Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision

NYSEG Cortland Homer
Former MGP Site, Operable Unit 02
Homer (V), Cortland County, New York
Site Number 7-12-005

March 2005

New York State Department of Environmental Conservation
GEORGE E. PATAKI, *Governor* DENISE M. SHEEHAN, *Acting Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

NYSEG Cortland Homer Former MGP Site
Operable Unit 02, Homer (Village),
Cortland County, New York
Site No. 7-12-005

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedy for Operable Unit 02 of the NYSEG Cortland Homer Former Manufactured Gas Plant (MGP) site. The selected remedial program was chosen in accordance with the New York State Environmental Conservation Law and is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300), as amended.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for Operable Unit 02 the NYSEG Cortland Homer inactive hazardous waste disposal site, and the public's 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 releases of hazardous waste constituents from this site, if not addressed by implementing the response action selected in this ROD, presents a current or potential significant threat to public health and/or the environment.

Description of Selected Remedy

Based on the results of the Remedial Investigation and Feasibility Study (RI/FS) for the NYSEG Cortland Homer Former MGP site and the criteria identified for evaluation of alternatives, the NYSDEC has selected the excavation of site impacted sediments from the West Branch of the Tioughnioga River, and stabilization of the downgradient land area. The components of the remedy are as follows:

- A remedial design program would be developed to provide the details necessary to implement the remedial program.

- Approximately 3,700 cubic yards of sediments contaminated with polycyclic aromatic hydrocarbons (PAHs) would be removed from the West Branch of the Tioughnioga River and sent off site for disposal. Please refer to Figures 10, 11, 12 and 13.

- All remedial and restoration activities in the Tioughnioga River must comply with the substantive conditions of Article 15 of the Environmental Conservation Law and 6 NYCRR Part 608.

- *In situ* stabilization of the subsurface impacted soil and NAPL in the downgradient area to a depth of 40 feet below ground surface (bgs).

- Provide 48 inches of soil backfill over the downgradient area to protect the stabilized soil from freeze/thaw conditions.

- A temporary interceptor trench would be constructed to collect non aqueous phase liquid (NAPL) migrating in the susbsurface from the site into the OU 2 area. The final disposition of this barrier would be dependent on the remedy selection for Operable Unit 1, the former plant site.

- Since the remedy would result in contamination above unrestricted levels remaining at the site, a site management plan (SMP) will be developed and implemented. The SMP will include the steps necessary to implement the institutional controls and engineering controls (IC/EC) identified for the site remedy, and the periodic evaluation of the effectiveness of the remedy on the banks, bed and river water quality of the Tioughnioga River.

- Imposition of an institutional control in the form of an environmental easement.

- The SMP will require the property owner to provide an annual IC/EC certification

New York State Department of Health Acceptance

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

Declaration

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

Date	Dale A. Desnoyers, Director Division of Environmental Remediation

TABLE OF CONTENTS

SECTION **PAGE**

I: SUMMARY OF THE RECORD OF DECISION 1

2: SITE LOCATION AND DESCRIPTION 2

3: SITE HISTORY 3
- 3.1: Operational/Disposal History 3
- 3.2: Remedial History 3

4: ENFORCEMENT STATUS 4

5: SITE CONTAMINATION 4
- 5.1: Summary of the Remedial Investigation 4
- 5.2: Interim Remedial Measures 12
- 5.3: Summary of Human Exposure Pathways: 12
- 5.4: Summary of Environmental Impacts: 13

6: SUMMARY OF THE REMEDIATION GOALS 14

7: SUMMARY OF THE EVALUATION OF ALTERNATIVES 14
- 7.1: Description of Remedial Alternatives 15
- 7.2: Evaluation of Remedial Alternatives 18

8: SUMMARY OF THE SELECTED REMEDY 19

9: HIGHLIGHTS OF COMMUNITY PARTICIPATION 22

Tables
- Table 1A: Nature and Extent of Subsurface Soil Contamination 23
- Table 1B: Nature and Extent of Surface Soil Contamination 23
- Table 1C: Nature and Extent of Groundwater Contamination 24
- Table 1D: Nature and Extent of Surface Water Contamination 24
- Table 1E: Nature and Extent of Sediment Contamination 25
- Table 2: Remedial Alternative Costs 26

Figures
- Figure 1: Site Location Map 27
- Figure 2: Historic Site Photo 28
- Figure 3: 1926 Sanborn Map of Site 29
- Figure 4: Historic/Current Use Overlay 30
- Figure 5: Summary of Sampling Locations - Phase I RI 31
- Figure 6: Cross Section B-B' 32
- Figure 7: Extent of Groundwater Contamination 33
- Figure 8: Extent of Soil Contamination 34

Figure 9: Extent of Operable Units 35
Figure 10: West Branch Tioughnioga, Sediment Overview 36
Figure 11: Extent of Sediment Contamination Near Site 37
Figure 12: Extent of Sediment Contamination Downstream 38
Figure 13: Extent of Sediment Contamination at Sediment Trap 39

Appendices
Appendix A: Responsiveness Summary A-1
Appendix B: Administrative Record B-1

RECORD OF DECISION

NYSEG Cortland Homer Former MGP Site
Homer (Village), Cortland County, New York
Site No. 7-12-005
March, 2005

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 (NYSDOH), has selected this remedy for Operable Unit 2 of the NYSEG Cortland Homer Former Manufactured Gas Plant (MGP) site. Operable Unit 2 (OU 2) of the site, consists of the off-site soils and contaminated sediments in the Tioughnioga River that are attributable to the site. The presence of hazardous waste has created significant threats to human health and the environment that are addressed by this proposed remedy. As more fully described in Sections 3 and 5 of this document, the production of manufactured gas and the generation of related by products have resulted in the disposal of hazardous wastes, including coal gas tars, carburetted water gas tars, and purifier waste. These wastes contain benzene, toluene, ethylbenzene and xylene, as well as a number of polycyclic aromatic hydrocarbons and cyanide. These wastes have contaminated soils, sediment and groundwater at the site as well as sediments in the Tioughnioga River. This contamination has resulted in:

- a significant threat to human health associated with current and potential exposure to contaminated site soils, contaminated groundwater, and contaminated river sediments.

- a significant environmental threat associated with the impacts of contaminants to the groundwater, river surface water and river sediments.

To eliminate or mitigate these threats, the NYSDEC has selected the following remedy for Operable Unit 2:

- A remedial design program would be developed to provide the details necessary to implement the remedial program.

- Approximately 3,700 cubic yards of sediments contaminated with polycyclic aromatic hydrocarbons (PAHs) would be removed from the West Branch of the Tioughnioga River and sent off site for disposal. Please refer to Figures 10, 11, 12 and 13.

- All remedial and restoration activities in the Tioughnioga River must comply with the substantive conditions of Article 15 of the Environmental Conservation Law and 6 NYCRR Part 608.

- *In situ* stabilization of the subsurface impacted soil and NAPL in the downgradient area to a depth of 40 feet below ground surface (bgs).

- Provide 48 inches of soil backfill over the downgradient area to protect the stabilized soil from freeze/thaw conditions.

- A temporary interceptor trench would be constructed to collect non aqueous phase liquid (NAPL) migrating in the subsurface from the site into the OU 2 area. The final disposition of this barrier would be dependent on the remedy selection for Operable Unit 1, the former plant site.

- Since the remedy would result in contamination above unrestricted levels remaining at the site, a site management plan (SMP) will be developed and implemented. The SMP will include the steps necessary to implement the institutional controls and engineering controls (IC/EC) identified for the site remedy, and the periodic evaluation of the effectiveness of the remedy on the banks, bed and river water quality of the Tioughnioga River

- Imposition of an institutional control in the form of an environmental easement.

- The SMP will require the property owner to provide an annual IC/EC certification.

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

SECTION 2: SITE LOCATION AND DESCRIPTION

The NYSEG Cortland Homer Former MGP Site is located at 216 South Main Street, in the Village of Homer, Cortland County, New York (see Figures 1 and 9). The site is approximately 2 acres in area and consists of two adjoining land parcels that are privately owned. The southern parcel contains a single story commercial building which is approximately 30,000 square feet. This building is occupied by a general plumbing and electrical supply store, and a utility company service and maintenance center. The northern parcel is utilized for parking.

The site is located just north of the City of Cortland, in the southern end of the Village of Homer. The site parcels are bordered by New York State (NYS) Route 11 to the east, the New York and Susquehenna railroad line to the west, and commercial properties to the north and south. East of NYS Route 11, is the West Branch of the Tioughnioga River. The west bank of the river is approximately 150 feet to the east of the site parcels. The parcel of land between the river and NYS Route 11, is owned by NYSEG and referred to as the downgradient area in this document. This downgradient land area, as well as the identified sediments in the Tioughnioga River, constitute OU 2 of the site which is the subject of this document. These areas represent the off-site areas which have been significantly impacted by contaminant migration from the site.

Operable Unit 1, the actual location of the former MGP, will be the subject of a separate PRAP at a future date.

The adjacent land uses include retail/convenience stores, automotive/equipment repair shops, gasoline service stations and a motel. A private residence and a recreational park containing athletic fields is located

immediately east of the river. The Cortland Country Club is located to the west of the site, beyond the railroad line.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

In 1858, the NYSEG Cortland Homer MGP plant was constructed and began supplying coal gas to the Village of Homer under the name, "Homer and Cortland Gas Light Company". Coal gas was produced on site until 1921, and then carburretted water gas was produced from 1921 to 1932. The gas holder was used until early 1935 for storing natural gas. Figure 2 is a picture which shows the MGP Plant as it stood some time between the years of 1915 and 1940.

A manufactured gas plant (MGP) is a facility where gas for lighting and heating homes and businesses was produced. Manufactured gas was produced at this site using the coal gas and the carburetted water gas processes. Coal gas was produced by heating coal in retorts or beehive ovens, carbonizing the coal in the absence of air. The carburetted water gas process involved the passage of steam through burning coal. This formed a gaseous mixture (water gas or blue gas) which was then passed through a super heater which had an oil spray. The oil spray would generate additional gas, enhancing the heat and light capacity of the overall gas mixture. In each process, the gas produced was condensed and purified prior to distribution.

Available records for the plant indicate that on-site coal tar production ranged from 19,528 gallons in 1907 to 51,347 gallons during 1913. Gas production in 1907 was 20,179,500 cubic feet of gas which was sold to 1,385 customers. Production had been expanded to approximately 600,000 cubic feet of gas per day by carburetted water gas processes in 1928. This translates to a potential for 219,000,000 cubic feet of gas per year.

In the 1940's, NYSEG partially decommissioned the plant. In 1944 the Brockway Motor Company purchased the subject property and razed the remaining structures. The building that presently stands on the site, is presumed to have been built by Brockway Motors and modified by subsequent owners.

3.2: Remedial History

Investigative activities at the site were initiated by NYSEG in 1985. These investigations identified an apparent source area of coal tar related compounds in subsurface soils at the site. Groundwater from monitoring wells downgradient of the site also contained coal tar related volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons (PAHs). Sediment samples from the Tioughnioga River collected adjacent to and downstream from the site contained PAHs. A surface water sample collected at one of the sediment sampling locations adjacent to the site had a detectable level of naphthalene.

In October of 1986, the NYSDEC first listed the site as a Class 2a site in the Registry of Inactive Hazardous Waste Disposal Sites in New York (the Registry). Class 2a is a temporary classification assigned to a site that has inadequate and/or insufficient data for inclusion in any of the other classifications. In December, 1987, the site was reclassified as Class 2. Class 2 sites are sites that present a significant threat to the public health or environment which require action.

Analytical tests for amenable cyanide identified these compounds in a seep sample collected in the basement of a building located between the site and the Tioughnioga River. Two air samples collected in the basement of this building and four exterior locations on the site indicated the presence of low levels of coal tar related substances in ambient air. NYSEG subsequently purchased this property and demolished the building.

Additional site evaluations were completed which included: an evaluation of Interim Remedial Measures, evaluation of groundwater treatment technologies, the evaluation of groundwater treatment at the Cortland Publicly Owned Treatment Works (POTW), assessment of health and environmental risks based on the existing data, and further site definition.

In March, 1994, New York State Electric and Gas Corporation (NYSEG) agreed to investigate and remediate the site as part of a multi-site consent order. Additional investigation of the site was undertaken in the form of a remedial investigation.

SECTION 4: ENFORCEMENT STATUS

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

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

SECTION 5: SITE CONTAMINATION

A remedial investigation/feasibility study (RI/FS) has been conducted to evaluate the alternatives for addressing the significant threats to human health and the environment.

5.1: Summary of the Remedial Investigation

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The RI was conducted between March 1994 and December 2003. The field activities and findings of the investigation are described in the RI report. The RI was preceded by various investigations detailed in the Remedial History, which confirmed the need for further investigation and evaluation of the site.

