-site migration of remaining contamination using the cutoff wall and cover. Containment and recovery of remaining DNAPL as well as treatment of groundwater leaving the site will be performed at the cutoff wall.

The estimated present worth cost to implement the remedy will be $ 16,342,350. The cost to construct the remedy will be estimated to bet$ 10,586,950. The estimated average annual operation and maintenance cost for 30 years will bet$ 394,600 per year up to and including the fifth year and $ 308,800 per year thereafter.

The elements of the selected remedy will be as follows:

1. A remedial design program to verify the components of the conceptual design and provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program. Any uncertainties identified during the RI/FS will be resolved, which include, delineation of the former ditch adjacent to the relief holder to determine if soils in this area will potentially be removed as source areas.

2. A survey of storm sewers will be performed during the design of the remedy to determine if existing lines have been impacted by MGP residuals or have the potential to act as a pathway for off-site transport of MGP residuals. If these conditions exist, additional remedial measures will be identified to eliminate the pathway.

3. Approximately 21,100 cubic yards of DNAPL and LNAPL source area soil will be removed and transported off-site for thermal treatment and disposal. "Source areas" are defined as those identified locations at the site where significant volumes of soil have been found to be saturated with NAPL, or have visually observable separate phase product. Soils exhibiting odors, staining and/or sheens will not to be considered for removal as "source areas" by this ROD. Removal of soil source areas will be completed to the depth of the water table throughout the site and will continue below the water table in source areas associated with former MGP structures. Actual limits of the excavation will be determined as part of a pre-design boring program. See Figure 4 for approximate soil source areas.

4. The tar well and former distribution and relief holder foundations will be demolished and removed as part of the source area excavation. Deep excavations required to remove DNAPL source areas associated with these structures, as defined in #3 above, will continue to depths below the water table. Shoring and/or sheet piling will be required to stabilize the deep excavations. The soils removed from below the water table will be dewatered and the water will be treated prior to discharge.

5. A sheet pile cutoff wall will be constructed to contain DNAPL and prevent its migration to off-site areas. Collection wells or sumps will be installed along the site side of the wall to allow for the removal of DNAPL for off-site treatment/disposal. Areas of perforations or "gates" will be included in the wall from the ground surface to slightly above the most shallow occurrence of DNAPL to allow for groundwater passage while containing the DNAPL. Groundwater flow through the wall will be through a funnel and gate configuration and will be treated for MGP constituents. See Figure 5 for the configuration of the wall.

6. Additional purifier waste removal from the area shown in Figure 4 will address impacted soils left in place following the purifier waste removal IRM. The limits of the purifier waste excavation will be established based on visual indication of purifier waste, defined as blue-stained soils, and excavation will be limited to the depth of the water table.

7. Approximately 800 cubic yards of sediments contaminated with cyanide and PAHs will be removed from the backwater area, near the Mohawk River, above the spillway shown on Figure 4. The removal of contaminated sediments will be to a depth of 4 feet and will include replacement with material of comparable characteristics to the native sediment.

8. A soil cover will be constructed on approximately 14 acres in the northern portion of the site to prevent exposures to contaminated soil. The extent of this soil cover is shown in Figure 4. The two foot thick cover will consist of clean soil with a geotextile or similar barrier installed above the contaminated soil as a demarcation layer. The top six inches will be of sufficient quality soil to support vegetation. Areas planned for construction of buildings or other structures will be covered by these structures and areas planned for roadways or parking lots will be covered by the pavement. A two foot soil layer will not be required if an alternative cover will be in place.

9. Areas of the soil cover as well as the sediment removal will require work within the regulatory floodway. The floodway/floodplain boundary for the site and surrounding area is shown on Figure 7. Prior to commencement of any work conducted in the zone, hydraulic analysis will be required.

10. Removal of soils which exceed TAGM 4046 levels for metals in small isolated areas of surface soils beyond the limits of the soil cover area will be required. Approximately 90 cubic yards of soil will be removed to a minimum depth of two feet from the areas shown on Figure 6. These areas will be backfilled with clean soil to restore the existing grade. The excavated soils will be disposed of off-site or incorporated under the soil cover.

11. Since the remedy will result in hazardous waste remaining at the site, a long term monitoring program will be instituted. Included in the long term program will be the monitoring and removal of DNAPL on a regular basis from wells or sumps installed behind the cutoff wall. Groundwater treatment for site related contaminants, including LNAPL, will also be performed at the gates of the cutoff wall. In addition, a groundwater monitoring well network will be established to monitor the effectiveness of the remedy. A monitoring program will be established for sediments in the backwater area. Inspection of the soil cover will be conducted on a regular basis as a component of the operation and maintenance for the site.

12. Institutional controls will be implemented to limit future site development and prevent future exposures to site contaminants. These will include: (a) a prohibition of land development for residential use, only appropriate commercial or industrial use will be allowed; (b) worker notification if utility or other excavation work was planned; (c) notification to the NYSDEC prior to any action which could jeopardize the integrity of the remedy; (d) development and approval of a soil management plan for any contaminated soil or waste removed from below

the soil cover; and, (e) prohibition of the development of water supply wells. Appropriate industrial or commercial uses of the property will have to be consistent with any applicable zoning ordinances, but will not include any enterprises that draw susceptible portions of the community to the properties for activities that may lead to exposures to residual site contamination (e.g. day care, child care, medical treatment facilities, some recreational enterprises). Annual certification will be required to ensure that engineering and institutional controls included in the remedy are in place and remain effective to control the identified exposures.

SECTION 9: HIGHLIGHTS OF COMMUNITY PARTICIPATION

As part of the remedial investigation process, a number of Citizen Participation activities were undertaken in an effort 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:

- A repository for documents pertaining to the site was established.
- A site mailing list was established which included nearby property owners, local political officials, local media and other interested parties.
- On September 16, 1993, Niagara Mohawk held a focus group meeting in Rome to discuss the site history, previous and future investigations as well as the purifier waste removal.
- On October 7, 1993, Niagara Mohawk held a public information meeting announcing the findings of the preliminary site assessment, the proposed RI and the purifier waste area IRM.
- On October 7, 1993, Niagara Mohawk issued a fact sheet discussing the investigation and the purifier waste IRM.
- On November 15, 1993, Niagara Mohawk issued a letter to update the project schedule for the purifier waste IRM.
- On February 11, 1994, Niagara Mohawk issued another letter with a revised purifier waste IRM project schedule.
- On June 6, 1994, Niagara Mohawk issued a letter informing residents that the concentrator house was to be demolished and removed.
- On December 27, 1994, Niagara Mohawk issued a fact sheet to provide an update on the status of the project.
- On July 11, 1995, Niagara Mohawk issued a letter updating residents on completed activities, upcoming activities and the project schedule.

- In February 2002 the Proposed Remedial Action Plan (PRAP) was released for public comment and a fact sheet was sent to the site mailing list summarizing the PRAP, identifying the public comment period start and providing the date of a public meeting to present the PRAP.

- On February 28, 2002, the NYSDEC held a public meeting to solicit comments on the proposed remedy.

- In March 2002 a Responsiveness Summary was prepared and made available to the public in the Record of Decision, to address the comments received during the public comment period for the PRAP.

