PROPOSED REMEDIAL ACTION PLAN

NYSEG - Binghamton Court St. MGP
Operable Unit Number 01: Former MGP Area
Binghamton, Broome County
Site No. 704031
February 2013

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

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SECTION 1: SUMMARY AND PURPOSE OF THE PROPOSED PLAN

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

The New York State Inactive Hazardous Waste Disposal Site Remedial Program (also known as the State Superfund Program) is an enforcement program, the mission of which is to identify and characterize suspected inactive hazardous waste disposal sites and to investigate and remediate those sites found to pose a significant threat to public health and environment.

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

SECTION 2: CITIZEN PARTICIPATION

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

A public comment period has been set from:

2/26/2013 to 3/28/2013

A public meeting is scheduled for the following date:

3/13/2013 at 7:00 PM

Public meeting location:

Conklin Fire Department, Station 1, 1034 Conklin Road, Conklin, NY

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

Written comments may also be sent through 3/28/2013 to:

Anthony Karwiel
NYS Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233
alkarwie@gw.dec.state.ny.us

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

Receive Site Citizen Participation Information By Email

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

SECTION 3: SITE DESCRIPTION AND HISTORY

Location: The Binghamton Court Street MGP site is located in an industrial section of Binghamton, NY and occupies approximately 4.3 acres of land identified as 271-291, and 293 Court Street. The site is bordered on the west by Brandywine Ave and to south by Court Street.

Site Features: The site is a gravel lot. The Susquehanna River borders the south side of the site. Immediately north of the site is a major Norfolk and Southern Railroad line.

Current Zoning/Use(s): The site is currently used as a natural gas service center and a combination of storage and warehousing. The site is zoned industrial.

Past Use(s) of the Site: The site was used as a former Manufactured Gas Plant from 1888 until it was decommissioned in approximately 1969.

Operable Units: The site was divided into two operable units. An operable unit represents a portion of a remedial program for a site that for technical or administrative reasons can be addressed separately to investigate, eliminate or mitigate a release, threat of release or exposure pathway resulting from the site contamination. Operable unit 1 (OU1) is the on-site former MGP area. OU2 consists of the off-site sediment impacts and surface water in the Susquehanna River.

Site Geology and Hydrogeology: The site surface and subsurface soils consist of fill material which start at the surface and continue to approximately 12 feet below ground surface (bgs). Below the fill unit is an alluvial silt and clay layer which is approximately 10 feet thick. Underneath the alluvial and clay layer is a sand gravel layer which averages about 30 feet thick. Below this is the till layer which is approximately 45 feet thick and of very low permeability which forms a lower confining unit. The groundwater level is generally at 6 to 8 feet below grade and flows south toward the Susquehanna River.

Operable Unit (OU) Number 01 is the subject of this document.

A Record of Decision will be issued for OU 02 in the future.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, alternatives (or an alternative) that restrict(s) the use of the site to commercial use (which allows for industrial use) as described in Part 375-1.8(g) are/is being evaluated in addition to an alternative which would allow for unrestricted use of the site.

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

SECTION 5: ENFORCEMENT STATUS

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

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

New York State Electric and Gas (NYSEG)

The Department and NYSEG entered into a Consent Order Index Number D7-001-96-03 on November 11, 1996 for this work.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

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

The following general activities are conducted during an RI:

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

The analytical data collected on this site includes data for:

- groundwater
- soil

6.1.1: Standards, Criteria, and Guidance (SCGs)

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

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

6.1.2: RI Results

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

COAL TAR	Chrysene
BENZENE	DIBENZ[A,H]ANTHRACENE
TOLUENE	DIBENZOFURAN
ETHYLBENZENE	FLUORANTHENE
XYLENE (MIXED)	FLUORENE
ACENAPHTHENE	indeno(1,2,3-cd)pyrene
ACENAPTHYLENE	NAPHTHALENE
ANTHRACENE	PHENANTHRENE
BENZO(A)PYRENE	PYRENE
BENZO(B)FLUORANTHENE	ARSENIC
BENZO(GHI)PERYLENE	LEAD
BENZO[K]FLUORANTHENE	CYANIDES(SOLUBLE CYANIDE SALTS)

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

- groundwater
- soil

6.2: Interim Remedial Measures

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

The following IRM(s) has/have been completed at this site based on conditions observed during the RI.

Removal of the No. 2 Gas Holder

In the late 1990s, the No. 2 gas holder and impacted soil was removed to a depth of 10 feet below grade, resulting in the off-site disposal of nearly 2,000 cubic yards of Manufactured Gas Plant (MGP) impacted soil and debris. The excavation was backfilled with clean fill which meets the requirements for commercial use (which allows for industrial use) specified in 6 NYCRR Part 375-6.7(d).

All IRMs were conducted on-site. Backfill materials meeting 6 NYCRR Part 375-6.7(d) were used to backfill the excavated areas.