The following activities were conducted during the RI:

- Further research of historical information;
- A survey of public and private water supply wells in the area around the site;
- Completion of 25 additional soil borings, to observe subsurface geologic conditions and collect subsurface soil samples. Including the borings for the previous phases of work and monitoring wells, approximately 57 borings have been completed at the site;

- Excavation of 1 additional test pit (bringing the site total to 5), to directly observe subsurface conditions, subsurface structures and collect soil samples;

- Collection of approximately 49 subsurface soil samples (bringing the site total to approximately 83);

- Installation of approximately 13 additional monitoring wells (bringing the site total to 30) to evaluate groundwater flow and collect groundwater samples;

- Completion of slug testing on 17 monitoring wells to evaluate groundwater velocities and soil transmissivity;

- Completion of multiple rounds of sampling of the existing monitoring wells resulting in 52 samples (bringing the site total to 97);

- Completion of multiple rounds of groundwater elevation readings, to evaluate groundwater flow and the accumulation of non aqueous phase liquid;

- Completion of approximately 42 borings in the sediments of the Tioughnioga River (bringing the site total to 42);

- Collection of approximately 65 aquatic sediment samples (bringing the site total to 74);

- Collection of approximately 9 surface water samples (bringing the site total to 18);

- Collection of approximately 9 surface soil samples (bringing the site total to 9);

- Collection of approximately 13 passive soil gas samples from on-site and off-site locations (bringing the site total to 13);

- Collection of approximately 3 sub slab soil vapor samples from the on-site building (bringing the site total to 3);

- Collection of approximately 6 ambient and indoor air samples (bringing the total to 13);

- Collection of approximately 2 subsurface soil samples for Toxicity Characteristic Leaching Procedure (TCLP);

- Completion of a Fish and Wildlife Impact Analysis through Step II C;

To determine whether the OU 2 area groundwater, subsurface soil, river sediments and surface water contain contamination at levels of concern, data from the investigation were compared to the following SCGs:

- Groundwater, drinking water, and surface water SCGs are based on NYSDEC "Ambient Water Quality Standards and Guidance Values" and Part 5 of the New York State Sanitary Code.

- Soil SCGs are based on the NYSDEC "Technical and Administrative Guidance Memorandum (TAGM) 4046; Determination of Soil Cleanup Objectives and Cleanup Levels".

- Sediment SCGs are based on the NYSDEC "Technical Guidance for Screening Contaminated Sediments."

- Background surface soil and sediment samples were taken from approximately 8 locations.

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 SRI report.

5.1.1: Site Geology and Hydrogeology

The RI activities, as well as those in the remedial history, have defined the site geology and hydrogeology. Site features and boring locations are shown on Figures 4 and 8. A cross section of the site geology is included as Figure 6.

The site is located in the Homer Preble Valley. This is within the Homer Preble Sole Source Aquifer. The regional geology is reported to consist of stratified drift and glacial outwash deposits. These deposits can be up to 240 feet thick.

In the Homer Preble Valley, the base of the aquifer is a lacustrine clay at a depth of approximately 60 feet below grade. Geologic cross sections of the valley prepared by the United States Geologic Service (USGS) indicate that this deposit may be over 100 feet thick in this area. This deposit overlays a thin layer of sand and then bedrock that is predominately shale with minor siltstone and fine grained sandstone. In the City of Cortland, there is a confined outwash aquifer, as well as the surficial outwash aquifer.

Wells drilled in the outwash aquifer in the Homer Preble Aquifer have been reported to have yields of 1,000 gallons per minute (gpm). The area of the site is served by public water from the Village of Homer wellfield located approximately 1.5 miles north of the site. However, private wells have been identified within 500 feet of the site. The identified wells are beyond the area of identified groundwater contamination from the site, and appear to be hydraulically sidegradient to the site.

The site investigations confirmed the site is underlain (in descending order) by a anthropogenic fill layer, a glacial outwash sand, and a laminated gray silt. The fill layer ranges from 6 inches to 10 feet on site, and the outwash sand varies in thickness from 20 to 40 feet. The laminated gray silt was found to be continuous throughout the site area. This layer was further examined in the remedial investigation and is considered to contain enough clay to be more aptly described as a silt/clay unit, consistent with regional geologic data. As such, it is considered a confining unit. It is presumed from the literature that this confining layer is underlain by a thin layer of sand and then bedrock.

Groundwater at the site is encountered at approximately 5 feet below the ground surface, in the glacial outwash deposits. A seasonal fluctuation of 1 to 1.5 feet has been observed. The groundwater flows across the site in a east to east southeast direction. The flow is primarily horizontal, consistent with the stratified nature of the aquifer. The groundwater then discharges into the West Branch of the Tioughnioga River. This is consistent with regional groundwater, which flows into the Tioughnioga River.

Site monitoring wells on the east bank of the Tioughnioga River, across the river from the site, confirm the river is a hydrogeologic divide as groundwater flows towards the river from both sides. Similarly, deep wells at the site have identified a slight upward gradient in the vicinity of the river.

Both the site groundwater and contaminants flow horizontally through the more permeable geologic units at the site, particularly the coarser sand lenses, apparently discharging through the banks and sediments of the West Branch of the Tioughnioga River. As noted previously, the river is located approximately 150 feet east of the site parcels.

The West Branch of the Tioughnioga River flows to the south east out of the valley. The river flows to the south past the site, where it joins Dry Creek, at the sediment trap on the northern edge of Cortland. The West Branch then flows eastward for another mile before joining the East Branch of the Tioughnioga River on the eastern edge of the City of Cortland.

This section of the river generally consists of riffles, slack waters and pools. The river in the immediate vicinity of the site is approximately 50 feet wide and generally varies from 1-3 feet in depth, based on seasonal and specific location, with a maximum depth of over 8 feet in the pool above the sediment trap. USGS gauging data in the City of Cortland indicate the river has a mean flow of 650 cubic feet per second (cf/s), with a maximum of 2010 cf/s.

The river sediments in this reach of the river primarily consist of coarse sand and gravel with cobbles and boulders. Along much of the riverbed, fine grained sediments are sparse with accumulations in depositional and backwater areas.

This stream segment is classified C(T), meaning its designated use is fish propagation and survival as well as primary and secondary contact recreation, although other factors may limit the use for these purposes. The (T) designates this stream segment as trout water, with more stringent water quality standards in place for dissolved oxygen and ammonia to protect these sensitive aquatic organisms. Historically, the NYSDEC stocks this segment of the river with brown trout.

5.1.2: Nature of Contamination

As described in the SRI report, many soil, groundwater, air, soil vapor, surface water and sediment samples were collected to characterize the nature and extent of contamination. As summarized in Table 1, the main categories of contaminants that exceed their SCGs are volatile organic compounds (VOCs), and semivolatile organic compounds (SVOCs).

The VOCs of concern are benzene, toluene, ethylbenzene and xylene. These compounds are referred to as BTEX in this document and are a common component of coal and carburetted water gas tars. Of these compounds, benzene which is a known human carcinogen, is the most significant.

SVOCs of concern are primarily polycyclic aromatic hydrocarbons (PAHs). The specific compounds of concern at this site, which are commonly found at MGP sites are:

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	*dibenzo(a,h)anthracene*
pyrene	

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

The main inorganic contaminant of concern at this site is cyanide. Cyanide is commonly found at MGP sites where waste from gas purification is present. Levels of cyanide have been found in site soils and site groundwater, however these levels are below SCGs for both media. Further, the cyanide exists in a relatively stable form, ferrocyanide.

Similarly levels of ammonia have been found in groundwater below SCGs. Ammonia is commonly found at MGP sites that reprocessed tars for ammonia recovery.

Tars and purifier wastes are two major types of waste present at this site and are typically found at former MGP sites. Coal tars and carburetted water gas 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. However, due to the closeness of the density of MGP tars to that of water and the variability of their physical properties depending on the specific MGP plant processes, they are also observed as NAPL that float on the water surface (LNAPL) or as neutrally buoyant.

Tars were disposed, spilled or leaked from tanks, gas holders, tar wells 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, at various depths below the ground surface. These discrete intervals of NAPL can be quite thin and are often found in the more permeable deposits, (i.e. coarse sand lenses), at the perimeter of the site. Overall, this tar appears to have migrated to and accumulated on the silt/clay layer underneath the site and into the banks and sediments of the West Branch of the Tioughnioga River.

Tars contain high levels of PAH compounds, often greater than 100,000 parts per million. Tars also typically exceed SCGs for BTEX by several orders of magnitude. The tar is a source of the BTEX and PAHs identified in various media at the site and discussed in section 5.1.3.

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 carburetted water gas process at former MGPs and frequently leaked into the subsurface. LNAPL also has high concentrations of BTEX and PAH compounds.

Purifier waste covers a variety of materials used to remove sulfur and other undesirable compounds from the manufactured gas before distribution to the public. Materials used for this purpose at the site, included

wood chips impregnated with iron oxide. Purifier materials which were no longer capable of removing the impurities were often disposed on site as fill. This waste contains high concentrations of sulfur and cyanide and has a characteristic blue color from the ferric/ferrocyanides when present at high levels. Cyanide and sulfur from this waste can impact site soils, groundwater and sediment. Sulfur and cyanide may also be present in the tars from MGP processes.

Certain metals were found in excess of either TAGM guidance values or background concentrations. In general, the metals levels are consistent with background concentrations or coincided with areas of identified site impacts (BTEX/PAHs). Therefore, metals were not identified as a contaminant of concern for the site.
Similarly, the RI found site groundwater that comes into contact with the NAPL or more heavily impacted soils, results in the contamination of the groundwater and aqueous phase migration of the contaminants.

5.1.3: Extent of Contamination

This section describes the findings of the investigation for all environmental media that were investigated and are associated with the OU 2 area.

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

Table 1 summarizes the degree of contamination for the contaminants of concern and compares the data with the SCGs for the site. The following are the media which were investigated and a summary of the findings of the investigation.

MGP Waste Material

The source of much of the BTEX and PAH contamination found at the site, in both OU 1 and OU 2, is the tar or NAPL which is found both in and around the various subsurface structures, or is migrating through the subsurface. 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 discrete seams with staining and/or sheen. Either of these conditions generally coincides with high BTEX and PAH concentrations in soils and typically results in significant impacts to the groundwater as well. Areas of significant waste have been termed "source materials" and are defined as: free tar and tar saturated soils, soils containing PAHs in excess of 1,000 ppm, soils containing reactive cyanide at concentrations above 500 ppm, or soils containing reactive sulfide at concentrations above 250 ppm. At the site, these "source materials" appear to be directly associated with several of the former plant structures, many of which remain on site below the current building. The extent of these "source materials" is identified on Figure 8, as well as the extent of those soils containing VOCs and SVOCs above TAGM guidance values.

Surface Soil

The surface soils at the site and the downgradient area are generally not impacted by the former MGP operations. The majority of the site surface is either fill that was placed after MGP operations ceased, or asphalt pavement. Although site constituents were found above analytical detection limits, they are orders of magnitude below those found in the "source materials", and are comparable to background soil samples.

Overall, TPAHs detected in surface (0-1 inch) samples ranged from 1.5 to 34.7 ppm. Values for TPAHs in the two samples collected on site were 10.5 and 34.7 ppm. A sample collected from the downgradient area contained 1.5 ppm of TPAHs.

Two background surface soil samples collected from areas around the site not affected by the MGP ranged from 5.9 to 7.1 ppm for TPAHs. TPAHs are common in fuel and coal residues, therefore they are common in developed areas.

Subsurface Soil

During the RI, approximately 49 subsurface soil samples were collected and analyzed. These samples found certain areas of the site were heavily impacted by MGP related constituents, while other areas had more discrete impacts.

Tar occurs most frequently near the former MGP structures. The area with greatest evidence of NAPL occurs around the former gasholders and other structures under the on-site building. These impacts then extend vertically to the top of the silt/clay layer, approximately 40 feet below ground surface (bgs), and laterally approximately 150 feet to the West Branch of the Tioughnioga River. Please refer to Figure 6. This lateral migration is the subsurface migration pathway to be addressed by OU 2.

Contaminant concentrations are generally higher on site (OU 1) and become more limited, in concentration and physical extent, to the east of the site building under New York State Route 11 and the area between Route11 and the Tioughnioga River (the OU 2 or downgradient area). NAPL at these locations occurs primarily as staining and/or sheens in discrete vertical zones, particularly towards the top of the water table and directly above the silt/clay unit. To illustrate, NAPL has been observed at 9 to 10 feet bgs and 36 to 37 feet bgs in SB-16B. DNAPL has been observed off site at 32 to 34 feet in MW-27D.