Table 1A
Nature and Extent of Contamination - Surface Soil
Niagara Mohawk Kingsley Avenue MGP Site

CONTAMINANT OF CONCERN	SAMPLES TAKEN	CONCENTRATION RANGE (ppm)	FREQUENCY of EXCEEDING SCGs/Background	SCG/ Bkgd.[1] (ppm)
Benzene	20	ND - 18	2/20	0.06
Toluene	20	ND - 11	2/20	1.5
Ethylbenzene	20	ND - 2.5	0/20	5.5
Xylenes	20	ND - 16	2/20	1.2
Total BTEX	20	ND - 47.5	2/20	10
Total cPAHs	24	ND - 4,346	4/24	10
Cyanide	20	ND - 107	NA	NA
Arsenic	20	ND - 31	3/20	9[2]
Lead	20	2.2 - 409	1/20	400
Mercury	20	ND - 21.7	11/20	0.1
Zinc	20	10.7 - 9,670	2/20	777[2]

1 - SCG Unless otherwise noted
2 - Background Upper Tolerance Limit (BUTL), from RI Report

ND - Not detected

Table 1B
Nature and Extent of Contamination - Subsurface Soil
Niagara Mohawk Kingsley Avenue MGP Site

CONTAMINANT OF CONCERN	SAMPLES TAKEN	CONCENTRATION RANGE (ppm)	FREQUENCY of EXCEEDING SCGs/Background	SCG/ Bkgd.[1] (ppm)
Benzene	136	ND - 1,400	36/136	0.06
Toluene	136	ND - 1,100	22/136	1.5
Ethylbenzene	136	ND - 38	13/136	5.5
Xylenes	136	ND - 590	24/136	1.2
Total BTEX	136	ND - 3,128	22/136	10
Total PAHs	314	ND - 30,110	38/314	500
Cyanide	131	ND - 41	NA	NA
Arsenic	35	ND - 10.1	2/35	9[2]
Lead	35	2.7 - 691	3/35	400
Mercury	35	ND - 0.75	2/35	0.1
Zinc	35	6.3 - 96.2	0/35	777[2]

1 - SCG Unless otherwise noted
2 - Background Upper Tolerance Limit (BUTL), from RI Report

ND - Not detected

Table 1C
Nature and Extent of Contamination - Sediment
Niagara Mohawk Kingsley Avenue MGP Site

CONTAMINANT OF CONCERN	SAMPLES TAKEN	CONCENTRATION RANGE (ppm)	FREQUENCY of EXCEEDING SCGs/Background	SCG/Bkgd. (ppm)[1]	SCG/Bkgd (μg/gOC)*
Benzene	57	ND	0/57	0.474	28
Toluene	57	ND - 0.003	0/57	0.762	45
Ethylbenzene	57	ND	0/57	0.83	49
Xylenes	57	ND	0/57	1.56	92
Total BTEX	57	ND - 0.003	NA	NA	NA
Total PAHs	57	ND - 25.59	NA	NA	
Cyanide	57	ND - 66.8	NA	NA	
Arsenic	16	1.6 - 7.4	2/16	6	
Lead	16	8.8 - 685	10/16	31	
Mercury	16	ND - 0.19	1/16	0.15	
Zinc	16	51.7 - 2,320	13/16	120	

1 - SCG based on the average of the TOC results from the site data
*** - Concentration given in micrograms per gram of organic carbon**

ND - Not detected

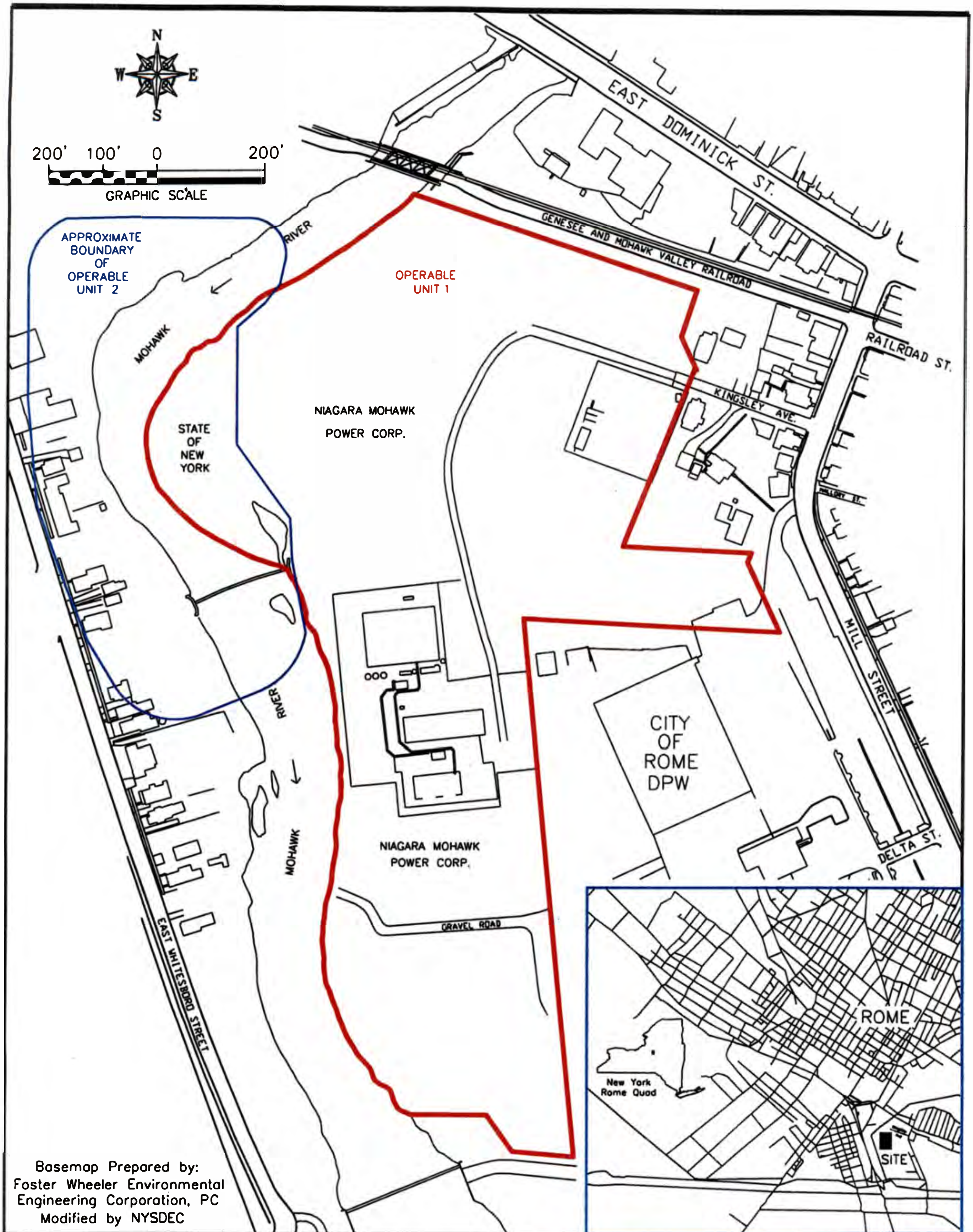
Table 1D
Nature and Extent of Contamination - Groundwater
Niagara Mohawk Kingsley Avenue MGP Site

CONTAMINANT OF CONCERN	SAMPLES TAKEN	CONCENTRATION RANGE (ppb)	FREQUENCY of EXCEEDING SCGs	SCG (ppb)
Benzene	80	ND - 72,000	45/80	0.7
Toluene	80	ND - 32,000	28/80	5
Ethylbenzene	80	ND - 1,700	25/80	5
Xylenes	80	ND - 6,400	33/80	5
Total BTEX	80	ND - 110,400	NA	NA
Acenaphthene	80	ND - 2,100	24/80	20
Acenaphthylene	80	ND - 34,000	24/80	20
Anthracene	80	ND - 12,000	3/80	50
Benzo (a) anthracene	80	ND - 7,200	10/80	0.002
Benzo (a) pyrene	80	ND - 6,200	9/80	0.002
Benzo (b) fluoranthene	80	ND - 2,900	6/80	0.002
Benzo (g,h,I) perylene	80	ND - 1,600	3/80	5
Benzo (k) fluoranthene	80	ND - 4,400	7/80	0.002
Chrysene	80	ND - 6,700	9/80	0.002
Dibenzo (a,h) anthracene	80	ND - 10	0/80	50
Fluoranthene	80	ND - 17,000	4/80	50
Fluorene	80	ND - 16,000	14/80	50
Indeno (1,2,3 - cd) pyrene	80	ND - 1,500	6/80	0.002
2-Methylnaphthalene	80	ND - 56,000	20/80	50
Naphthalene	80	ND - 120,000	32/80	10
Phenanthrene	80	ND - 40,000	10/80	50
Pyrene	80	ND - 22,000	5/80	50
Total PAHs	80	ND - 272,000	NA	NA
Total cPAHs	80	ND - 1,230	NA	NA
Cyanide	87	ND - 630	11/87	200
Arsenic	34	ND - 79.1	4/34	25
Lead	34	ND - 66.8	9/34	25
Mercury	34	ND - 1.8	2/34	0.7
Zinc	34	ND - 521	0/34	2000

ND - Not detected

Table 2
Remedial Alternative Costs

REMEDIAL ALTERNATIVE	CAPITAL COST	ANNUAL O&M	TOTAL PRESENT WORTH
Alternative 1: No Action	$ 0	$ 11,000	$ 166,860
Alternative 2: Capping	$ 3,147,225	$ 256,200	$ 7,196,825
Alternative 3: Removal of Soils Above TAGM 4046	$ 111,716,525	$ 0	$ 111,716,525
Alternative 4: Source Removal and Containment	$ 10,586,950	Yrs. 0-5 $ 394,600 Yrs. 6-30 $ 308,800	$ 16,342,350
Alternative 5: In-Situ Treatment	$ 19,365,050	$ 253,800	$ 23,377,850