Storm Sewer IRM

A storm sewer lining IRM was conducted by NYSEG from July to November 2003 to clean and line the 66-inch storm sewer that transects the NYSEG property. The IRM was performed to address non- aqueous phase liquid (NAPL) that had been observed infiltrating the storm sewer. The liner system consisted of a 12-inch wide by 1-inch thick sheet of PVC that was spirally wrapped around the interior of the storm sewer. The continuous PVC joint was sealed with a snap-together PVC gasket and the annular space between the liner and storm sewer pipe/culvert was grouted to hold the liner in place. The 66-inch storm sewer was eventually totally replaced due to failures of the seal that allowed infiltration of NAPL into the storm sewer. NAPL impacted material encountered during the sewer replacement was removed for off-site disposal.

Removal of the No. 3 gas holder, tar well and piping.

From October 2000 to January 2001, the No.3 gas holder and tar separating well were removed. In July and August of 2001 the associated piping containing NAPL was removed or drained and plugged if removal was not possible. These activities resulted in the removal of impacted soils to a depth of 10 feet below grade and disposal of approximately 9,000 tons of MGP impacted material and 68,000 gallons of contaminated groundwater.

Barrier Wall

From July through December 2006, a barrier wall was constructed to prevent off-site migration of non-aqueous phase liquid (NAPL) and recover NAPL to the extent practicable. The NAPL barrier was constructed from the ground surface and keyed into the till unit to intercept and collect mobile dense non-aqueous phase liquid (DNAPL) and light non-aqueous phase liquid (LNAPL), if present in passive recovery wells.

6.3: Summary of Environmental Assessment

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

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

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

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

The primary contaminants of concern in on-site soils are related to coal tar and include volatile organic compounds comprised primarily of benzene, toluene, ethyl benzene, and xylene; semi-volatile organic compounds comprised mainly of polycyclic aromatic hydrocarbons; heavy metals; and cyanide. The upper foot of soil on-site is clean gravel which meets the requirements for commercial (and industrial) use specified in 6NYCRR Part 375-6.7(d). These contaminants have also impacted the groundwater on-site and Susquehanna River sediments adjacent to and downstream of the site. The contaminant concentrations (greater than NYSDEC Class GA standards and guidance values) in groundwater, strongly correlate to the distribution of the visually impacted soils within the footprint of the former MGP structures. Impacts to surface water and sediment (if any) will be evaluated under a separate OU.

Interim Remedial Measures (IRM) have been conducted to eliminate on-going releases from the site, including: removal of subsurface soils and structures at a tar well and gas holders #2 and #3 locations to a depth of 10 feet below grade, cleaning and lining of the 66 inch sewer, and installation of a NAPL barrier wall and collection system. A final IRM was conducted to completely replace the storm sewer due to a failure in the liner installed by the initial storm sewer IRM.

6.4: Summary of Human Exposure Pathways

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

People are not drinking contaminated groundwater because the area is served by a public water supply that is not affected by site-related contamination. No one is expected to come into contact with contaminants in soil because clean fill covers the site and a fence restricts public access.

6.5: Summary of the Remediation Objectives

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

The remedial action objectives for this site are:

Groundwater

RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of volatiles, from contaminated groundwater.

RAOs for Environmental Protection

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

Soil

RAOs for Public Health Protection

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

RAOs for Environmental Protection

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

SECTION 7: SUMMARY OF THE PROPOSED REMEDY

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

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

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

The proposed remedy is referred to as the Monitoring with Site Management remedy.

The estimated present worth cost to implement the remedy is $1,200,000. The cost to construct the remedy is estimated to be $96,000 and the estimated average annual cost is $67,000.

The elements of the proposed remedy are as follows:

The major components of the proposed remedy include the barrier wall with NAPL recovery, storm sewer replacement and removals undertaken by the IRMs and Site Management:

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

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

2. A site cover currently exists and must be retained to allow for commercial and industrial use of the site. Any site redevelopment will maintain a site cover, which may consist either of the structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where an additional soil cover is required it will be a minimum of one foot of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for commercial use. Any future soil cover (if required) will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

3. Site Management Plan is required, which includes the following:

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

Institutional Controls: The Environmental Easement discussed in Paragraph 1 above.

Engineering Controls: IRM barrier wall with NAPL recovery, site cover, new storm sewer

This plan includes, but may not be limited to:
- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- descriptions of the provisions of the environmental easement including any groundwater use restrictions;
- a provision for evaluation of the potential for soil vapor intrusion for any buildings developed on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

b. A Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:
- monitoring of groundwater to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department;

- monitoring for vapor intrusion for any buildings developed on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

c. An Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, optimization, monitoring, inspection, and reporting of any mechanical or physical components of the remedy. The plan includes, but is not limited to:

- compliance monitoring of the NAPL collection system to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;
- maintaining site access controls and Department notification; and
- providing the Department access to the site and O&M records.

Exhibit A

Nature and Extent of Contamination

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

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

Waste/Source Areas

As described in the RI report, waste/source materials were identified at the site and are impacting groundwater, soil, and sediment.