Analytical results for subsurface soil samples in the downgradient area reached a maximum value of 38.1 ppm for BTEX and 160 ppm for TPAHs, while on site they were observed as high as 1,052 and 2,684 ppm respectively .

Figures 5, 6, 7 and 8 illustrate subsurface conditions through the site and downgradient area.

Sediments

During the RI, approximately 65 analytical sediment samples were collected from the West Branch of the Tioughnioga River. These samples were collected from 35 boring locations up to 8 feet below the river bottom. These boring locations were spaced at approximately 300 foot intervals, then biased on sediment conditions and visual observations. These borings covered approximately 7,000 feet of river.

These visual observations include two previous RI sampling events, including ten borings driven to 4 feet below the river bottom in the immediate proximity of the site. Two separate probing events were also performed, including one with transects across the river at 25 foot intervals that began 400 feet upstream of the site and extended to 600 feet downstream of the site. These efforts identified a solid, pliable, black tar like material with strong odors from transects 10 to 19, which had an overall depth of less than 0.5 feet. Please refer to Figures 10 and 11.

The analytical samples verified that this stretch of the river, in the immediate proximity of the site, is heavily impacted by PAHs and BTEX. Levels ranged from: non detect (ND) to 31 ppb of BTEX in SED-19A, ND to 3,523 ppm of TPAHs in SED-17A, and ND to 10 ppm of cyanide in SED-19B.

Downstream of the site, contamination appears to be predominately located in depositional areas of the river. During the probing events, impacts in the form of sediments capable of producing sheens were observed at four locations: north and south of a constriction due to a bridge crossing approximately 950 feet south of the site, and at two locations associated with a meander/bend approximately 4,000 feet downstream of the site.

Tar was also observed in the west bank of the river corresponding with the sheens observed to the north of the previously mentioned bridge. These findings are consistent with previous experience where the PAH contaminants transported from the site would accumulate in the fine grained sediments of the river system. The analytical levels from this downstream stretch support this assessment, although they are influenced by the presence of other anthropogenic sources (resulting from the influence of human beings), such as storm water outfalls, debris, etc.

Analytical samples collected downstream of the site found the levels of PAHs and BTEX to vary widely: from ND to 3,570 ppm of PAHs, and ND to 309 ppb of BTEX. The highest levels generally correspond with the identified depositional areas identified on Figures 12 and 13. These analytical samples also identified chlorinated solvents that are not related to the MGP.

For comparison purposes, levels detected upstream of the site ranged from ND to 6.2 ppm of TPAHs. The lowest levels were found at depths 4 to 8 feet below the river bottom. Chlorinated solvents were also detected in the upgradient sampling points.

Metals were also detected in all of the river sediment samples. Metals are naturally occurring. The detections do not appear to identify site related contamination beyond those associated with TPAHs and BTEX.

The investigative program ended at the sediment trap that was identified below the impacted meander of the river. This structure is considered a sediment trap and represents the distance that MGP impacted sediments can be reasonably expected to migrate.

Groundwater

The RI identified significant groundwater contamination at the site. This groundwater contamination originates in the area of the former MGP structures under the on-site building and extends beyond the site to the Tioughnioga River. In the vicinity of the site, the groundwater discharges to the river. Monitoring wells installed on the opposite bank of the river, the east bank, show no impacts from the site.

Levels of groundwater contamination observed on the downgradient parcel during the RI ranged from: ND to 882 ppb of BTEX, 4 to 3,116 ppb of TPAHs, and ND to 109 ppb of cyanide. Please refer to Figure 7.

The BTEX compounds are the most mobile of the groundwater contaminants and all were present well above their individual groundwater quality standards.

Surface Water

During the RI, nine surface water samples were collected from the Tioughnioga River in the vicinity of the site. The sample location closest to the site, SW-5, found low levels of two chemicals (naphthalene and

benzo(a)anthracene) that are common MGP contaminants. The corresponding sediment sample from this location contained 179 ppm of TPAHs, 110 ppm of naphthalene, and 1.1 ppm of benzo(a)anthracene.

Sheens have also been observed on the water surface in the Tioughnioga River, which is a contravention of surface water quality standards.

Background Samples

Six background sediment samples were collected from the West Branch of the Tioughnioga River to assess local sediment quality. These samples were collected upstream of the site at locations SED 10A, SED 10B, SED 11A, SED 11B, SED 8 and SED 7. Please refer to Figure 11.

These samples were collected to assess the condition of local sediment quality resulting from anthropogenic or natural occurrences. These sediment samples found metal levels that were generally comparable to those observed in the site vicinity. They also resulted in a background level of TPAHs in the surface sediments of 6.2 ppm, sample SED 8. Therefore, a TPAH level of 6.2 ppm will be utilized as background for the site.

Two background soil samples were collected from across Route 11, SSS-5 and SSS-6. These samples were collected from the surface soils to assess the condition of local soil quality, due to anthropogenic or natural occurrences.

These soil samples found metal levels that were generally comparable to those observed on the site and TPAH levels of 7 and 5 ppm.

5.2: 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. There were no IRMs performed at this site during the RI/FS.

5.3: Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the human exposure pathways can be found in Section 8 of the Final Remedial Investigation report.

An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has five elements: [1] a contaminant source, [2] contaminant release and transport mechanisms, [3] a point of exposure, [4] a route of exposure, and [5] a receptor population.

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

direct contact). The receptor population is the people who are, or may be, exposed to contaminants at a point of exposure.

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

At this site the potential exposure pathways are:

- Dermal contact with contaminated soil, groundwater, or sediments;
- Incidental ingestion of contaminated soils, groundwater, or sediments; and
- Inhalation of contaminated soil vapors.

Human exposures to contaminated soil is unlikely because soil contamination is subsurface and the area is covered by a building, gravel, or grass. However, future development of the downgradient area could bring contaminated soils to the surface. No one is currently using the site groundwater for drinking or other uses and municipal water is available, however, the potential for human exposures to contaminated groundwater exists if a well were installed. There is currently a small metal skinned storage building on the downgradient area that is not occupied, therefore the potential exposure to indoor air contamination is limited. A potential human exposure pathway exists through dermal contact and incidental ingestion to Tioughnioga River sediments that are affected by site-related contaminants.

5.4: Summary of Environmental Impacts

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

Fish and wildlife resources were identified in the OU 2 area consisting of the downgradient area and the Tioughnioga River. The river supports fish and benthic communities, as well as higher organisms (birds, mammals, etc.) that are present in the habitats found in the surrounding area. The river and its banks provide a valuable corridor of riparian habitat that higher wildlife may use to feed in, propagate, and migrate through the surrounding areas. No threatened or endangered species are present within a 2.0 mile radius of the site according to state and federal records.

The Fish and Wildlife Impact Analysis, which is included in the SRI report, presents a detailed discussion of the existing and potential impacts from the site to fish and wildlife receptors. The following environmental exposure pathways and ecological risks have been identified:

- Sediments in the river contain levels of PAHs that exceed the severe effect level (SEL) in NYSDEC screening criteria, and exceed the background sample values.
- The direct contact by aquatic fauna and flora with NAPL and contaminated sediments on the river bottom.

- Impact of contaminants from NAPL and sediments to the overlying surface water.
- The potential for direct contact by aquatic fauna and flora with NAPL discharges.
- The potential for direct contact by terrestrial fauna and flora with NAPL and contaminated subsurface soils.

Site contamination has also impacted the groundwater resource in the unconsolidated geologic units.

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. 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 remediation goals for Operable Unit 2 of this site, the downgradient area as well as the identified sediments in the Tioughnioga River that are attributable to the site, are to eliminate or reduce to the extent practicable:

- Human and wildlife contact with sediments and bank deposits contaminated by site related constituents.
- Human and wildlife contact with subsurface soils contaminated by site related constituents and/or NAPL.
- Migration of tar, as both LNAPL and DNAPL, into the surface waters, bank deposits, and sediments of the West Branch of the Tioughnioga River.
- Human and wildlife exposure to NAPL in the surface waters, bank deposits and sediments of the West Branch of the Tioughnioga River.

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

- Attainment of NYSDEC ambient groundwater and surface water quality standards

SECTION 7: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. Potential remedial alternatives for the Cortland Homer Former MGP Site, for both Operable Units 1 and 2, were identified, screened and evaluated in the FS report. The FS report is available for further review at the document repositories identified in Section 1.

A summary of the remedial alternatives that were considered for the site related contaminants in the West Branch of the Tioughnioga River are discussed below. These alternatives have been modified from those in the FS to account for the downgradient and river remedy being considered prior to the former MGP site. The following alternatives incorporate components evaluated in the FS, and include the addition of a shallow NAPL interceptor trench to reduce the potential for NAPL and groundwater contaminants to migrate around the remediated downgradient area.

The present worth value represents the amount of money invested in the current year that would be sufficient to cover all present and future costs associated with the alternative. This enables the costs of remedial alternatives to be compared on a common basis. As a convention, a time frame of 30 years is used to evaluate present worth costs for alternatives with an indefinite duration. This does not imply that operation, maintenance, or monitoring would cease after 30 years if remediation goals are not achieved.

7.1: Description of Remedial Alternatives

The following potential remedies were considered to address the contaminated bank deposits, sediments, surface water and groundwater in the West Branch of the Tioughnioga River and the subsurface soil in the downgradient area of the site.

The alternatives considered were developed to address the contaminated sediments near the site, Alternatives 2 and 3, and the contaminated sediments located further downstream, Alternative 4. This was done as the shallow nature and physical access available to the river near the site, due to NYSEG ownership of the downgradient area, alters the viability of the remedial approaches.

Alternative 1: No Action

Present Worth: $479,000
Capital Cost: $70,000
Annual OM&M (Years 1-30): $39,000

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. It would require continued monitoring only, allowing the site to remain in an unremediated state.

This alternative would require the use of institutional controls to restrict public access to the area. This alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment.

Alternative 2: High Capacity Vacuum Extraction of NAPL and Contaminated Sediments Near the Site, *In Situ* Stabilization of the Downgradient Area (from NYS Route 11 to the River)

Present Worth: $4,100,000
Capital Cost: $3,300,000
Annual OM&M (Years 1-30): $68,000

For Alternative 2, a sediment control structure would be installed to isolate the contaminated area, as delineated in Figure 11. The contaminated sediment and NAPL in this area would then be removed by vacuum extraction equipment.

Approximately 2,400 cubic yards of sediment would be removed from the river bottom and transferred to lined storage pads. The water and sediment would be separated and taken to a permitted off-site facility for treatment and/or disposal. After excavation, the river bottom would be restored to maintain bank stability and general grade, and then naturally reestablish itself.

The estimated volume for removal is based on the removal of sediment to approximately two feet below the current bottom elevation. The actual depth and extent of removal would be field determined to provide for the removal of all free tar or NAPL present in any form, and all significant sediment deposits containing TPAHs that are attributable to the site in exceedance of background. Background for this remedial action has been defined as 6.2 ppm of TPAHs. The conceptual extent of this removal is represented in Figure 11.

In conjunction with the remediation of these sediments, *in situ* stabilization of the contaminated soil and NAPL would be performed on the downgradient land area (from NYS Rte. 11 to the river) to an approximate depth of 40 feet. Approximately 48 inches of soil cover would be provided to protect the stabilized soils from frost, as well as dermal contact.

In place stabilization of these site soils and contaminants means they would be chemically bound in place to form a stable solid matrix. Large augers are typically used to inject the stabilizing reagents and mix them with the impacted material. Excess volume generated by the bulking of the soils by the stabilizing reagents would be used to regrade the site. The shallow NAPL interceptor trench would remain until the OU 1 remedy is in place.

To prevent future exposure to the stabilized contaminants beneath the soil cover and contaminated on-site groundwater, land and groundwater use restrictions would also be a component of this alternative.

A Site Management Plan (SMP) would be required to detail these restrictions, maintain the NAPL interceptor trench, and evaluate the effectiveness of the remedy. The SMP would require the property owner to provide an Institutional Control/ Engineering Control (IC/EC) certification annually. The certification would be prepared and submitted by a professional engineer or environmental professional acceptable to the Department.

Additional details of this approach can be found in the FS under media specific alternatives: alternative 2 for contaminated sediment adjacent to the site, and alternative 2 for downgradient area NAPL and contaminated soil.

Alternative 3: Excavation of NAPL and Contaminated Sediments Near the Site, Containment of the Downgradient Area

Present Worth: $5,930,000
Capital Cost: $3,330,000
Annual OM&M: (Years 1-30): $209,000

For Alternative 3 a temporary dike would be installed to isolate and lower the water level in the contaminated area, as approximated in Figure 11. The contaminated sediment and NAPL in this area would then be removed by excavation with standard construction equipment.

Approximately 2,400 cubic yards of sediment would be removed from the river bottom and transferred to lined containment cells. The water and sediment would be separated, then taken to a permitted off-site

facility for treatment and/or disposal. After excavation, the river bottom would be restored to maintain bank stability and then allowed to naturally reestablish itself.