NIAGARA MOHAWK - KINGSLEY AVENUE FORMER MGP SITE
ROME(C), ONEIDA COUNTY, NEW YORK

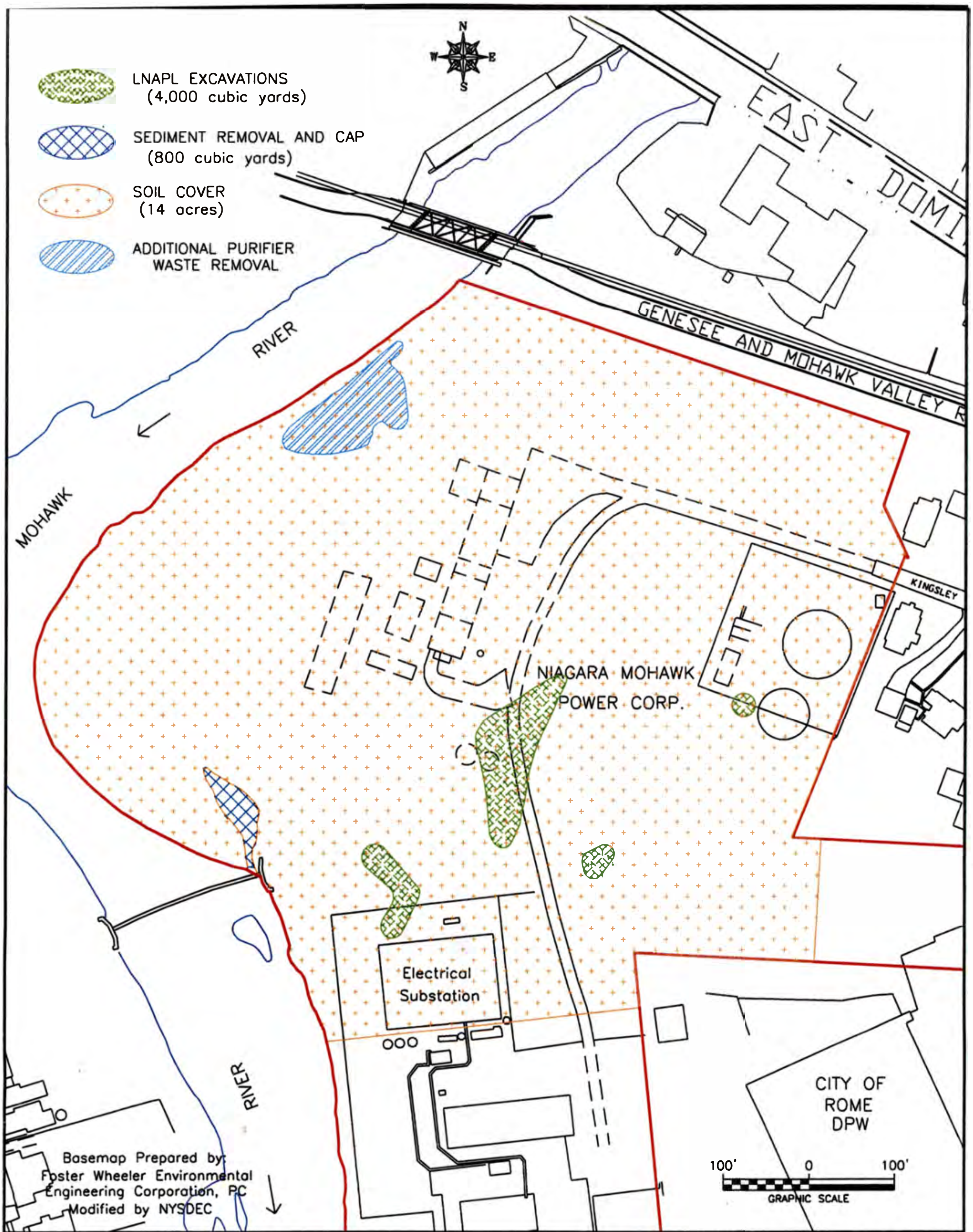
SITE MAP

FIGURE I

NIAGARA MOHAWK - KINGSLEY AVENUE FORMER MGP SITE
ROME (C), ONEIDA COUNTY, NEW YORK

PRESENT SITE CONDITIONS

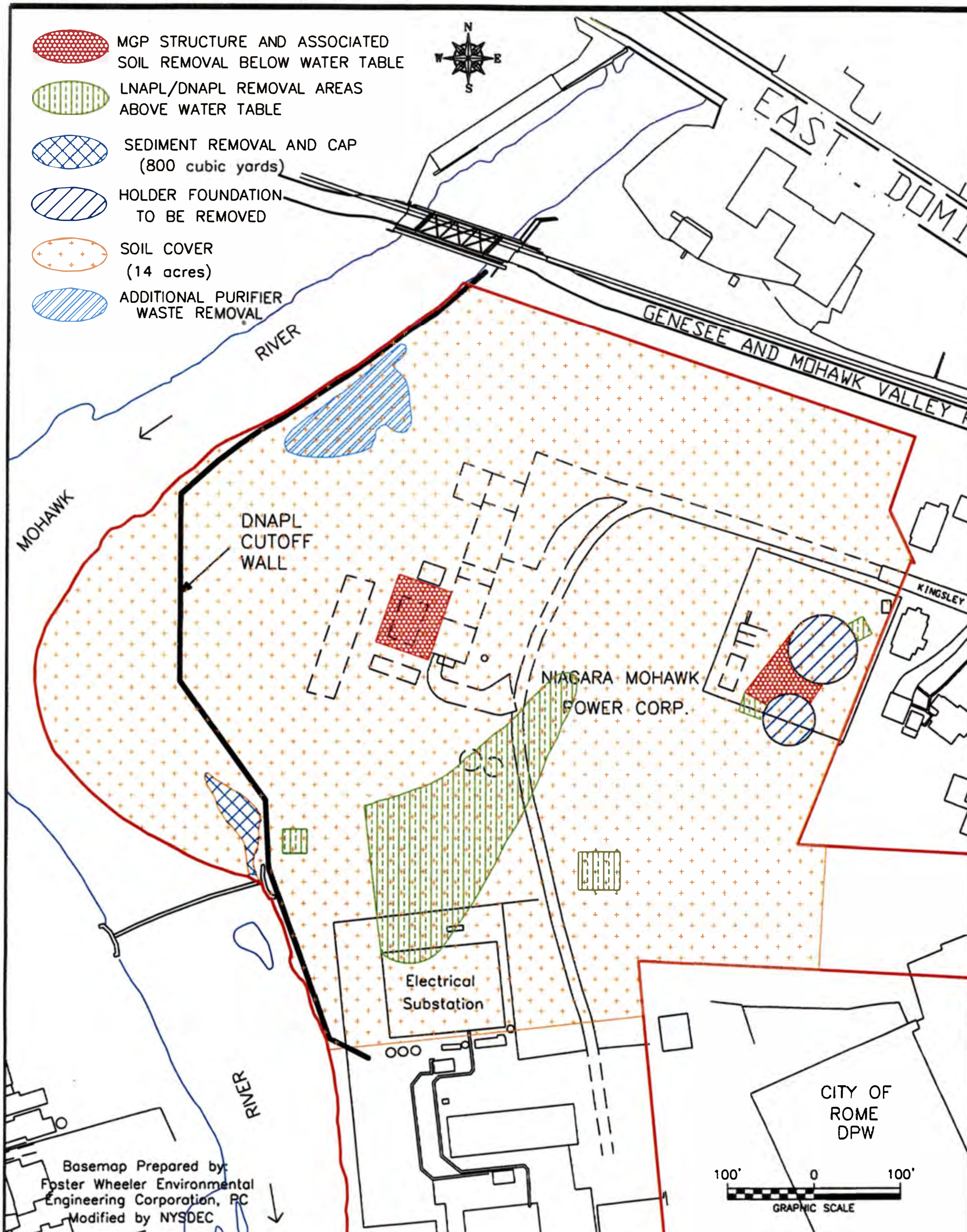
FIGURE 2



NIAGARA MOHAWK - KINGSLEY AVENUE FORMER MGP SITE
ROME (C), ONEIDA COUNTY, NEW YORK

ALTERNATIVE 2 - CAPPING

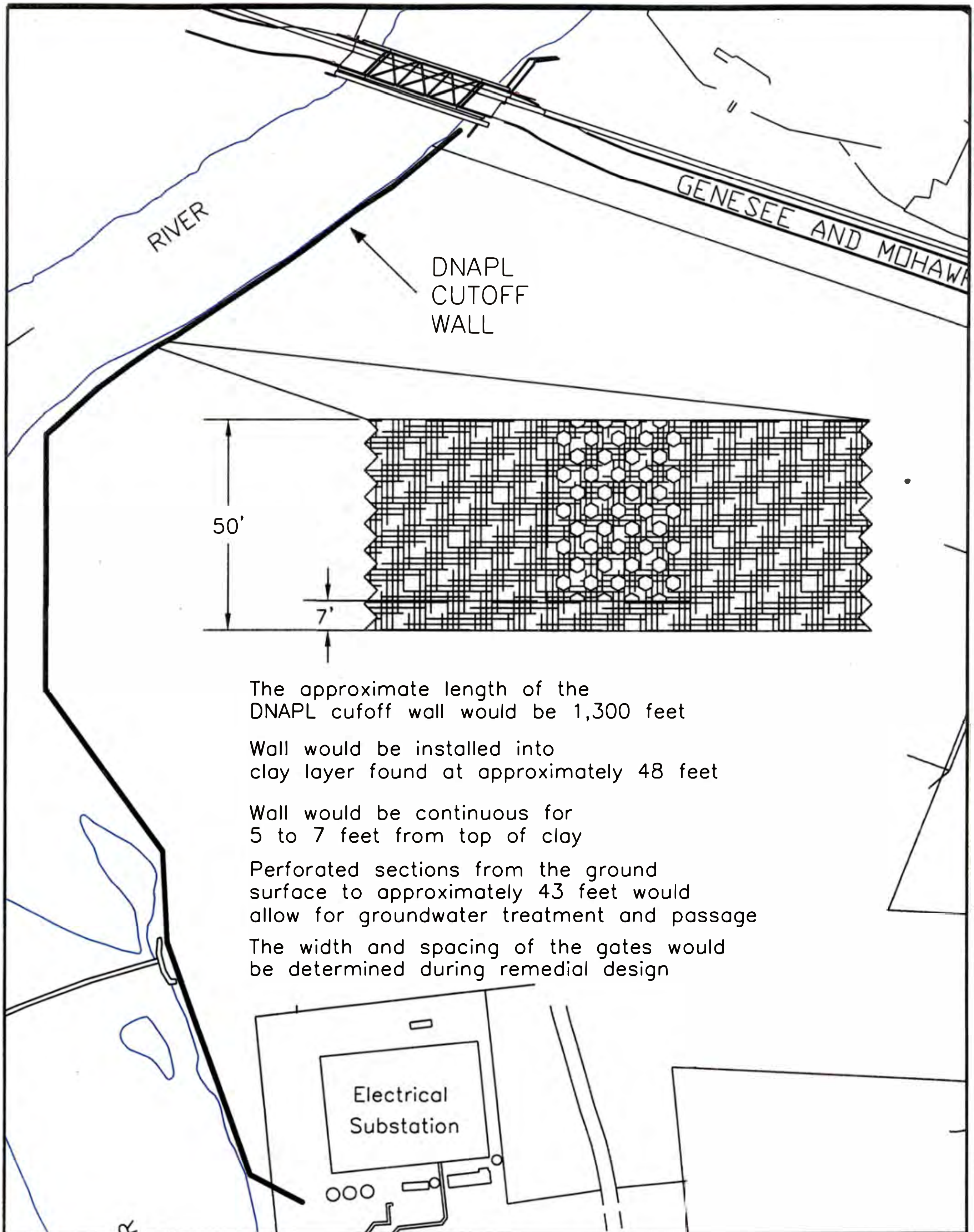
FIGURE 3



NIAGARA MOHAWK - KINGSLEY AVENUE FORMER MGP SITE
ROME (C), ONEIDA COUNTY, NEW YORK

ALTERNATIVE 4 - SOURCE REMOVAL AND CONTAINMENT

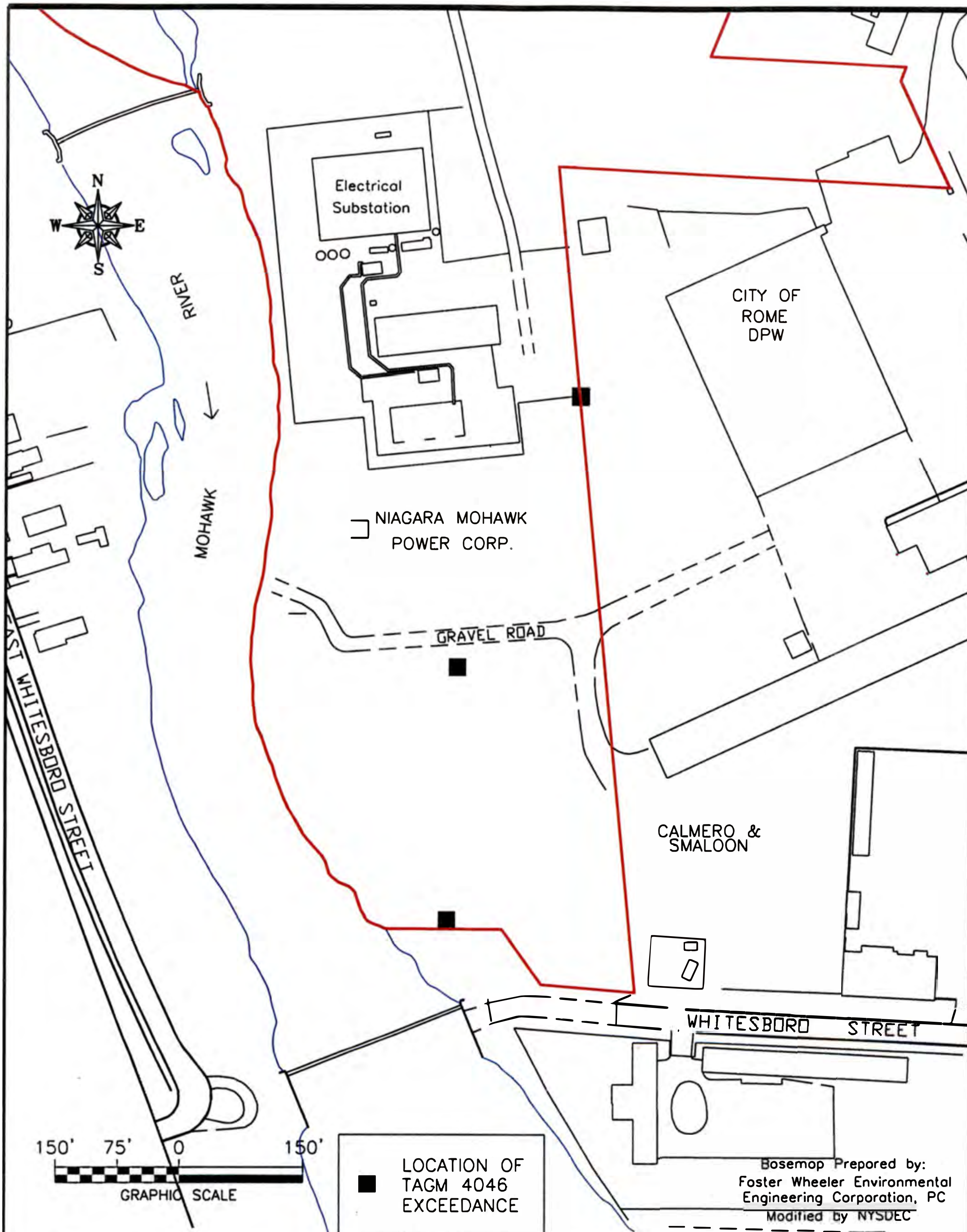
FIGURE 4



NIAGARA MOHAWK - KINGSLEY AVENUE FORMER MGP SITE
ROME (C), ONEIDA COUNTY, NEW YORK

LOCATION AND CONFIGURATION OF DNAPL CUTOFF WALL

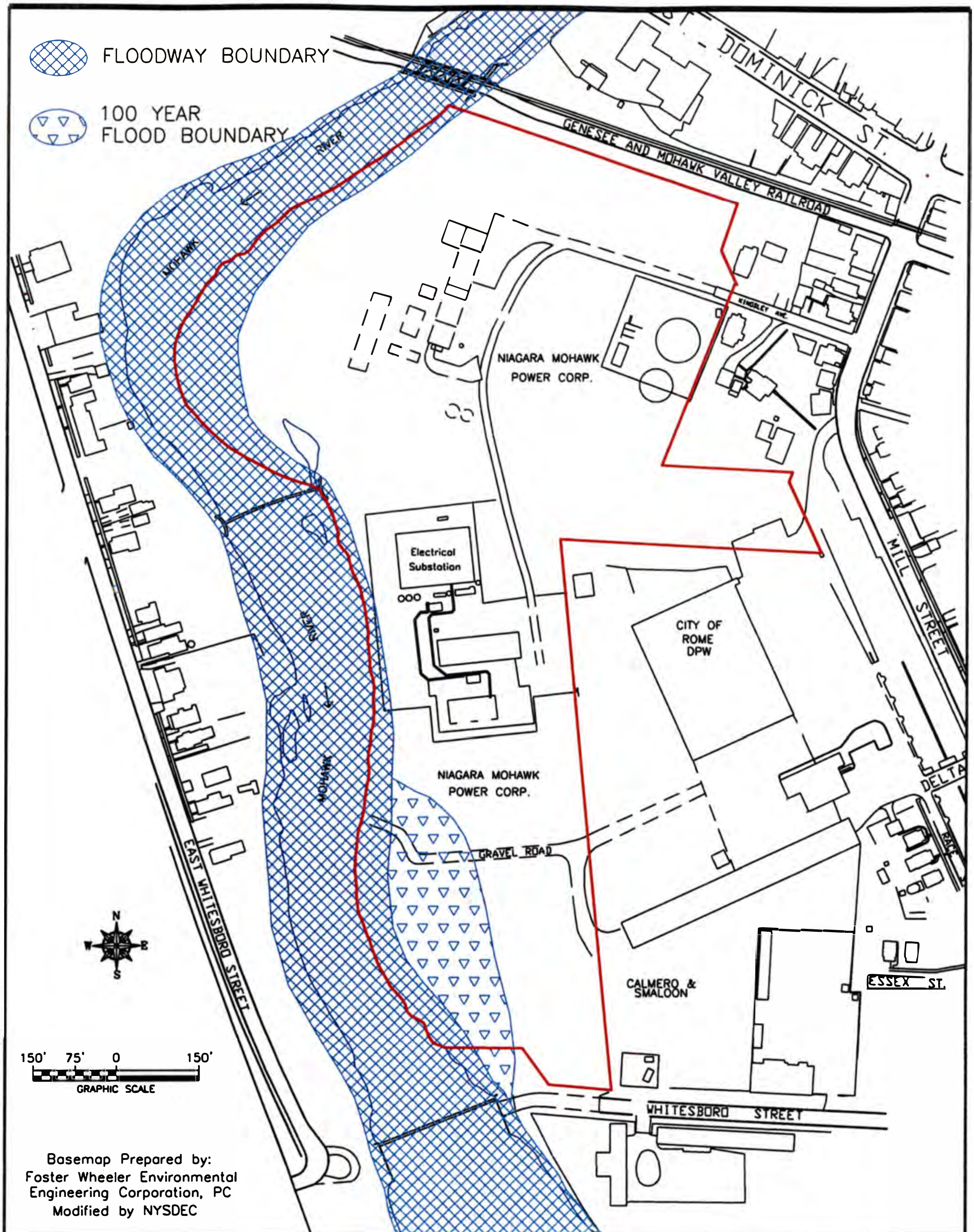
FIGURE 5



NIAGARA MOHAWK - KINGSLEY AVENUE FORMER MGP SITE
ROME(C), ONEIDA COUNTY, NEW YORK

TAGM 4046 EXCEEDANCES OUTSIDE PROPOSED CAP

FIGURE 6



NIAGARA MOHAWK - KINGSLEY AVENUE FORMER MGP SITE
ROME (C), ONEIDA COUNTY, NEW YORK

FLOOD BOUNDARY AND FLOODWAY

FIGURE 7

APPENDIX A

Responsiveness Summary

for the
Proposed Remedial Action Plan
Niagara Mohawk Rome - Kingsley Avenue Former Manufactured Gas Plant Site
Operable Unit 1: Former Plant Site
Rome (C), Oneida County, New York
Site No. 6-33-043

The Proposed Remedial Action Plan (PRAP) for Operable Unit No. 1 of the Niagara Mohawk Rome - Kingsley Avenue Former MGP Site, was prepared by the New York State Department of Environmental Conservation (NYSDEC) and issued to the local document repository on February 15, 2002. The PRAP outlined the preferred remedial measure proposed for the remediation of the contaminated soil, sediment and groundwater at Operable Unit No. 1 of the site. The preferred remedy is the excavation for off-site treatment and/or disposal of approximately 21,100 cubic yards of contaminated soils and placement of a soil cover across approximately 14 acres on the northern portion of the site. A cutoff wall with areas of perforations, in a funnel and gate configuration in the upper portion, will allow for the passage and treatment of groundwater while the lower wall will serve to contain DNAPL from the site so it can be removed for treatment/disposal.