Wastes are defined in 6 NYCRR Part 375-1.2 (aw) and include solid, industrial and/or hazardous wastes. Source Areas are defined in 6 NYCRR Part 375 (au). Source areas are areas of concern at a site were substantial quantities of contaminants are found which can migrate and release significant levels of contaminants to another environmental medium. Wastes and Source areas identified at the site include, former MGP structures and piping, and subsurface soils that contain coal tar, a non-aqueous phase liquid (NAPL).

Certain waste/source areas identified at the site were addressed by the IRMs described in Section 6.2. The remaining waste/source areas identified during the RI will be addressed in the remedy selection process.

Groundwater

Groundwater samples were collected from both shallow groundwater (above the silt and clay unit) and deeper groundwater (below the silt and clay unit, in the sand and gravel unit). The samples were collected to assess groundwater conditions on and off-site. The results indicate that groundwater at the site contained benzene, toluene, ethyl benzene and xylene (BTEX) and polycyclic aromatic hydrocarbons (PAHs) at concentrations greater that NYSDEC Class GA standards and guidance values.

Table 1 - Groundwater (Conditions prior to conducting IRMs)

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCs			
Benzene	ND – 22,000	0.7	27/72
Ethylbenzene	ND – 2600	5	28/72
Toluene	ND – 7400	5	17/72
Xylenes, Total	ND - 2600	5	28/66
SVOCs			
Acenaphthene	ND – 250	20	30/72
Anthracene	ND – 140	50	3/72
Benzo(a)pyrene	ND – 85	ND	17/72
Benzo(b)fluoranthene	ND – 21	0.002	7/72
Chrysene	ND – 97	0.002	18/72
Fluoranthene	ND – 150	50	2/72
Indeno(1,2,3-cd)pyrene	ND – 21	0.002	4/72
Naphthalene	ND – 8200	10	34/72
Phenanthrene	ND – 750	50	20/72
Pyrene	ND - 290	50	4/72
Inorganics			
Arsenic	ND – 153	25	15/68
Lead	ND – 246	25	30/62
Cyanide Total	ND - 600	200	2/72

a - ppb: parts per billion, which is equivalent to micrograms per liter, ug/L, in water.
b- SCG: Standard Criteria or Guidance - Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1), 6 NYCRR Part 703, Surface water and Groundwater Quality Standards, and Part 5 of the New York State Sanitary Code (10 NYCRR Part 5).

Groundwater contamination identified during the RI was addressed during the IRMs described in Section 6.2

Soil

Surface soil and subsurface soil samples were collected and analyzed for volatile, semi-volatile, and metals compounds during the RI to determine the nature and extent of impacts to soil as a result of the operation of the former MGP. Sampling results shows that the primary soil contaminants are found in subsurface soils at 8-10 feet bgs that are saturated with coal tar NAPL. As noted on Figure 3, the primary soil contamination is generally located at areas near the former MGP structures including the gas holders, tar wells, oil tanks, retorts and associated piping. Chlorinated solvents were also detected in soil samples and are suspected to have migrated from an unidentified, off-site source.

Analytical results indicate that shallow (0-6 inches) and near-surface (0-2 feet) soil samples did not contain BTEX compounds or PAHs at concentrations greater than Part 375-6.7(d) guidance values for commercial use.

In general, the areal extent of subsurface soil above and below the water table that contained elevated concentrations of total BTEX and total PAHs was located in the northern portion of OU-1 in areas associated with several oil tanks (Nos.1, 2, and 6), the former No 2. gas holder, and the retorts.

Table 2 - Soil (Conditions prior to conducting IRMs)

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Industrial Use SCG[c] (ppm)	Frequency Exceeding Restricted SCG
VOCs					
Benzene	ND – 691	0.06	15/62	89	3/62
Ethylbenzene	ND – 1830	1	13/45	780	3/45
Toluene	ND – 1040	0.7	12/45	1000	1/45
Xylenes, Total	ND - 1460	0.26	15/22	1000	1/22
SVOCs					
Acenaphthene	ND – 780	20	14/62	1000	0/62
Acenaphthylene	ND – 3200	100	7/62	1000	1/62
Anthracene	ND – 3000	100	7/62	1000	1/62
Benzo(a)anthracene	ND - 2400	1	23/62	11	17/62
Benzo(a)pyrene	ND – 980	1	29/62	1.1	29/62
Benzo(b)fluoranthene	ND – 750	1	29/62	11	14/62
Benzo(ghi)perylene	ND – 330	100	4/62	1000	0/62
Benzo(k)fluoranthene	ND - 310	0.8	29/62	110	4/62
Chrysene	ND – 890	1	29/62	110	4/62
Dibenz(a,h)anthracene	ND – 77	0.33	8/62	1.1	7/62
Fluoranthene	ND – 2300	100	7/62	1000	1/62
Indeno(1,2,3-cd)pyrene	ND – 270	0.5	24/62	11	7/62
Naphthalene	ND – 10,000	12	19/62	1000	7/62
Phenanthrene	ND – 7100	100	14/62	1000	4/62
Pyrene	ND - 3300	100	8/62	1000	3/62
Inorganics					
Arsenic	ND – 22	13	4/20	16	2/20
Lead	ND – 894	63	8/20	3900	0/20
Mercury	ND - 2	0.18	6/20	5.7	0/20
Zinc	ND - 273	109	5/18	10,000	0/18
Cyanide Total	ND - 68	27	3/20	10,000	0/20

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

b - SCG: Part 375-6.8(a), Unrestricted Soil Cleanup Objectives.
c - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Public Health for Industrial Use, unless otherwise noted.
d - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Groundwater.