The estimated volume for removal is based on the removal of sediment to approximately two feet below the current bottom elevation. The actual depth and extent of removal will be field determined to provide for the removal of all free tar or NAPL present in any form, and all significant sediment deposits containing TPAHs that are attributable to the site in exceedance of background. Background for this remedial action has been defined as 6.2 ppm of TPAHs. The conceptual extent of this removal is represented in Figure 11.

In conjunction with the remediation of these sediments, the downgradient area would be contained with approximately 500 feet of sealable joint sheet piling installed into the silt/clay aquitard, approximately 40 feet below grade. A low permeability soil cover would be installed over the enclosed area with a surface treatment suitable to the end use of the property to form a containment cell. The shallow NAPL interceptor trench would be placed outside the MGP side of the cell.

Groundwater extraction wells would be installed in this containment cell to remove infiltration from the underlying aquitard. The details would be completed as part of the remedial design, but conceptually three wells will be required with a combined extraction rate of 25 gallons per minute (gpm). Dissolved phase contaminants and NAPL would also be extracted from the containment cell for treatment/disposal.

A SMP would be required to detail these restrictions and to maintain the dewatering system, NAPL interceptor trench, and evaluate the effectiveness of the remedy.

Additional details of this approach can be found in the FS under media specific alternatives: alternative 3 for contaminated sediment adjacent to the site, and alternative 3 for downgradient area NAPL and contaminated soil.

Alternative 4: High Capacity Vacuum Extraction of NAPL and Contaminated Sediments Downstream

Present Worth: $760,000
Capital Cost: $710,000
Annual OM&M (Years 1-30): $4,000

Alternative 4 the downstream areas of sediment impact would include the installation of a sediment control structure installed to isolate the six discrete contaminated areas. The contaminated sediment and NAPL in these areas would then be removed by vacuum extraction equipment.

Approximately 1,300 cubic yards of sediment would be removed from the river bottom and transferred to lined dewatering cells. The water and sediment would be separated, then taken to a permitted off-site facility for treatment and/or disposal. After excavation, the river bottom would be restored to maintain bank stability and general grade, then allowed to naturally reestablish itself.

The estimated volume for removal is based on the removal of 3 feet of sediment in the vicinity of sample locations SED 38, SED 39, SED 40 and SED 41. Approximately 10 feet of sediments would be removed in the vicinity of SED 43. These sampling locations represent the contaminated bank and sediment deposits near the sediment trap, the conceptual extent of which is represented in Figures 12 and 13.

The actual depth and extent of removal will be determined in the design to provide for the removal of all free tar or NAPL present in any form and all significant sediment deposits containing TPAHs attributable to the site in exceedance of background level defined as 6.2 ppm of TPAHs.

In addition to these three deposits near the sediment trap, the three areas of contaminated bank deposits observed at the bridge located approximately 950 feet downstream of the site would also be removed. In conjunction with the design and remediation of these sediments, any significant additional deposits of site contaminants identified between the sediment trap and the site would be delineated and removed.

Additional details of this approach can be found in the FS under media specific alternative 2 for contaminated sediment at the sediment trap.

7.2 Evaluation of Remedial Alternatives

The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375, which governs the remediation of inactive hazardous waste disposal sites in New York State. A detailed discussion of the evaluation criteria and comparative analysis is included in the FS report.

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

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

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

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

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

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

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

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction of the remedy and the ability to monitor its effectiveness. For administrative feasibility, the availability of the necessary

personnel and materials is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, institutional controls, and so forth.

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

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

8. Community Acceptance. Concerns of the community regarding the RI/FS reports and the PRAP have been evaluated. The responsiveness summary (Appendix A) presents the public comments received and the manner in which the NYSDEC addressed the concerns raised. No significant comments were received.

SECTION 8: SUMMARY OF THE SELECTED REMEDY

Based on the Administrative Record (Appendix B) and the discussion presented below, the NYSDEC has selected both: Alternative 2, High Capacity Vacuum Extraction of NAPL and Contaminated Sediments Near the Site, *In Situ* Stabilization of the Downgradient Area (From NYS Route 11 to the River); and Alternative 4, High Capacity Vacuum Extraction of NAPL and Contaminated Sediments Near the Sediment Trap. Together, these alternatives provide for a comprehensive remedy for the entire stretch of the West Branch Tioughnioga that appears significantly impacted by the site. The elements of this remedy are described at the end of this section.

The selected remedy is based on the results of the RI and the Department's evaluation of alternatives presented in the FS.

Alternatives 2 and 4 are being proposed because together, as described below, they would satisfy the threshold criteria of being protective to human health and the environment and comply with New York State standards, criteria and guidance. Further, they provide the best balance of the primary balancing criteria described in Section 7.2.

Alternative 2 would best achieve the remediation goals for Operable Unit 2 by removing the MGP impacted materials present in the contaminated sediments in the Tioughnioga River that are clearly attributable to the site. These waste materials represent the most significant threat to public health and the environment. Their removal would greatly reduce the heaviest contamination to the river. However, this alternative alone would leave pockets of significant contamination in the sediments and bank deposits downstream of the site, but in conjunction with Alternative 4, which extends the removal to the areas of additional MGP impacted materials present downstream of the site, would create the conditions needed to restore surface water and sediment quality to the maximum extent practicable. Together, these alternatives would comply with New York State standards, criteria and guidance.

Alternative 1 has been rejected as a remedy since it would not satisfy the threshold criteria of being protective of public health and the environment; and complying with New York State standards, criteria and guidance.

Alternative 3 would also comply with the threshold criteria, but at a significant increase in effort with little benefit in comparison to the preferred alternatives. Alternative 3 would contain the contaminants in the

downgradient area and would not reduce the toxicity of the waste, but would incur significantly larger operation and maintenance costs. Alternative 2 would permanently treat the contaminants and reduce their toxicity and mobility.

Alternatives 2, 3, and 4 would all have comparable short-term impacts which would need to be controlled with a health and safety plan, and engineering controls as needed. The time needed to achieve the remediation goals and potential for adverse short term impacts for this operable unit is largely a function of the time and activities required for remedial construction. Hence they would be greatest for Alternative 2, due to the larger volume of material to be excavated. Alternative 4 would also require additional river access from third party property owners. Construction of the *in situ* stabilized monolith and the containment cell are both estimated at 2 to 3 months.

Achieving long-term effectiveness and permanence would be best accomplished by removal of the contaminated materials present in the operable unit. All of the considered alternatives utilize this approach for the significantly impacted stream and bank deposits, which are the areas with the greatest health and environmental exposures.

Alternatives 2 and 3 would respectively utilize *in situ* stabilization and containment for the impacted subsurface soils in the downgradient area. Although the removal of these soils would be possible, with a substantial increase of effort, their removal would provide little additional benefit since those contaminated soils are located at depth where exposure is limited. These alternatives would, however, eliminate the migration of NAPL to the River, which is the primary goal of this aspect of the remedy.

The containment component of Alternative 3 would be considered effective and permanent during the thirty year term utilized for this evaluation. The *in situ* stabilization component of Alternative 2 would also be considered to be effective and permanent, although the long term data for this technology is limited at this time. Alternative 2 would require a larger design effort to address this degree of uncertainty regarding the long term effectiveness and implementability due to the need for a treatability study/ pilot test.

Alternative 2 would result in removal or stabilization of most of the chemical contamination related to this operable unit, including source materials, thus greatly reducing the mobility and toxicity of the waste and the resulting need for groundwater and NAPL treatment/containment. However, it would increase the volume of contaminated material as stabilization can bulk up the volume of impacted soil. Alternative 3 would rely on the long term integrity of the institutional and engineering controls.

Alternatives 2 and 3 would be relatively easy to implement as they both employ proven construction means that would be readily available. Although the containment of source areas in the downgradient area for Alternative 3 may prove challenging, due to dewatering difficulties and the required depth of the containment cell, these are manageable logistic concerns.

In situ stabilization is considered an innovative technology for MGP wastes and, as such, a pilot test would be needed on the site specific contaminated materials to ascertain the effectiveness, methodology, and cost of the stabilization method that would best solidify the site contaminants.

The cost of the alternatives varies significantly. Vacuum extraction of the sediments is slightly less expensive than excavation (Alternatives 2 and 3). However, both are acceptable and effective methods for removal of the contaminated sediments and waste material from the river bottom and banks.

In situ stabilization and containment of the contaminated subsurface soils and waste in the downgradient area would be the greatest cost items in the considered alternatives. *In situ* stabilization (Alternative 2),

would appear more cost effective due to the lower and more predictable operation and maintenance costs associated with this technology versus those for maintaining a containment cell.

The estimated present worth cost to implement the remedy is $4,860,000. The capital cost to construct the remedy is estimated to be $4,010,000 and the estimated average annual operation, maintenance, and monitoring costs for 30 years is $ 72,000.

The elements of the selected remedy are as follows:

1. A remedial design program to verify the components of the conceptual design and provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program. Further delineation of NAPL impacts in the areas identified for removal in Figures 11, 12, and 13; and any significant additional deposits of site contaminants identified between the sediment trap at Dry Creek and the site would be delineated during the design.

2. Sediments contaminated with 6.2 ppm of site related TPAHs or NAPL would be removed and transported off site for thermal treatment and/or disposal. NAPL impacted areas would be defined as those sediments which contain free tar or oil present in any form and sediment that is capable of generating a sheen when disturbed. The precise limits, depths and volume of the excavations would be defined in the remedial design. The estimated volume of sediment excavation would be 3,700 cubic yards.

3. All remedial and restoration activities in the Tioughnioga River must comply with the substantive conditions of Article 15 of the Environmental Conservation Law and 6 NYCRR Part 608.

4. The contaminated subsurface soils and NAPL in the downgradient area, down to the underlying silt/ clay layer at approximately 40 feet bgs, would be stabilized in place to prevent recontamination of the river sediments. The *in situ* stabilization method would be verified during the remedial design by a pilot test/treatability study.

5. Provide 48 inches of soil backfill over the downgradient area to protect the stabilized soils from freeze/thaw conditions.

6. A shallow NAPL interceptor trench would be installed to mitigate the potential for NAPL to migrate around the stabilized monolith and into the Tioughnioga River. The need and configuration for the trench would be reevaluated as part of the Operable Unit 1 remedy selection process.

7. Since the remedy results in contamination above unrestricted levels remaining in the operable unit, a site management plan (SMP) would be developed and implemented. The SMP would include the institutional controls and engineering controls to: (a) address residual contaminated soils that may be excavated from the downgradient area (between NYS Route 11 and the river) during future redevelopment. The plan would require soil characterization and, where applicable, disposal in accordance with NYSDEC regulations; (b) evaluate the potential for vapor intrusion for any buildings developed in the downgradient area (between NYS Route 11 and the river), including provision for mitigation of any impacts identified; (c) provide for the annual inspection of the site cover; (d) monitor the groundwater and any other appropriate media; (e) identify any use restrictions on downgradient area development or groundwater use; and (f) and evaluate the efficacy of the remedy to control the releases and removal of site PAHs and NAPL through periodic evaluation of the banks, bed and river water quality of the Tioughnioga River.

8. Imposition of an institutional control in the form of an environmental easement that would: (a) require compliance with the approved site management plan, (b) limit the use and development of the property to commercial or industrial uses only; (c) restrict use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the Cortland County Department of Health; and, (d) require the property owner to complete and submit to the NYSDEC an annual Institutional Control/ Engineering Control (IC/EC) certification.

9. The SMP will require the property owner of the downgradient area (between NYS Route 11 and the river) to provide an annual IC/EC certification, prepared and submitted by a professional engineer or environmental professional acceptable to the Department annually. The certification would certify that the institutional controls and engineering controls put in place are unchanged from the previous certification and nothing has occurred that would impair the ability of the control to protect public health or the environment or constitute a violation or failure to comply with any operation and maintenance or soil management plan.

SECTION 9: HIGHLIGHTS OF COMMUNITY PARTICIPATION

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

- Repositories for documents pertaining to the site were established.
- A public contact list, which included nearby property owners, elected officials, local media and other interested parties, was established.
- A public meeting was held on March 10, 2005 to present and receive comment on the PRAP.
- A responsiveness summary (Appendix A) was prepared to address the comments received during the public comment period for the PRAP.