The release of the PRAP was announced via a notice to the mailing list, informing the public of the PRAP's availability.

A public meeting was held on February 28, 2002, 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. Written comments were received from the City of Rome. The public comment period for the PRAP closed on March 18, 2002.

This Responsiveness Summary responds to all questions and comments raised at the public meeting and to the written comments received.

The following are the comments received at the public meeting, with the NYSDEC's responses:

COMMENT 1: Has an investigation been performed?

RESPONSE 1: Yes. Niagara Mohawk completed an extensive remedial investigation (RI) in March 1999. The investigation included sampling and analysis of surface and subsurface soils, groundwater, sediment and surface water.

COMMENT 2: Is the investigative data in a repository such as the library?

RESPONSE 2: Yes. The entire volume of the RI report as well as the Feasibility Study (FS) Report is available at the Jervis Public Library in the City of Rome.

COMMENT 3: Have you identified stratus beneath the site?

RESPONSE 3: A detailed geological investigation was conducted as part of the boring program at the site. The site subsurface consists of an approximately 8 foot thick fill unit across much of the site. A unit of alluvial sand and gravel of varying thickness is below the fill. A lacustrine silt, sand and clay unit is found below the alluvial deposit. The clay acts as a confining layer and is found extensively beneath the site. The cutoff wall will be keyed into the clay. Perforations above the DNAPL elevation will allow groundwater to pass through and be treated, while the solid lower portion of the barrier wall will allow for DNAPL containment and collection for off-site treatment. Subsurface DNAPL and groundwater contamination west of the wall will be addressed by the operable unit for off-site contamination, Operable Unit No. 2.