Soil contamination identified during the RI was addressed during the IRMs described in Section 6.2.

Exhibit B

Description of Remedial Alternatives

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

Alternative 1: No Action

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. This alternative leaves the site in its present condition and does not provide any additional protection to public health and the environment. The No Action alternative does not include long-term monitoring and therefore has no associated cost.

Alternative 2: Monitoring with Site Management

The Monitoring with Site Management Alternative recognizes the remediation of the site completed by the IRM(s) described in Section 6.2 and Site Management and Institutional Controls and Engineering Controls are necessary to confirm the effectiveness of the IRM. This alternative maintains engineering controls which were part of the IRM and includes institutional controls, in the form of an environmental easement and site management plan, necessary to protect public health and the environment from contamination remaining at the site after the IRMs. The major components of Alternative 2 consist of:

- Conducting long-term groundwater monitoring
- Continuing the on-going NAPL collection and monitoring activities
- Developing a site management plan (SMP)
- Establishing institutional controls that restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH.

Present Worth: *$1,200,000*
Capital Cost: *$96,000*
Annual Costs: *$67,000*

Alternative 3: Restoration to Pre-Disposal or Unrestricted Conditions

This alternative achieves all of the SCGs discussed in Section 6.1.1 and Exhibit A and soil meets the unrestricted soil clean objectives listed in Part 375-6.8 (a). This alternative will include:

- Excavation and off-site disposal of over 300,000 cubic yards of contaminated material to a depth of 50 feet that exceeds unrestricted soil cleanup objectives. The excavated hazardous material will be treated prior to disposal using low temperature thermal desorption. Existing on-site buildings will be demolished and removed as part of this remedy. This alternative will not rely on institutional or engineering controls to prevent future exposure and will include implementation of a short-term groundwater monitoring to ascertain the effectiveness of the remedy.

The cost to implement Alternative 3 has been estimated as follows:

Present Worth: *$141,100,000*
Capital Cost: *$141,046,200*
Annual Costs: *$28,200*

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
Alternative 1: No Action	0	0	0
Alternative 2: Monitoring with Site Management	96,000	67,000	1,200,000
Alternative 3 : Restoration to Pre-Disposal or Unrestricted Conditions	141,046,200	28,200	141,100,000

Exhibit D

SUMMARY OF THE PROPOSED REMEDY

The Department is proposing Alternative 2, as the remedy for this site. Alternative 2 would achieve the remediation goals for the site by managing contamination that remains at the site by conducting periodic groundwater monitoring and NAPL monitoring (with recovery, as necessary), establishing institutional controls, and preparing a Site Management Plan. The elements of this remedy are described in Section 7. The proposed remedy is depicted in Figure 3.

Basis for Selection

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

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

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

Alternative 1 (No Action) does not include active remedial actions and thus will not provide any additional protection to human health and the environment over what currently exists. Therefore, Alternative 1 is eliminated from further evaluation.

Alternative 2, which includes site management and institutional controls, will protect human health and the environment by preventing exposure and migration of the remaining deep subsurface contamination through the use of easement that restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH, monitoring and maintenance of the barrier wall, site cover and implementation of the site management plan. Alternative 3, which calls for total removal of all impacted materials will provide a higher level of protection the environment by removing all deep contamination from the site.

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

Alternative 2, with the combination of IRMs performed at the site and existing site cover, will meet SCGs in the upper one foot of surface soil. While subsurface soil below 10 feet will contain MGP-related impacts and will remain in place beneath clean surface materials including clean backfill brought on-site during the previous IRMs, engineering controls implemented under the IRMs performed at the site will address this remaining contamination. Alternative 3 will comply with both SCGs and RAOs as the site will be cleaned and restored to pre-release conditions.

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

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

Alternative 2, in combination with the previously-implemented IRMs, will provide long-term effectiveness and permanence. The majority of the surface cover on OU-1 consists of gravel and asphalt pavement, which provides a site cover which is a physical barrier to remaining subsurface impacts. Alternative 2 includes monitoring to ensure the long-term effectiveness of the IRMs performed at the site. The passive NAPL barrier and the new 63-inch storm sewer installed as part of the IRM will be monitored under Alternative 2 to ensure their effectiveness at preventing the potential for NAPL to further migrate beyond the NYSEG property. Based on the limited potential for exposures to impacted media, the periodic groundwater monitoring, institutional control, and SMP components of Alternative 2 will be an effective means to reduce the potential for future exposures. Additionally, Alternative 2 includes periodic NAPL monitoring (and recovery) to reduce the volume of mobile NAPL present in OU-1. Long-term effectiveness would be best achieved by Alternative 3, as all contaminated material will be removed from the site to achieve the unrestricted use SCOs, although this increase in effectiveness is slight in comparison to alternative 2.