TABLE 1 A
Nature and Extent of Subsurface Soil Contamination
NYSEG - Cortland Homer MGP Site
August 1994 - December 2000

DOWNGRADIENT AREA SUBSURFACE SOIL	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Benzene	ND - 1.7	0.06	3/20
	Toluene	ND - 22	1.5	1/20
	Ethylbenzene	ND - 14	5.5	2/20
	Xylene	ND - 16.6	1.2	3/20
	BTEX	ND - 38.1	10	3/20
Semivolatile Organic Compounds	Total cPAHs	ND - 21.8	10	3/20
	Total PAHs	ND - 160	500	2/20
Inorganic	Cyanide	ND - 13.6	NA	0/20

TABLE 1 B
Nature and Extent of Surface Soil Contamination
NYSEG - Cortland Homer MGP Site
October 1999

SURFACE SOILS	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Benzene	NT	0.06	NA/6
	Toluene	NT	1.5	NA/6
	Ethylbenzene	NT	5.5	NA/6
	Xylene	NT	1.2	NA/6
	BTEX	NT	10	NA/6
Semivolatile Organic Compounds	Total cPAHs	.8 - 18.9	10	2/6
	Total PAHs	1.5 - 34.7	500	0/6
Inorganic	Cyanide	ND	NA	0/6

TABLE 1 C
Nature and Extent of Groundwater Contamination
NYSEG - Cortland Homer MGP Site
January 1986 - January 2002

GROUNDWATER	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Benzene	ND - 167	1	47/92
	Toluene	ND - 2,810	5	34/92
	Ethylbenzene	ND - 1,650	5	32/92
	Xylene	ND - 1,930	5	31/92
	BTEX	ND - 7,627	NA	0/92
Semivolatile Organic Compounds	Total cPAHs	ND - 55,270	NA	0/92
	Total PAHs	ND - 493,120	NA	0/92
Inorganic	Cyanide	ND - 7,960	200	14/92

TABLE 1 D
Nature and Extent of Surface Water Contamination
NYSEG - Cortland Homer MGP Site
January 1986 - May 1999

SURFACE WATER	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Benzene	ND	1	0/9
	Toluene	ND	5	0/9
	Ethylbenzene	ND	5	0/9
	Xylene	ND	5	0/9
	BTEX	ND	NA	0/9
Semivolatile Organic Compounds	Total cPAHs	ND - .1	NA	0/9
	Total PAHs	ND - .2	NA	0/9
Inorganic	Cyanide	ND	200	0/9

TABLE 1 E
Nature and Extent of Sediment Contamination
NYSEG - Cortland Homer MGP Site
August 1986 - May 2001

RIVER SEDIMENTS	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]		Frequency of Exceeding SCG
			ERL/ERM	BACK GROUND[1]	
Volatile Organic Compounds (VOCs)	Benzene	ND - .17	NA	ND	16/80
	Toluene	ND - .8	NA	ND	35/80
	Ethylbenzene	ND - .780	NA	ND	15/80
	Xylene	ND - 1.2	NA	ND	11/80
	BTEX	ND - .967	NA	ND	38/80
Semivolatile Organic Compounds	Total cPAHs	ND - 850	NA	3.0	41/103
	Total PAHs	ND - 3,570	4/35	6.2	42/103
Inorganic	Cyanide	ND - 10.8	NA	ND	7/103

[1] Sediment background is represented in this table by sediment sample SED - 8

For Table 1A-E
[a] ppb = parts per billion, which is equivalent to micrograms per liter, µg/l, in water;
ppm = parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
$\mu g/m^3$ = micrograms per cubic meter

[b] SCG = standards, criteria, and guidance values;
[c] LEL = Lowest Effects Level and SEL = Severe Effects Level. A sediment is considered to be contaminated if either of these criteria is exceeded. If both criteria are exceeded, the sediment is severely impacted. If only the LEL is exceeded, the impact is considered to be moderate.

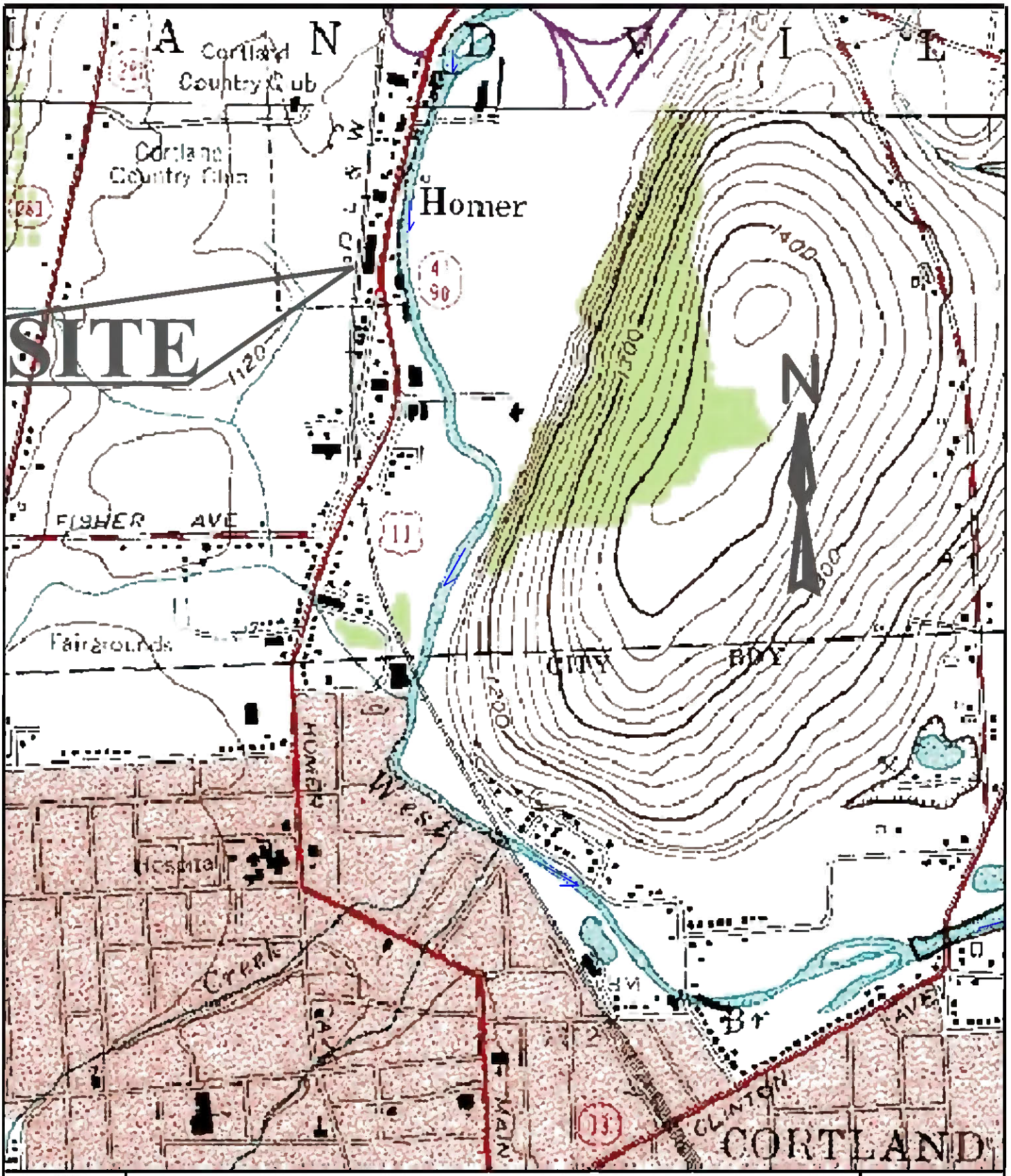
ND - Not Detected
NA - Not Applicable
NT - No Samples Taken

BTEX indicates the summation of benzene, toluene, ethylbenzene and xylene
Total PAH indicates the total of all PAH compounds identified
Total cPAH indicates the total of the seven PAH compounds that are considered carcinogenic

TABLE 2
Remedial Alternative Costs
NYSEG - Cortland Homer MGP Site

Remedial Alternative	Capital Cost	Annual OM&M	Total Present Worth
No Action	$ 70,000	$ 39,000	$ 479,000
High Capacity Vacuum Extraction of NAPL and Contaminated Sediments Near the Site, *In Situ* Stabilization of the Downgradient Area	$ 3,300,000	$ 68,000	$ 4,100,000
Excavation of NAPL and Contaminated Sediments Near the Site, Containment of the Downgradient Area	$ 3,330,000	$ 209,000	$ 5,930,000
High Capacity Vacuum Extraction of NAPL and Contaminated Sediments Downstream	$ 710,000	$ 4,000	$ 760,000
Proposed Remedial Action, Alternatives 2 and 4	$ 4,010,000	$ 72,000	$ 4,860,000

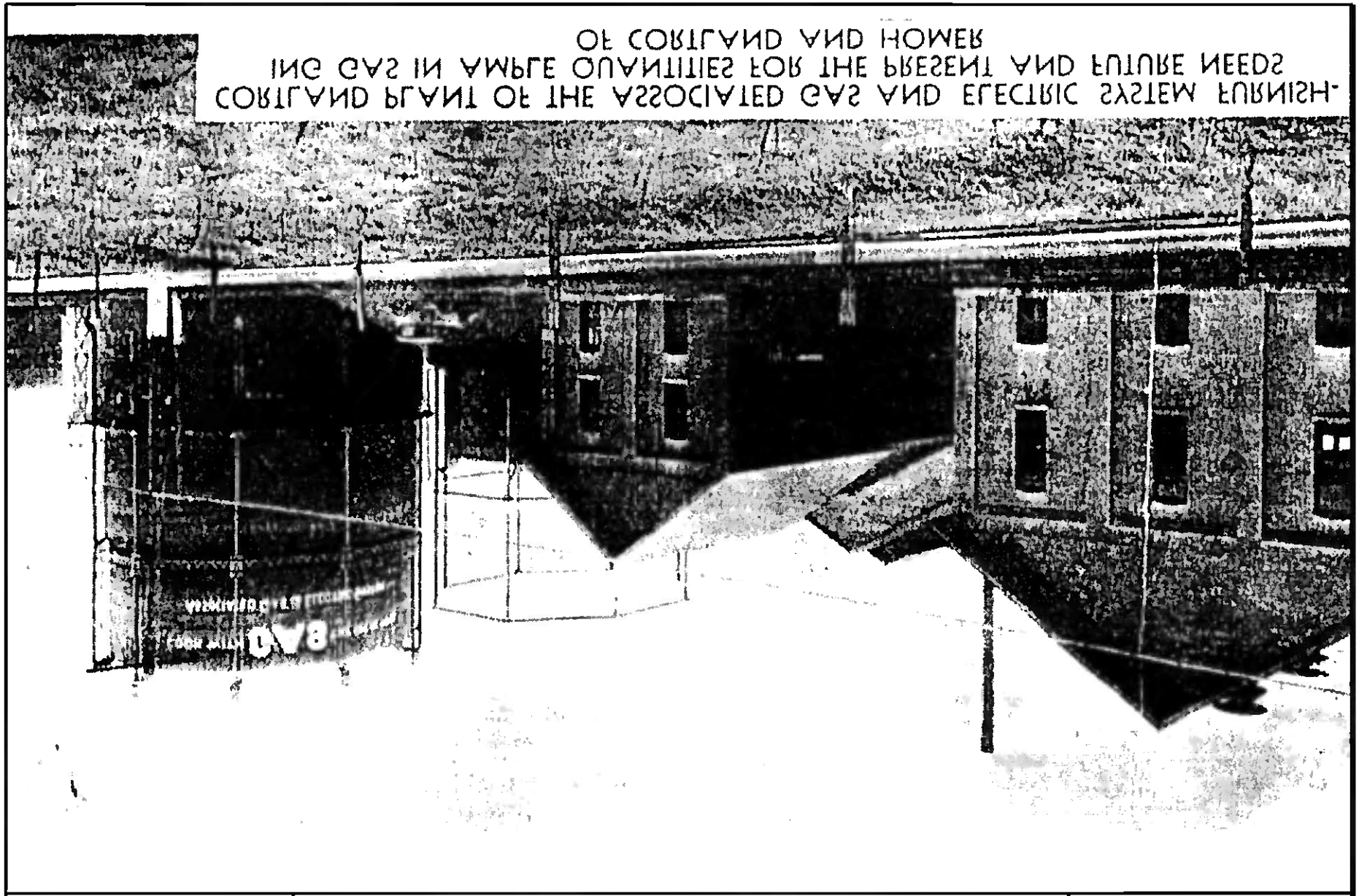
Note: Present worth costs are based on a 7% interest rate over 30 years.