COMMENT 4: Have you done a migration study?

RESPONSE 4: An extensive subsurface investigation has been conducted. Analytical sampling of soil borings and monitoring wells both on-site and on the west side of the Mohawk River has clearly defined the migration of contaminants. A DNAPL plume has migrated off site through the subsurface, at a depth of approximately 40 feet below the state owned land on the west side of the site.

COMMENT 5: Is the purifier waste found at the surface?

RESPONSE 5: Purifier material, hydrated lime or wood chips treated with iron oxide, was used to remove hydrogen sulfide and cyanide from the gas. Exhausted purifier material was discarded at this site as fill material. This purifier waste is found primarily at or within a few feet of the surface.

COMMENT 6: Regarding Alternative 4, please explain the deed restrictions.

RESPONSE 6: Deed restrictions in Alternative 4, the selected remedy, will be required for the entire site boundary outlined in Figure 1. Residential use will be prohibited on the site. Future development will be restricted to commercial/industrial use. Health and safety requirements will be necessary for utility or other excavation work. Any contaminated soil or waste removed from below the soil cover will require proper handling and disposal. A restriction will be placed on the development of water supply wells on the site. The soil cover will be inspected as part of a yearly certification for the site.

COMMENT 7: Is there a treatability Study for OU-1?

RESPONSE 7: A treatability study for OU1 is not necessary. A design period of approximately 12 months, followed by remediation is anticipated. A treatability study may be required for Operable Unit 2 and the NYSDEC would like to coordinate construction activities for the two operable units in three to four years.