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

Over 8,000 cubic yards of MGP source material was removed and disposed off-site through various IRMs conducted at the site. Alternative 2 includes periodic NAPL monitoring and passive recovery of mobile NAPL (if any) that may collect in the wells. Through the NAPL monitoring/recovery activities, the toxicity, mobility and volume of mobile NAPL will be further reduced. NAPL removal will reduce the volume of material that is serving as a source to dissolved phase groundwater impacts. This removal will reduce the flux of COCs from source material to groundwater, which will reduce the toxicity and volume of dissolved phase groundwater impacts. Alternative 2 also includes groundwater monitoring to document the extent and potential long-term reduction (i.e., toxicity and volume) of dissolved phase groundwater impacts. Also Alternative 2 will include a means to monitor and remove NAPL that accumulates in the passive NAPL recovery wells. Alternative 3 will provide the greatest reduction of toxicity, mobility and volume of contaminants by removing over 300,000 cubic yards of contaminated material that exceed pre-disposal conditions from the site.

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

Implementation of Alternative 2 could potentially result in minimal short-term exposure to the field personnel during periodic groundwater and NAPL monitoring. The potential for exposures is reduced through the use of proper training and personal protection equipment (PPE) as will be specified in a site-specific Health and Safety Plan (HASP). Alternative 3, which calls for total removal of impacted materials to a full depth of 50 feet to restore the site to pre-disposal condition will result in over 300,000 cubic yards of excavated material transported through the community for off-site treatment and/or disposal. Excavation to such depths will result in significant disruption to the community and adjacent commercial establishments as a result of the need for large scale dewatering, treatment and disposal of water. Additionally, excavation to this depth will require

shoring/stabilization of the elevated rail way and the surrounding commercial-traffic roadways. The existing on-site building would be removed to allow for the excavation and disposal of impacted material that may be present under the building. Alternative 3 would also result in significant noise generation and heavy truck traffic. Over 400,000 tons of soil and building material would need to be transported off-site for treatment and/or disposal. More than 25,000 tractor truck round trips would be required to accomplish this remedy, with increased potential for a traffic accident and spill incident. Alternative 2 is more sustainable, with a reduced carbon footprint on the environment associated with reducing the trucking of wastes to a landfill or treatment facility. Although this alternative will result in a reduction in the volume of contaminated material, it will result in significant short-term impacts on nearby residents and commercial establishments during construction and will only provide minimal additional protection the environment over Alternative 2. Soil excavation and backfilling activities would be completed in approximately 2 and 12 months for Alternatives 3.

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

Alternative 2, which includes groundwater and NAPL monitoring, preparation of an SMP and implementation of institutional controls, is easily and readily implementable. Activities under Alternative 2 will not require highly specialized equipment and trained personnel and are readily available to affect the alternative. Establishing institutional controls will require coordination with state agencies (i.e., NYSDEC and NYSDOH). Access agreements and permits are required for conducting groundwater and NAPL monitoring activities within Court Street (south of the NYSEG property) and on the railroad property (north of the NYSEG property) and these activities can easily be accomplished. Alternative 3, though would pose some difficulties during construction can be accomplished. Personnel, equipment and technology required to accomplish excavation are easily available. Alternative 3, due to the significant depth and volume of excavation, will be extremely challenging to construct. Dewatering and excavation shoring associated with Alternative 3, would be challenging, difficult to construct and be very disruptive to the community. Several million gallons of water would need to be handled, treated and disposed of. The large scale excavations associated with Alternative 3 would require shoring/stabilization of the raised railway, Court Street and Brandywine Avenue, as well as the 60 inch storm sewer. The access and permitting required to accomplish this would be extremely difficult.

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

The estimated capital cost for Alternative 2 is associated with preparing an SMP and establishing institutional controls and the estimated 30-year present worth cost of O&M activities. The cost associated with Alternative 2 is reasonable and effective. Alternative 3 would have a much higher significant cost due to the large volume of material to be handled. Although Alternative 3 would result in significant reduction in the volume of contaminated materials at the site, the incremental cost of over $139,000,000 compared to Alternative 2 would only result in a slight increase in protection or effectiveness.