NYSEG CORTLAND HOMER FORMER MGP SITE
HOMER (V), CORTLAND COUNTY, NEW YORK

SITE LOCATION

FIGURE 1



NYSEG CORTLAND HOMER FORMER MGP SITE
HOMER (V), CORTLAND COUNTY, NEW YORK

HISTORIC SITE PHOTO, CIRCA 1920s

FIGURE 2

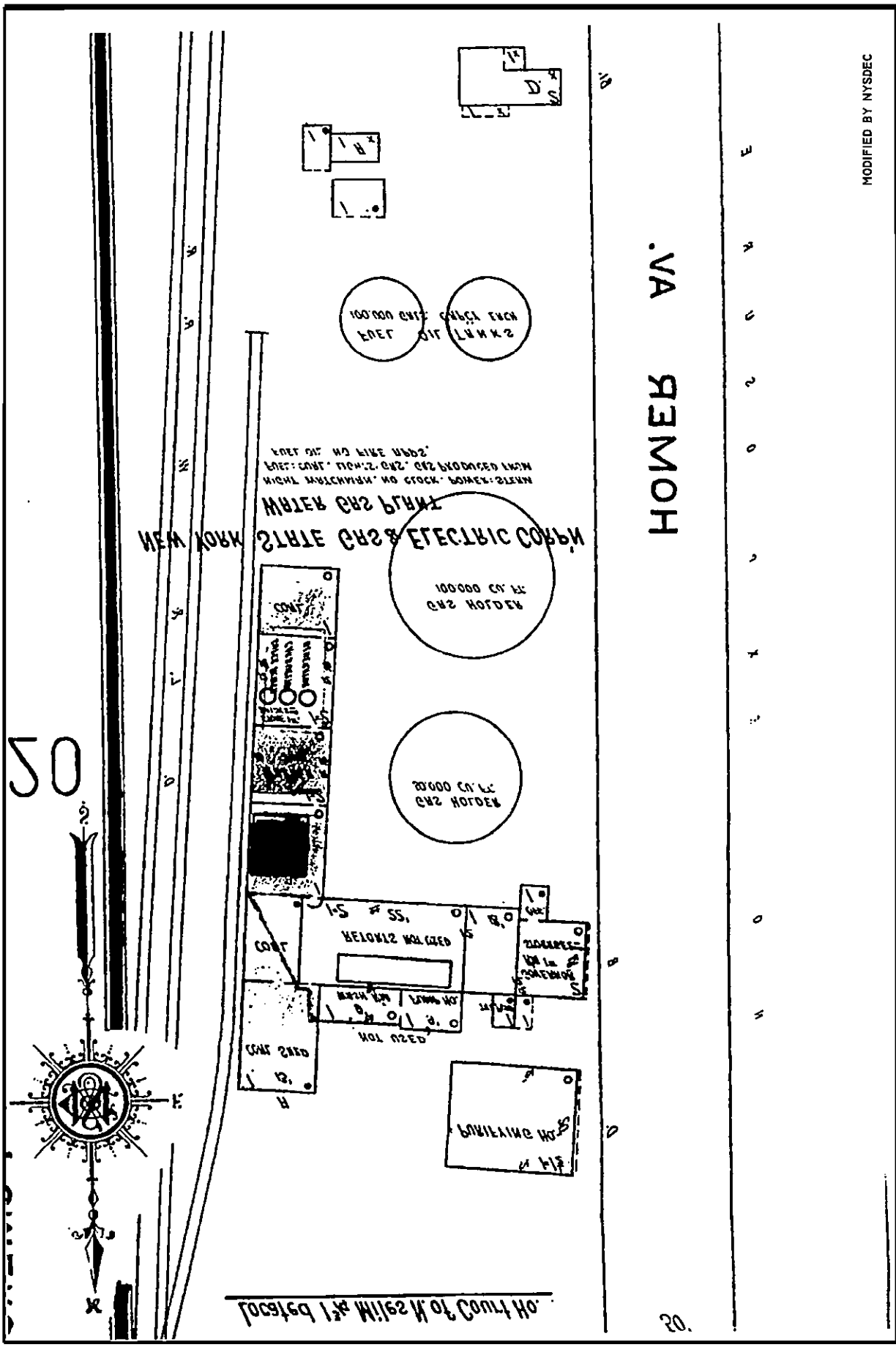
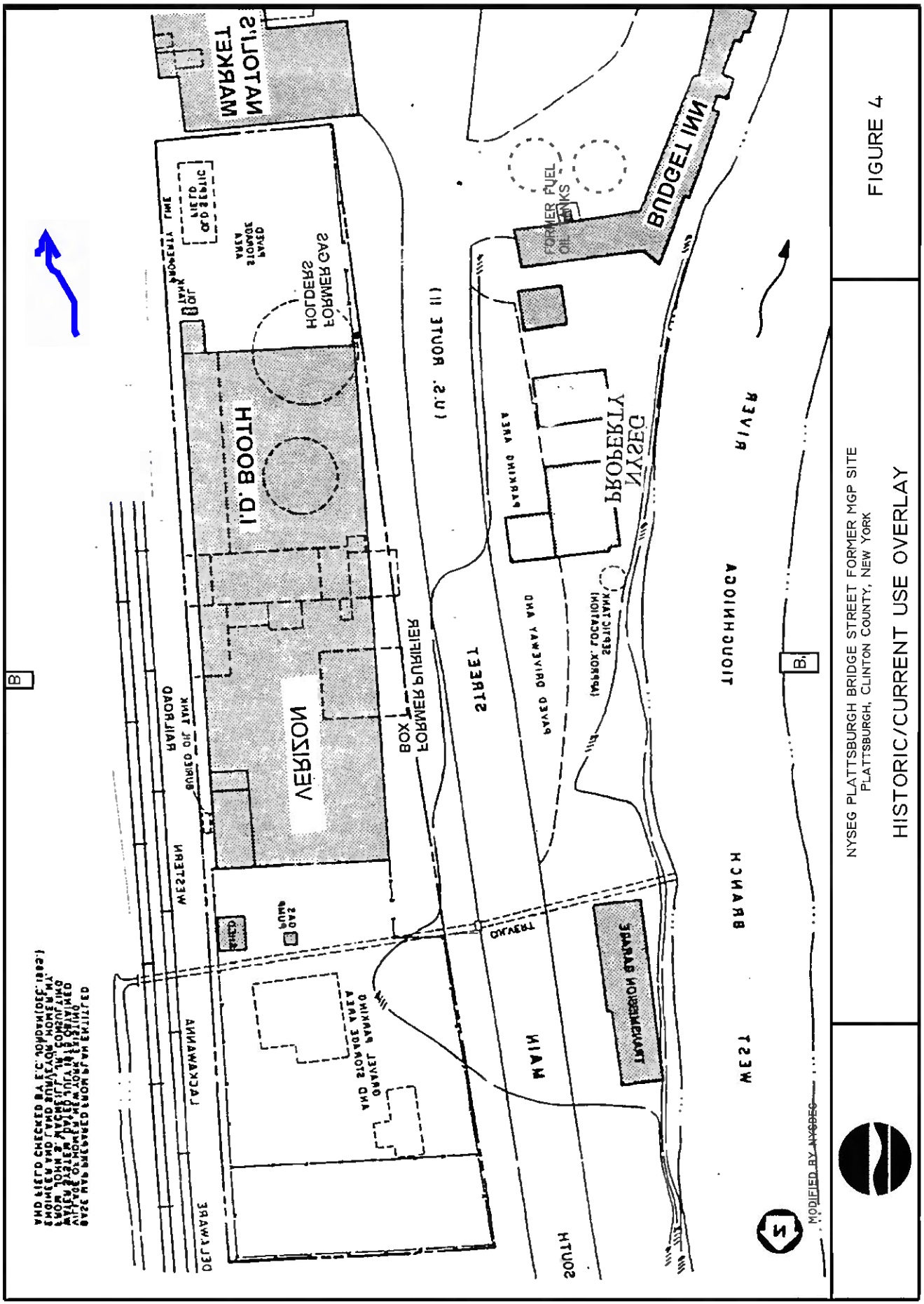
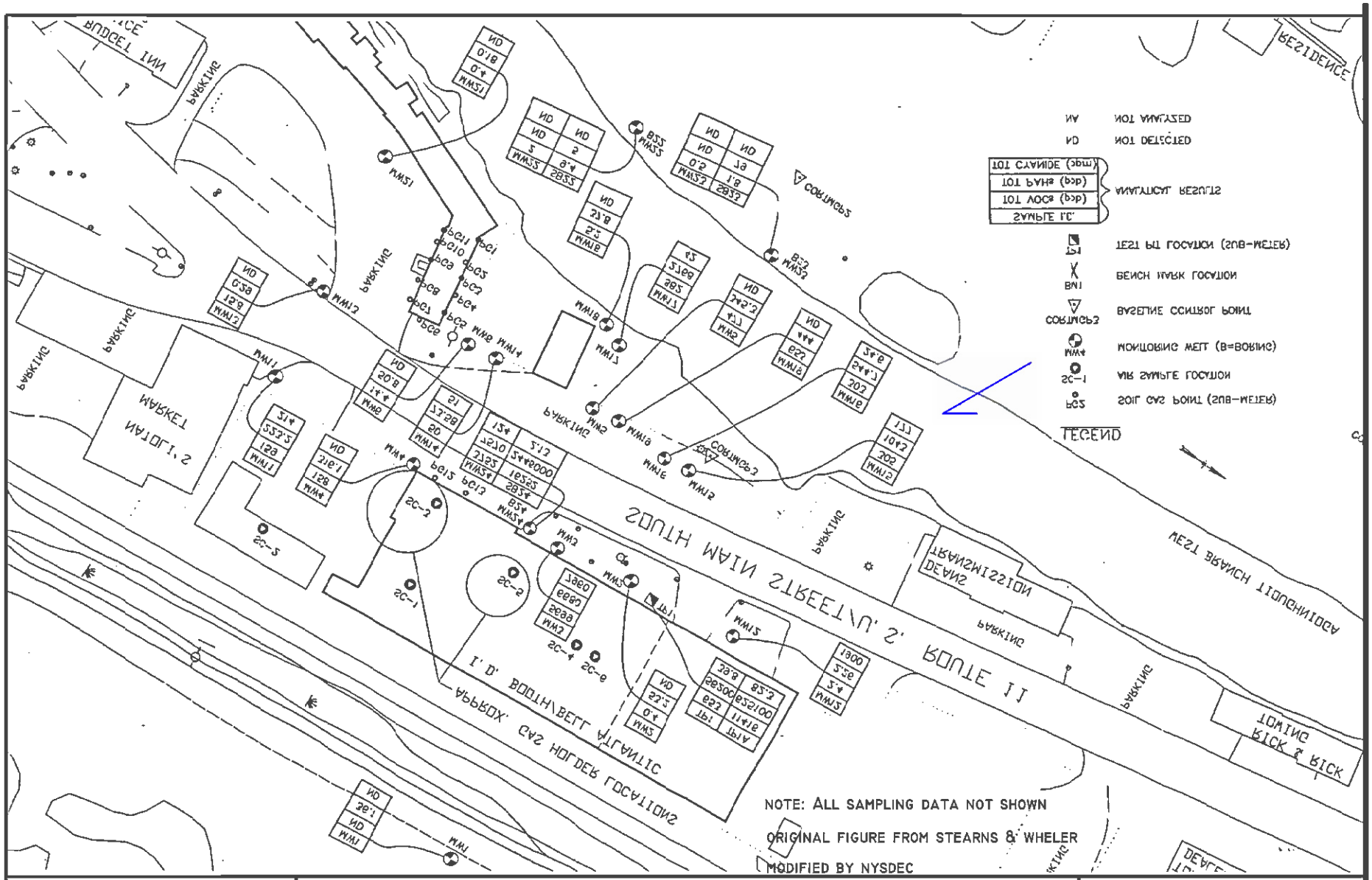