COMMENT 8: What is happening in the river?

RESPONSE 8: Sediment sampling done in the Mohawk River along the western site boundary revealed only an isolated area of contamination. A small area, referred to as the backwater area, just upstream of the spillway had elevated levels of cyanide and PAHs. The selected remedy will remove these sediments to a depth of four feet. No other areas of impacted sediments were identified and surface water collected from the Mohawk River was not impacted by site contaminants.

COMMENT 9: Sediments probably have moved to New York City by now.

RESPONSE 9: We acknowledge that sediments move downstream over time. However downstream samples did not reveal an increase in contamination. Covering the entire site should eliminate the migration pathway for future contamination of sediments.

COMMENT 10: What has been the result of sampling from wells on the other side of the river?

RESPONSE 10: Sampling of wells on the west side of the Mohawk River has indicated that the DNAPL plume has resulted in limited groundwater contamination in this area. BTEX and naphthalene compounds were identified in three of the six wells on the west side of the River. Concentrations of BTEX ranged from 133 to 11,250 ppb and for the PAHs from 15-210 ppb in one sampling round. This information is available in the Operable Unit 2 -Off-Site Remedial Investigation report, which is available for review in the document repository.

COMMENT 11: Will there be sampling at OU-2 south and west?

RESPONSE 11: OU-2 consists of all subsurface contamination outside the Niagara Mohawk property. The approximate limit of this operable unit is shown in Figure 1. Sampling for OU-2 will consist of subsurface investigation of soils and groundwater. Additional monitoring wells may be installed to further characterize groundwater quality on the west side of the Mohawk River.

COMMENT 12: Has sampling been done along property lines?

RESPONSE 12: Yes. Surface and subsurface soil sampling has been done along the Niagara Mohawk property boundary. Most of the sampling was done on the northern portion of the property.

COMMENT 13: Has any testing been performed on off-site properties?

RESPONSE 13: Based on the on-site investigation it was determined that off-site testing was only necessary for groundwater on the west side of the Mohawk River. This area is directly downgradient of the source areas. The data from all other groundwater and surface soil samples collected near the site boundaries have revealed low levels of contamination, including PAHs; however, they are not believed to have migrated onto off-site properties.

COMMENT 14: Is there contamination on adjacent properties located east of the site?

RESPONSE 14: Based on sampling conducted on site, there is no evidence that MGP related contamination would be found on adjacent properties, however no sampling has been performed on these properties. The contaminants of concern for the MGP, PAHs and BTEX, have many other sources than just the former MGP. Low levels of contamination, attributable to past and present industrial activities in the area may be present.

COMMENT 15: Are there potentially dangerous levels of contamination on the residential properties?

RESPONSE 15: As stated in RESPONSES 13 and 14, contamination attributable to past site operations is not believed to have migrated off-site to the neighboring residential properties. Thus, we do not anticipate seeing potentially dangerous levels of site related contamination on the adjacent residential properties.

COMMENT 16: My aunt lives on Kingsley Avenue. I lived on Mill Street. Living there, what do we do about potential health risk?

RESPONSE 16: Health risks may be directed related to exposure to a potential source of contamination. With respect to known contamination on the Niagara Mohawk Kingsley Avenue site, we advise that you avoid direct contact with the contaminant source areas. Site trespass should be avoided.

COMMENT 17: I am concerned about possible health affects. There is a history of cancer in my family and also with neighbors.

RESPONSE 17: Adverse health effects may be possible if exposure to site contaminantion occurs. The current physical barriers, proposed groundwater use restrictions and soil removal/cover actions will preclude exposure to site contamination. In short, risks can be reduced by eliminating the routes of exposure to any known contamination. The proposed remediation will address actual and potential routes of exposure to current site contamination.

Cancer is a common disease that will be diagnosed in one of three people in their lifetimes. Cancer may be one of over 100 different diseases. Different types of cancers are generally associated with varying risk factors. The most common risk factors include diet and lifestyle.

COMMENT 18: Can you say with 100% confidence that you have identified all contamination under homes is not affecting us? How do we get this comfort?

RESPONSE 18: No agency can assure a resident, with absolute certainty, that there is no environmental contamination under or near their homes. For this site, we can say that review of the extensive data compiled from site investigations does not indicate that site contamination has migrated beneath the adjacent homes, but does, clearly show that contaminants are migrating away from the residential areas, towards the Mohawk River.

COMMENT 19: We grew vegetables in gardens, ate jam from grapes grown on grapetvines that hung over fence onto Niagara Mohawk property, is this a problem.

RESPONSE 19: Site investigations have not revealed significant soil contamination beyond contaminant source areas. The source areas identified were not at the property boundaries. In addition, the physical nature of the site contaminants limits the mobility of these compounds. Therefore, it is not likely that residential gardens were susceptible to plant uptake of site contamination. As an added precaution, you may want to wash your vegetable and fruit to remove surficial dirt particles prior to eating.

Due to a report that a homeowner may have actively gardened beyond their property boundary, onto Niagara Mohawk land (prior to erection of the fence), the NYSDOH will collect samples from this yard to assess whether inadvertent spreading of site contamination may have occurred during garden tilling.

COMMENT 20: Who would pay for sampling on adjacent properties?

RESPONSE 20: If, based upon identified contaminant migration from the site, it is determined that an investigation of adjacent properties is necessary ,Niagara Mohawk would pay for such an investigation.

COMMENT 21: If data is made available to the public how is it presented?

RESPONSE 21: Relevant data will be complied and presented in an easy to follow manner for each of the homeowners residing near the site entrance.

COMMENT 22: Concerned about flooding in basements as well as air quality. Is contamination left behind when water dries up?

RESPONSE 22: Groundwater contamination in the site vicinity is to the west away from the residential properties near the site entrance on Kingsley Avenue. Groundwater samples from wells near the site entrance have been, for the most part, below state groundwater quality standards. Groundwater near the eastern, northern and southern site boundaries has not been found to be contaminated by the MGP site. Therefore, flooding in the basements, indoor air quality and any sediment left behind are not likely to be a health concern.

COMMENT 23: What about backflow of groundwater? City Engineer says there is backflow of groundwater locally?

RESPONSE 23: The ''backflow'' of groundwater is an annual occurrence more typically referred to as a seasonal high groundwater table. The level of groundwater rises due to inputs from melting snow and spring rains, and is also called groundwater recharge. Groundwater, along with any dissolved phase contaminants, continues to flow in the same general direction, just at a higher seasonal elevation.

COMMENT 24: I got a letter from NYSDEC 2 years ago stating that toxic chemicals were on Niagara Mohawk property and to present the letter to any potential buyers. Who would buy the property with this requirement?

RESPONSE 24: The letter in question is a standard letter sent by the NYSDEC to all adjacent property owners to notify them when a site is placed on the NYS Registry of Inactive Hazardous Waste Disposal sites. This notification is required by 6 NYCCR Part 375-1.8 (d), the regulation which governs the State Superfund program.

COMMENT 25: My house is on the market to be sold. How would it affect property value?

RESPONSE 25: The entire surface area of the former MGP property, up to the property line, will be covered with two feet of clean soil, a protective remediation of the site. The required deed restrictions/notices are intended to insure that anyone developing the site in the future is aware that a former MGP was located here and will remain in effect if the property is sold. Potential buyers must be made aware of the deed restrictions and Niagara Mohawk's involvement. Documentation from the NYSDEC can be provided to each of the adjacent property owners to demonstrate that the site has been effectively remediated. The high level of site specific information on the former MGP property, information not typically available in many real estate transactions, should work in the seller's favor in many instances.

COMMENT 26: The proposed cleanup will cost $16 million. Will you move people out of the area and make it a totally industrial area as only a few houses on Kingsley Avenue are present?

RESPONSE 26: Based on the environmental investigation conducted at the site, contamination was only found to have migrated off site in groundwater on the western portion of the site, under the Mohawk River. This plume is to be investigated and remediated as part of Operable Unit No. 2 for this site. However, surface soils off site are not impacted by site related activities and the surrounding area is supplied by city water. There has been no impact to the surrounding neighborhood attributable to the former MGP, therefore relocation of residents is unnecessary. There is nothing related to the former MGP site to prevent people from living near the site now, or in the future.

COMMENT 27: March 18 is the end of the comment period? After that is there another meeting? What happens?