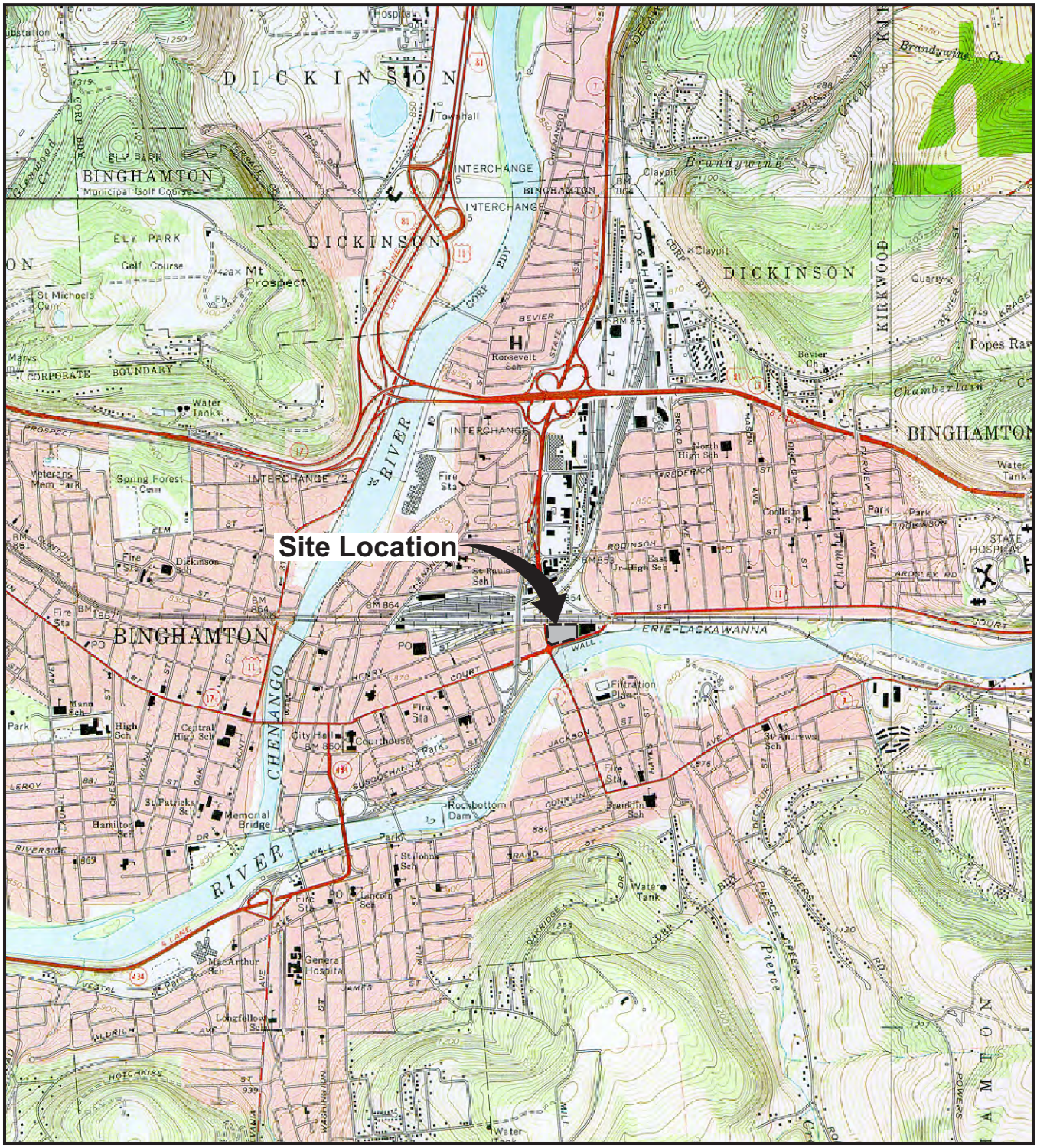
8. Land Use. When cleanup to pre-disposal conditions is determined to be infeasible, the Department may consider the current, intended, and reasonable anticipated future land use of the site and its surroundings in the selection of the soil remedy.

The current zoning for OU-1 is listed as heavy industrial use. Areas immediately surrounding OU-1 are also zoned for heavy industrial use. The nearest residential areas are located approximately 0.25 miles east, west and south of OU-1. The current and foreseeable future use of the site and the immediately surrounding area is industrial. The property will continue to be used by NYSEG for equipment/material storage and parking. Implementing Alternative 2 will not affect the current or anticipated future industrial land use of the site.

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

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

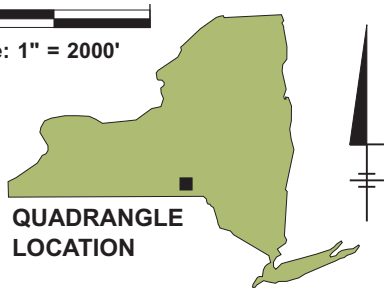
Alternative 2 is being proposed because, as described above, it satisfies the threshold criteria and provides the best balance of the balancing criterion.



REFERENCE: BASE MAP SOURCE: USGS 7.5 MIN. TOPO. QUAD., BINGHAMTON EAST, NY., BINGHAMTON WEST, NY., CASTLE CREEK, NY., CHENANGO FORKS, NY. (1968, PHOTOREVISED 1976).