FIGURE 3

NYSEG CORTLAND HOMER FORMER MGP SITE
HOMER (V), CORTLAND COUNTY, NEW YORK

1926 SANBORN MAP OF SITE

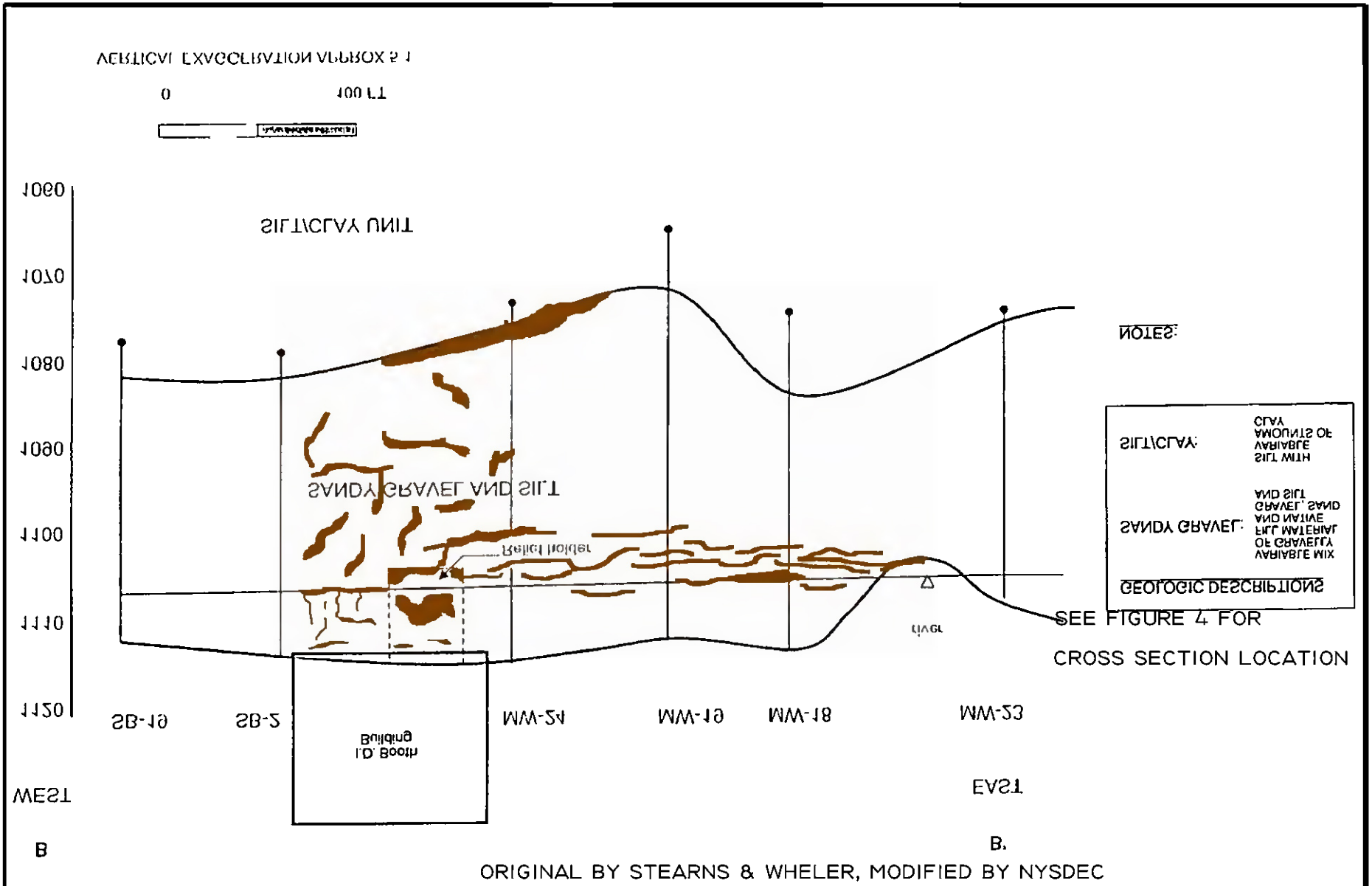

NYSEG PLATTSBURGH BRIDGE STREET FORMER MGP SITE
PLATTSBURGH, CLINTON COUNTY, NEW YORK
HISTORIC/CURRENT USE OVERLAY
FIGURE 4
MODIFIED BY NYSDEC
WEST BRANCH AUSABLE RIVER
MAIN STREET
U.S. ROUTE 11
BRIDGE STREET
BUDGET INN
FORMER FUEL OIL TANKS
PROPERTY NYSEG
AREA DRIVING
PAVED DRIVEWAY AND
(MONROE, FOCATION) SEPTIC TANK
FORMER PURIFIER BOX
HOLDERS FORMER GAS
I.D. BOOTH
VERIZON
WESTERN AVENUE
RAILROAD
BURIED OIL TANK
GAS PUMP
DRIVEWAY
GRAVEL PARKING AREA AND STORAGE AREA
JACKSONVILLE
DEL TAWARE
SOUTH
STATE PARK MOTOR VEHICLE
TOWN'S MARKET
N



NYSEG CORTLAND HOMER FORMER MGP SITE
HOMER (V), CORTLAND COUNTY, NEW YORK

SUMMARY OF SAMPLING LOCATIONS - PHASE I RI

FIGURE 5

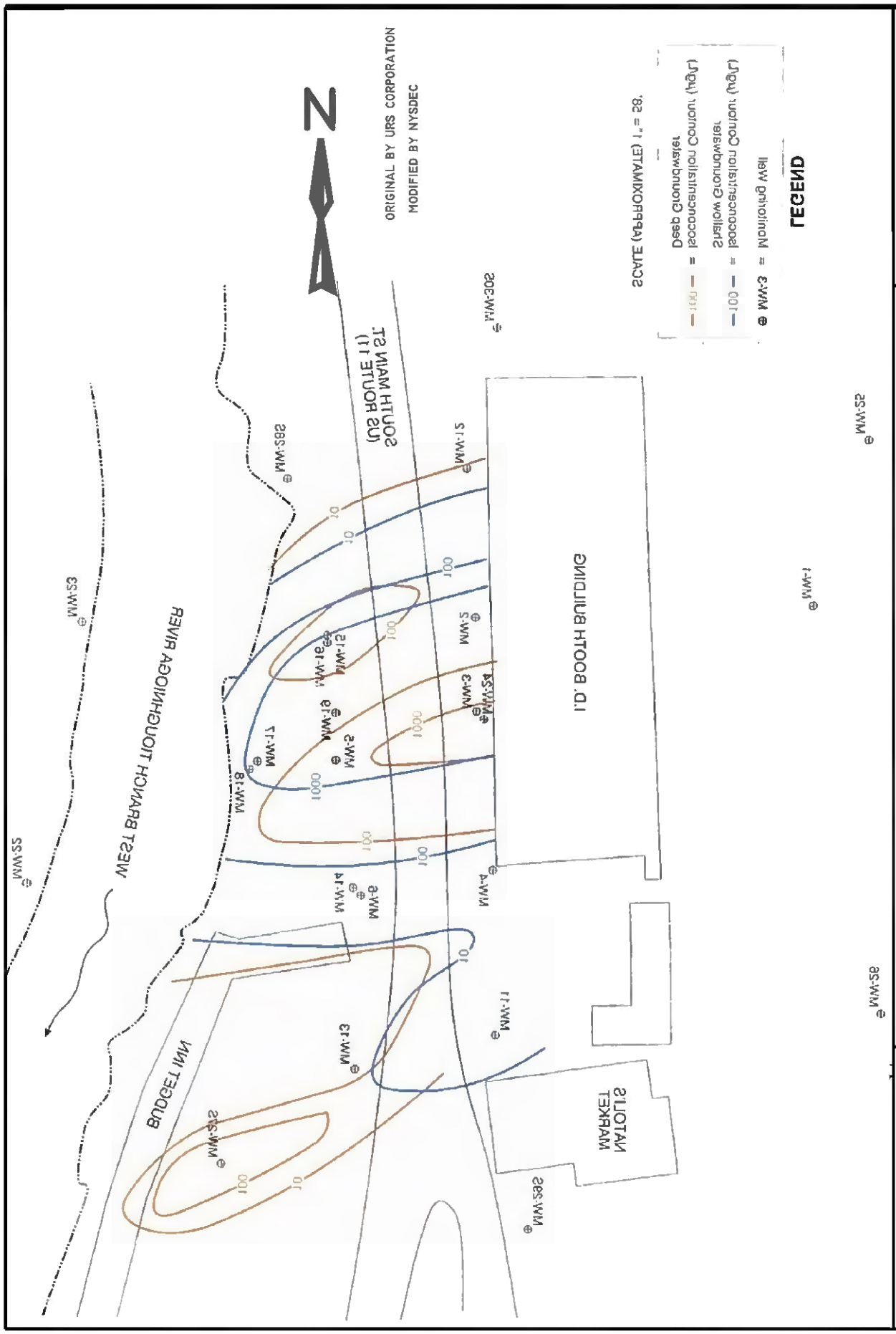


ORIGINAL BY STEARNS & WHELER, MODIFIED BY NYSDEC

NYSEG CORTLAND HOMER FORMER MGP SITE
HOMER (V), CORTLAND COUNTY, NEW YORK

CROSS SECTION B-B'