RESPONSE 27: Following the close of the comment period, NYSDEC will address all public comments and then select the final remedy. Another meeting is not held. The NYSDEC finalizes this decision when it issues the Record of Decision (ROD) for this operable unit of the site. The ROD includes a written response to all questions or comments received during the PRAP comment period, known as the responsiveness summary. The ROD is then made available to the public in the document repositories and a notice is sent to the mailing list notifying them of the availability of the ROD.

COMMENT 28: Who makes the final decision? What about elected officials?

RESPONSE 28: The Director of the Division of Environmental Remediation of the NYSDEC makes the final decision. Elected officials are encouraged to provide public comment before the close of the comment period.

COMMENT 29: When will the remedy occur?

RESPONSE 29: Niagara Mohawk will begin designing the remedy for this site based on the alternative chosen in this ROD. The design is expected to take approximately 12 months and construction activities will follow.

COMMENT 30: Who is responsible (pays) for the cleanup?

RESPONSE 30: The NYSDEC Order on Consent with Niagara Mohawk requires Niagara Mohawk Power Corporation (NMPC) to implement a full remedial program, including operation and maintenance.

COMMENT 31: What happens if Niagara Mohawk is bought out?

RESPONSE 31: A change in ownership or corporate status, including, but not limited to, any transfer of assets or real property shall in no way alter Niagara Mohawk''s responsibilities. Thus, the selected remedy will have to be implemented, operated, maintained and monitored by any purchaser, successor or assign of NMPC. NMPC was in fact bought out and now continues this remediation as Niagara Mohawk, A National Grid Company.

COMMENT 32: If Niagara Mohawk goes bankrupt what happens?

RESPONSE 32: In the event of bankruptcy, we are confident there would be a corporate successor to provide for the gas and electric needs of Niagara Mohawk's customers and the remediation.

COMMENT 33: When you start digging, are we going to be notified?

RESPONSE 33: Yes. We intend to keep the public informed of progress at the site. We will provide a schedule and typically hold a meeting prior to the start of construction with mailed updates as needed during the construction.

A letter dated March 10, 2002 was received from Ms. Lisa L. Bellacosa, 2nd Ward Councilor, City of Rome, which included the following comments:

COMMENT 34: I am disappointed at the negative replies supplied by the Department of Health when homeowners requested that their property be tested. Their unwillingness to test their houses upset and frightened the property owners. They requested testing over ten years ago from DOH and were denied. Why are they still being denied?

RESPONSE 34: As stated at the public meeting, the NYSDOH offered to review existing data generated from the on-site investigations conducted by Niagara Mohawk prior to agreeing to residential sampling. A review of this data was completed and off-site sampling does not appear warranted based on site sampling data for the portions of the site which are nearest the homes. However, a limited sampling plan has been approved for the closest neighboring home, as justified in RESPONSE 19.

COMMENT 35: Most of the residents in the surrounding area have gardens and eat the vegetables grown in this alleged contaminated soil. Most of these families have been eating out of these gardens for decades, yet the Department of Health still refuses to test the soil.

RESPONSE 35: See RESPONSE 19

COMMENT 36: All of the these homeowners have experienced groundwater in their basements throughout the past decade, yet there is still no testing.

RESPONSE 36: Groundwater samples have been collected and analyzed periodically since 1995 from five monitoring wells installed near the eastern site boundary. Results show that groundwater in this area has generally been below groundwater standards. There were a few minor exceedences of these standards on the site, however these were noted very near the source areas. Groundwater flow at the site is to the west, away from the residences, therefore off-site groundwater east of the site is not impacted by former operations at the MGP site. Based on this data, testing groundwater from all basements located east of the site is not justified.

COMMENT 37: The city yard transfer station is located on this adjoining property. People use this facility and leave with mud on their shoes. Without proper testing these people could be bringing this contaminated soil home during the wet months, thus contaminating people that do not even live around this site.

RESPONSE 37: As described in RESPONSE 4, surface soil contamination was noted primarily near the former plant location. This is in the west-central area of the northern portion of the site. Surface soil samples taken outside this general area were typical of a historic industrial location and not determined to be of concern. The city yard transfer station is located even further away from the former plant operation than the samples taken along the property lines to the south and east. Therefore soils at the transfer station have not been impacted by the former MGP and it was not necessary for Niagara Mohawk to expand surface soil testing off-site and onto this location.

COMMENT 38: Some of the people on Race Street, Essex Street, Kingsley Avenue and Mill Street have had their homes on the market for years and have been unable to sell them. The property owners surrounding this site will most likely never be able to sell their property as a result of the contaminated property around them.

RESPONSE 38: The site and the area surrounding it have historically been a mix of residential and commercial/industrial properties. The manufactured gas plant began operation in 1917 and continued through 1930. The site was placed on the NYS Registry of Inactive Hazardous Waste Disposal sites as a Class 2 site in December of 1998. The first investigation at the site was in 1987. While this history may adversely affect how some potential buyers view the property, issuance of the ROD and implementation of the selected remedy should serve to eliminate the uncertainty associated with these properties. The fact that property owners in areas far from any site related impacts have been unable to sell their properties may be more indicative of a local trend in housing rather than proximity to the formereMGP.

COMMENT 39: The DEC should recommend that Niagara Mohawk contact all property owners that border this site and make them a buyout offer. These people should be compensated and relocated. The houses should be demolished and removed from the site to ensure no one lives on this site ever again.

RESPONSE 39: See RESPONSE 26.

A letter dated March 18, 2002 was received from Mr. Steven P. Stucker, representing Niagara Mohawk, a National Grid Company, which included the following comments:

COMMENT 40: Since the recommended alternative is to remove "source areas", a clear definition of this term should be provided in the PRAP. References to "containing heavy NAPL saturation", "LNAPL- contaminated soil", and "DNAPL source areas" should be clearly defined. Soil to be excavated as part of the recommended alternative should be consistently referred to as "source areas", and this should be defined as soils saturated with NAPL (either DNAPL or LNAPL). It should be clear in the definition that "source areas" do not include soils containing, oily odors, stained soils, or sheens, "source areas" are soils having a visually observable separate phase product.

RESPONSE 40: The ROD more clearly defines the "source areas" to be excavated. "Source areas" are defined as those identified locations at the site where significant volumes of soil have been found to be saturated with NAPL, or have visually observable separate phase product. Soils exhibiting odors, staining and/or sheens will not to be considered for removal as "source areas" by this ROD.

COMMENT 41: The pre-design investigation will include installation of soil borings or Geoprobes at the estimated limits of the source areas in the FS to confirm that "source areas" have been adequately delineated. Borings that do not contain separate phase product will define the limits of sheet piling for the source area removal.

RESPONSE 41: This scope of work is consistent with the intent of Section 8, number 1.

COMMENT 42: The purifier waste remaining at the site will also be delineated during pre-design investigations. Borings or Geoprobes will be installed at the estimated limits of this area to define the limits of excavation. The limits of excavation will be based on visual indication of purifier waste, defined as blue-stained soils, and will be limited to excavation to the water table. Borings that do not have blue staining will define the limits of the purifier waste removal. Since a cleanup criteria for cyanide has not been established, NM NGrid requests that the reference to post-excavation sampling for the purifier waste delineation be removed from the ROD.

RESPONSE 42: The NYSDEC agrees that since the area in question is within the limits of the site containment/groundwater treatment system, the purifier waste is best delineated by the distinctive visual indication of blue staining, that excavation can be limited to the water table, as outlined above, however post-excavation sampling to document cyanide levels that remain will be required. The ROD reflects these items.

COMMENT 43: In regards to proposed Operable Unit 2 (OU-2), as shown on Figure 1, DEC should clarify that OU-2 pertains to "off-site" groundwater including NAPL. "Off-site" soil and sediment are addressed in OU-1.

RESPONSE 43: Subsurface DNAPL and groundwater contamination west of the cutoff wall will be addressed by the operable unit for off-site contamination, Operable Unit No. 2. Surface soils on the peninsula and sediment in the backwater area were the only areas outside Niagara Mohawk property addressed by OU-1t This is clarified in the Record of Decision.

COMMENT 44: The following revisions were requested to the ROD language:

- Page 1, Section 1, 3rd sentence; rewrite as "...operation of the former manufactured gas plant has resulted in the presence of a number of hazardous wastes or substances at the site..."
- Page 1, Section 1, 4th sentence rewrite as "The activities of the former manufactured gas plant operation have resulted in the following threats to the public health and the environment:"
- Page 1, Section 1, 4th sentence; remove word "significant" from narratives of each bullet. NM agrees that these threats exist, however, the use of the term "significant" to describe these threats is an exaggerated depiction of the magnitude of the threats.