2000' 0 2000'

Approximate Scale: 1" = 2000'



NYSEG
COURT STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Proposed Remedial Action Plan

SITE LOCATION MAP

NYSDEC

FIGURE
1

12/11/2012 SYRACUSE, DIV/GROUP: ENV/IM-DV DJHOWES
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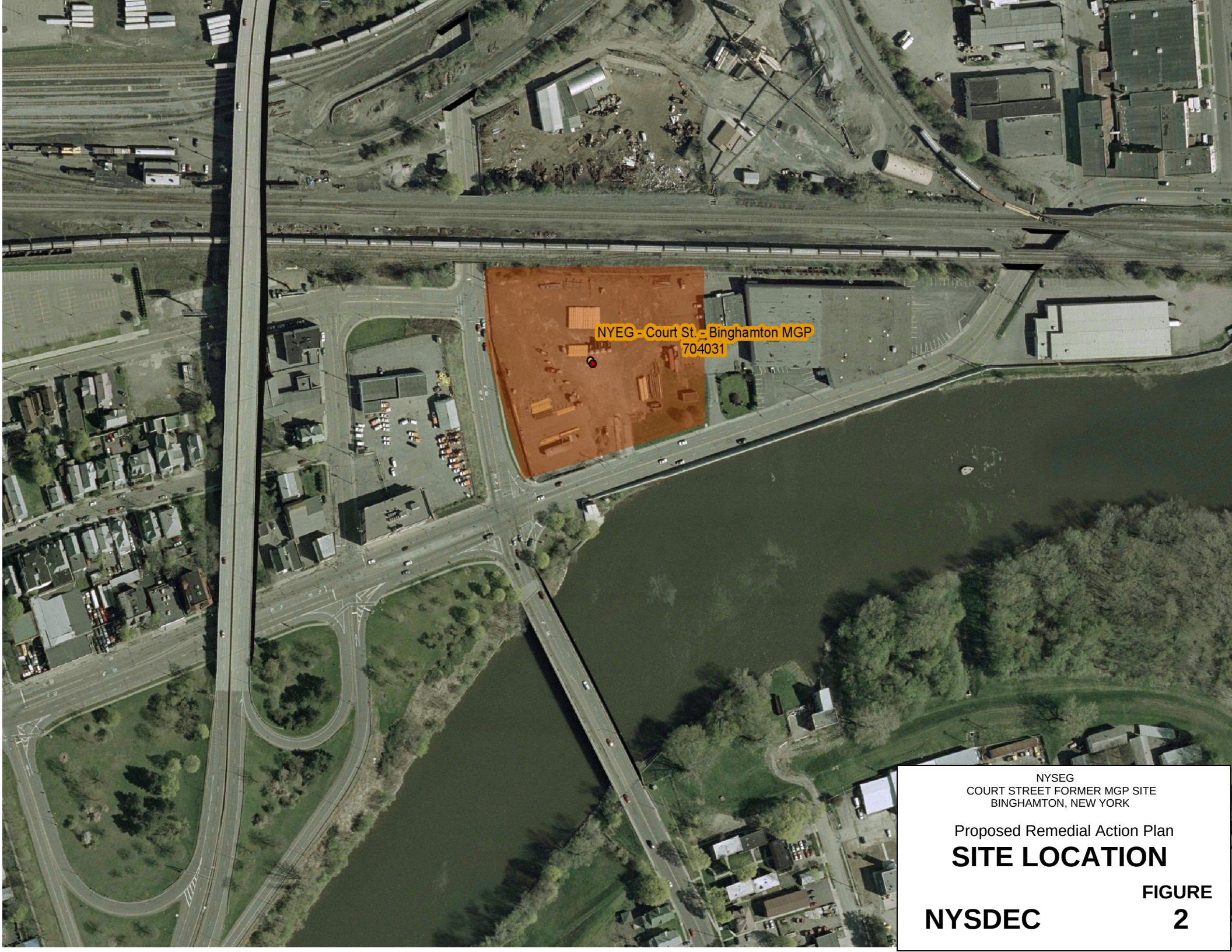


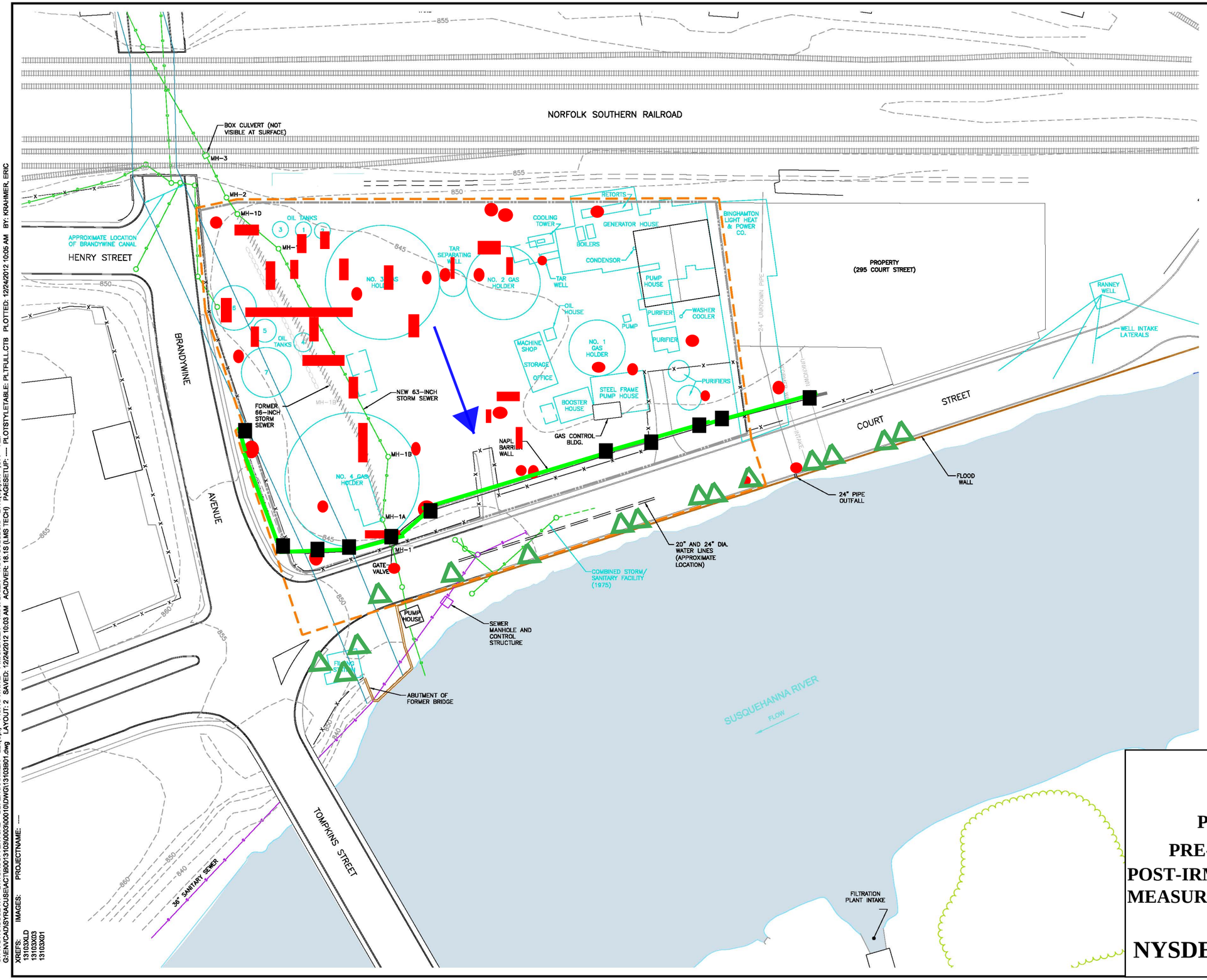
NYSEG
COURT STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Proposed Remedial Action Plan

SITE LOCATION

NYSDEC

FIGURE
2



TEST PITS WITH NAPL

SOIL/TEST BORINGS WITH NAPL

Nested NAPL Recovery Wells

Groundwater Flow Direction

Sentinel Monitor Wells

- FLOOD WALL
- OPERABLE UNIT BOUNDARY
- NYSEG PROPERTY LINES
- SANITARY SEWER LINE
- STORM SEWER LINE
- ABANDONED STORM SEWER LINE
- GROUND SURFACE ELEVATION (FT AMSL)
- NAPL BARRIER WALL
- JET GROUT PANEL
- HISTORICAL FEATURE
- BURIED CONCRETE WALL
- RAILROAD TRACK
- FENCE

NOTES:

1. BASE MAP PROVIDED BY NYSEG (JUNE 12, 1997).
2. SURFACE ELEVATIONS DIGITIZED FROM CITY OF BINGHAMTON MAP, SHEET 303; FLOWN DECEMBER 2, 1973 AND MAPPED APRIL 1, 1974.
3. ALL ELEVATIONS ARE REFERENCED TO MEAN SEA LEVEL USING NATIONAL GEODETIC VERTICAL DATUM OF 1929, HORIZONTAL DATUM: NAD 83 NEW YORK STATE CENTRAL 3102.
4. STORM SEWER LOCATION DIGITIZED FROM CITY OF BINGHAMTON MAP, SHEET 303, ENTITLED: PRELIMINARY REPORT, COMPREHENSIVE STORM DRAINAGE, EXISTING FACILITIES, PREPARED BY VERNON O. SHUMAKER, CONSULTING ENGINEER, VESTAL, NEW YORK, DATE NOT PROVIDED.
5. ALL LOCATIONS ARE APPROXIMATE. SITE PLAN DEPICTS BOTH HISTORIC AND CURRENT SITE FEATURES.

NYSEG
Court Street Former MGP Site
Binghamton, New York

Proposed Remedial Action Plan

PRE-IRM NAPL CONDITIONS WITH POST-IRM MONITORING AND RECOVERY MEASURES

NYSDEC **FIGURE 3**