RESPONSE 44: This site is listed on the NYS Registry of Inactive Hazardous Waste Disposal Sites as a Class 2 site. As such it has been determined to represent a significant threat to public health and/or the environment. The ROD will not be modified as noted above.

COMMENT 45: Page 2, Column 1, 3rd bullet (under remedy description) - item should be clarified to indicate that the collection points are for DNAPL, not groundwater, and that treatment will occur at fixed "gates"' along the cutoff wall.

RESPONSE 45: Item has been clarified in the ROD to indicate that collection points are for DNAPL and that treatment will occur at gates installed along the cutoff wall.

COMMENT 46: Page 2, Column 1, 5th bullet - remove term "cyanide" refer to sediment just as contaminated. It also contains PAHs.

RESPONSE 46: Sediment to be removed from the backwater area will be referenced as either "contaminated sediment" or "cyanide and PAH contaminated sediment" in the ROD.

COMMENT 47: Page 5, Column 1, Remedial History - Jan. 2002 reference should be modified to reflect OU-1 Feasibility Study complete.

RESPONSE 47: Reference to the January 2002 completion date will for the OU-1 Feasibility Study.

COMMENT 48: Page 8, Column 2, 3rd para. - First sentence should be modified to read "...total BTEX exceeding SCGs was only detected in two..." to be consistent with the table, the table does not indicate that total BTEX was only detected in 2 samples.

RESPONSE 48: Although BTEX was only detected in two samples, this is not discernable from the table. The text will be modified to be consistent with the table.

COMMENT 49: Page 8, Column 2, 3rd para. - Last sentence should be revisited. There are many more samples that exceed SCGs for metals (e.g. 11 for mercury) than for BTEX/PAHs (max. 2), so the areas cannot all be coincident.

RESPONSE 49: The ROD has been revised to delete this statement.

COMMENT 50: Page 13, Column 1, Alternative 1 - The present worth of this alternative is based on $60,000 every five years for site reviews. This does not correlate with a $10,000 annual O&M cost (if the $60,000 is converted to an annuity, it is approximately $11,000.)

RESPONSE 50: Annual O&M cost has been modified to reflect an annual cost of $11,000 per year.

COMMENT 51: Page 13t, Column 1, Second bullet - The PRAP under Alternative 2 discusses removal of purifier waste based on visual impacts. Section 4.2.1, p.4-4 of the FS under Common Elements discusses removal of the purifier waste to the water table. The PRAP should be revised to indicate that the purifier waste removal will be limited to blue stained soil (as noted above) and to soil above the water table.

RESPONSE 51: See RESPONSE 42t

COMMENT 52: General Commentt- Alternative 2 includes capping for soil and MNA for groundwater, while Alternative 4 includes source removal and capping, for soil and a funnel and gate for groundwater. It is not consistent to allow MNA with capping only, but to require a Funnel and Gate system in conjunction with source removal and capping. If MNA is acceptable in conjunction with capping only, it should then be more acceptable with source removal and capping, and the Funnel find Gate should not be required.

RESPONSE 52: Monitored Natural Attenuation (MNA) is not a no action remedy for groundwater contamination. Unless a remedy includes provision for removal, treatment or containment of source material at a site, where the source continues to impact off-site groundwater MNA is not appropriate. (Reference: United States Environmental Protection Agency "Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action and Underground Storage Tank Sites" (OSWER Directive Number 9200.4-14-17P) dated April 21, 1999) Evaluating MNA as part of Alternative 2 does not indicate that it was acceptable. This alternative was rejected as it does not comply with SCGs, significantly reduce the toxcicity, volume or mobility of contaminants, including off-site migration of groundwater contamination. Groundwater treatment will be an requirement for the funnel and gate system of the selected remedy.

COMMENT 53: Page 14, Column 1, 1st bullet - Excavation volume for LNAPL is 4,648 cy (or 5,000 cy rounded off), not 4,000 cy.

RESPONSE 53: Bulleted item in the ROD is revised to indicate that approximately 4,700 cubic yards of source area soils contaminated with LNAPL would be removed.

COMMENT 54: Page 14, Column 2 - Alternative 3 does not include any costs (i.e., not even reviews for No Action) for GW remedies and does not discuss No Action or MNA for groundwater.

RESPONSE 54: Alternative 3 proposes to excavate all soils which exceed TAGM 4046 levels. This remedy would effectively remediate groundwater by removing the source soils and is assumed to effectively remove the contaminated groundwater present (by the dewatering of the site necessary to complete the removal) . While limited monitoring for a short term following construction may be required it will not represent a operation and maintenance program and with minimal costs compared to that for the excavation, was not included as a separate cost.

COMMENT 55: Page 16, Alternative 5 - Last paragraph in column 1 and second to last paragraph in column 2 are repetitive.

RESPONSE 55: We agree, the second to last paragraph in column 2 has been deleted in the ROD.

COMMENT 56: Page 17, Column 1, 4th para. - Alternative 3 does not fully comply with SCGs - soil SCGs are met, but groundwater SCGs are not immediately obtained.

RESPONSE 56: The NYSDEC feels that groundwater SCGs will be attained within a very short time frame following the excavation.

COMMENT 57: Page 20, Column 1, 1st para. - The second sentence refers to construction of a soil cover, but the third sentence indicates that the cap will be constructed of soil or asphalt. Please revise to be consistent, with the approach detailed in Section 4.2.2.2.1 of the FS which proposes soil, asphalt or structures capping depending upon reuse scenarios. Additionally, it should be noted that a pre-design task may be appropriate to better define the on-site cover thickness needed proximal to the property boundaries.

RESPONSE 57: The soil cover, given current site use, will consist primarily of soil. However if areas of the site are proposed for structures, these areas will be covered by the structure and areas planned for roadways or parking use will be covered by asphalt. In these cases, a separate soil layer will not be required if an alternative barrier will be in place. This is reflected in the ROD.

COMMENT 58: Page 21, Section 8, 2nd Paragraph - NAPL will be properly disposed of off-site. Remove reference to treatment of DNAPL.

RESPONSE 58: The ROD clarifies this statement.

COMMENT 59: Page 22, Item 5 - Perforations will be present in sections of the wall (i.e., gates), not along the entire wall, this should be specified in this item.

RESPONSE 59: This item has been clarified to indicate that the perforations will only be present in sections of the wall, called gates.

COMMENT 60: Table 2 - Costs for Alternative 3 do not include a groundwater component.

RESPONSE 60: See RESPONSE 54.

COMMENT 61: Figure 2 - The LNAPL impact on the small "island" near the spillway should not be shown - this is part of OU-2.

RESPONSE 61: Figure 2 is depiction of the contamination attributable to the former MGP and does not differentiate between OU 1 or OU 2, therefore no change has been made in this Figure in the ROD.

COMMENT 62: General - The proposed cap, as shown on Figures 3 and 4 extends across the entire "peninsula" adjacent to the Mohawk, as detailed in the FS. OU-2 will address ground water underneath this area.

RESPONSE 62: See RESPONSE 43.

COMMENT 63: General - There is no figure showing the TAGM 4046 removal (Alternative 3).

RESPONSE 63: It was not considered necessary.

APPENDIX B

Administrative Record

Final Preliminary Site Assessment/Interim Remedial Measures Study, Rome (Kingsley Avenue) Manufactured Gas Plant Site, June 1993, Atlantic Environmental Services, Inc.

Remedial Investigation Report for the Rome (Kingsley Avenue) Site, City of Rome, New York, March 1999, Parsons Engineering, Science, Inc.

Final Feasibility Study Report for the Rome (Kingsley Avenue) Site, January 2002, Foster Wheeler Environmental Engineering Corporation, PC.

Letter from Gary Litwin of the New York State Department of Health, to Michael O'Toole, P.E., NYSDEC, dated February 8, 2002

NIMO - Rome: Kingsley Avenue MGP, Proposed Remedial Action Plan, Operable Unit No. 1: Former Plant Site, February 2002, NYSDEC

A letter dated March 10, 2002 from Lisa L. Bellacosa, Second Ward Councilor, City of Rome, providing comments on the PRAP

A letter dated March 18, 2002 from Mr. Steven P. Stucker of Niagara Mohawk, A National Grid Company, providing comments on the PRAP