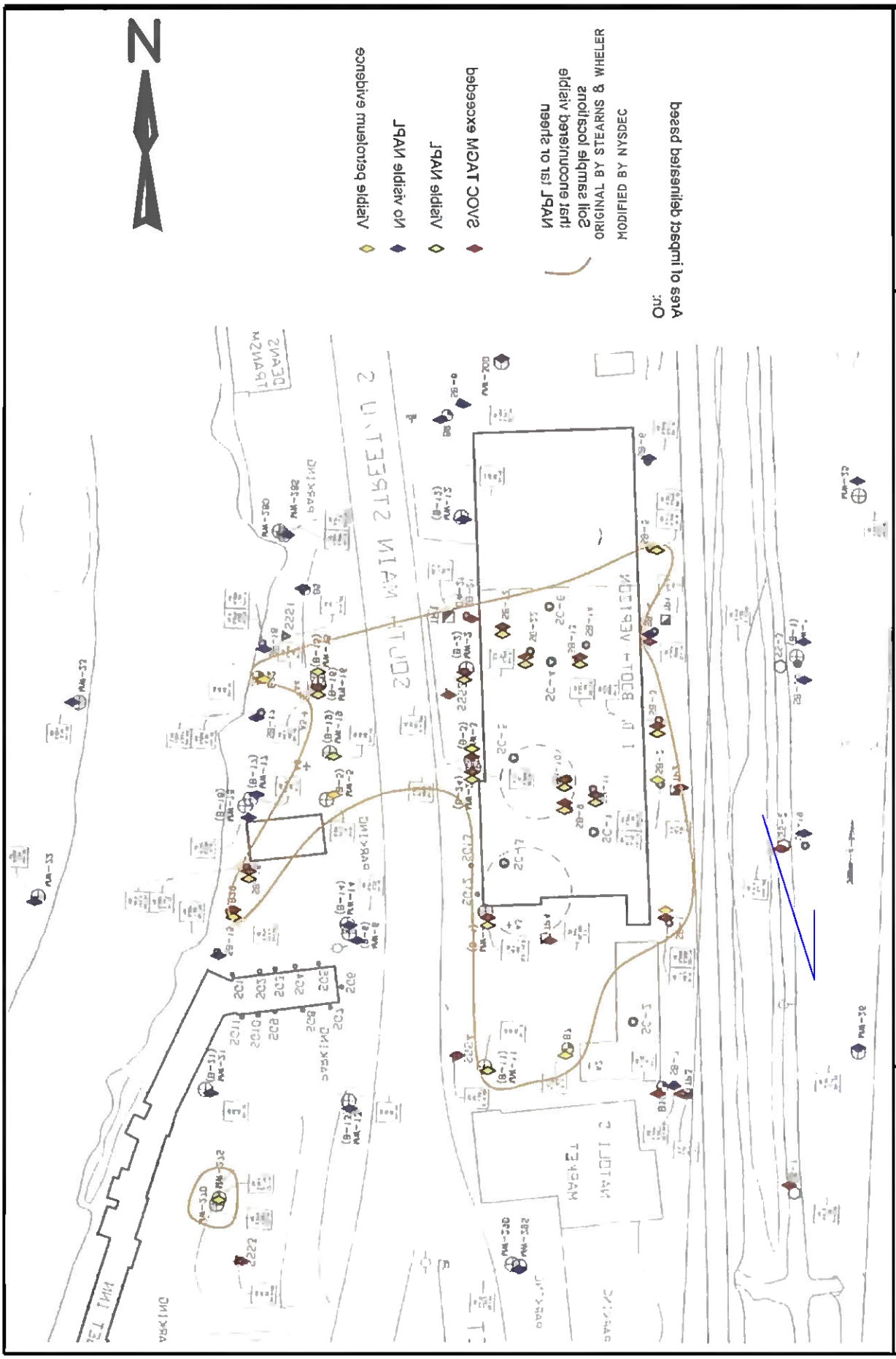
FIGURE 6



NYSEG CORTLAND HOMER FORMER MGP SITE
HOMER (V), CORTLAND COUNTY, NEW YORK

EXTENT OF GROUNDWATER CONTAMINATION

FIGURE 7



NYSEG CORTLAND HOMER FORMER MGP SITE
HOMER (V), CORTLAND COUNTY, NEW YORK

EXTENT OF SOIL CONTAMINATION

FIGURE 8

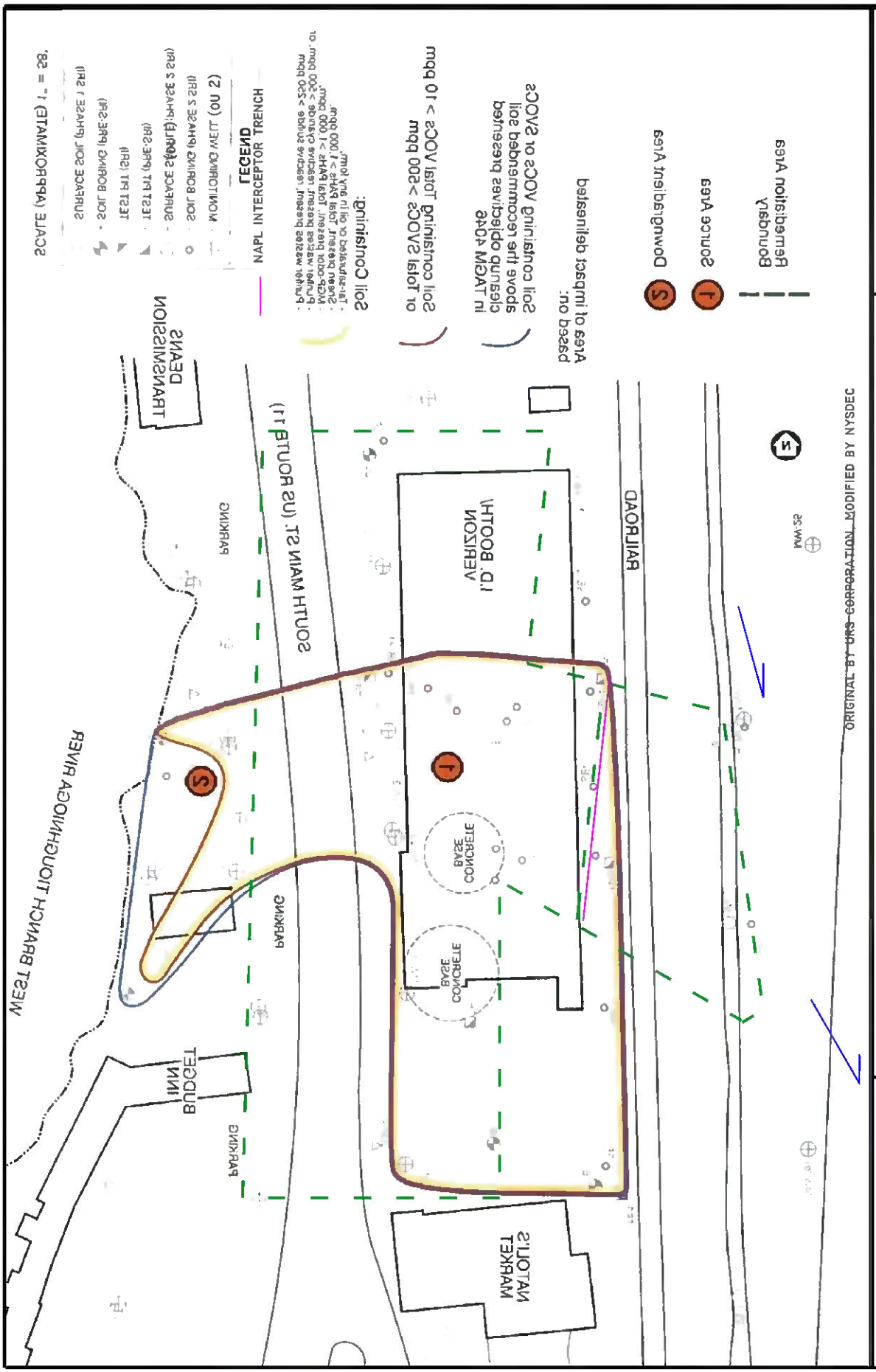
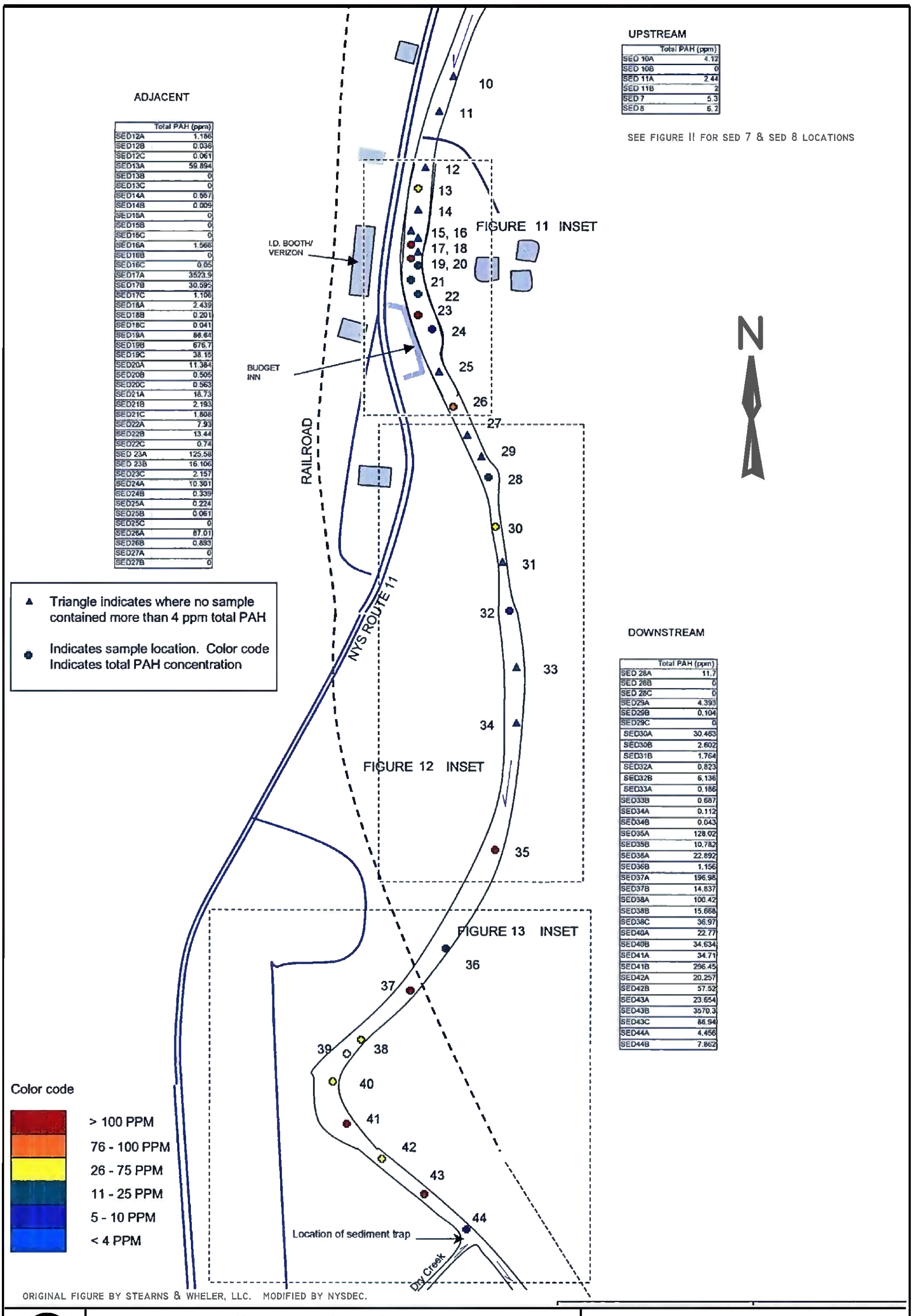


FIGURE 9

NYSEG CORTLAND HOMER FORMER MGP SITE
HOMER (V), CORTLAND COUNTY, NEW YORK

EXTENT OF OPERABLE UNITS



	Total PAH (ppm)
SED12A	1.186
SED12B	0.036
SED12C	0.061
SED13A	59.894
SED13B	0
SED13C	0
SED14A	0.557
SED14B	0.009
SED15A	0
SED15B	0
SED15C	0
SED16A	1.566
SED16B	0
SED16C	0.05
SED17A	3523.9
SED17B	30.595
SED17C	1.106
SED18A	2.439
SED18B	0.201
SED18C	0.041
SED19A	86.64
SED19B	676.7
SED19C	38.15
SED20A	11.384
SED20B	0.505
SED20C	0.563
SED21A	18.73
SED21B	2.193
SED21C	1.808
SED22A	7.93
SED22B	13.44
SED22C	0.74
SED 23A	125.58
SED 23B	16.106
SED23C	2.157
SED24A	10.301
SED24B	0.339
SED25A	0.224
SED25B	0.061
SED25C	0
SED26A	87.01
SED26B	0.893
SED27A	0
SED27B	0

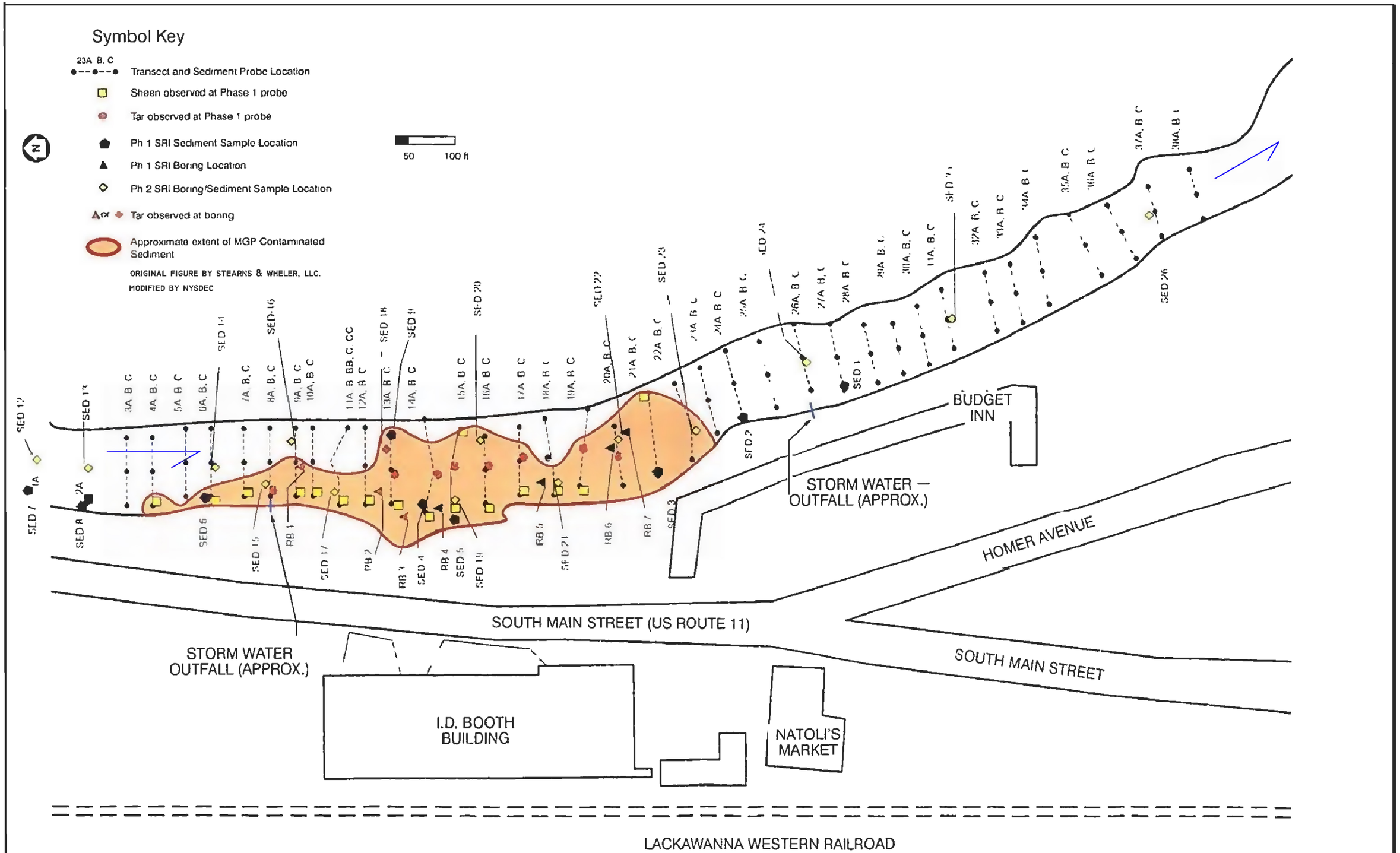
	Total PAH (ppm)
SED 10A	4.12
SED 10B	0
SED 11A	2.44
SED 11B	2
SED 7	5.3
SED 8	6.2

	Total PAH (ppm)
SED 28A	11.7
SED 28B	0
SED 28C	0
SED29A	4.393
SED29B	0.104
SED29C	0
SED30A	30.463
SED30B	2.602
SED31B	1.764
SED32A	0.823
SED32B	6.136
SED33A	0.186
SED33B	0.687
SED34A	0.112
SED34B	0.043
SED35A	128.02
SED35B	10.782
SED36A	22.892
SED36B	1.156
SED37A	196.98
SED37B	14.837
SED38A	100.42
SED38B	15.668
SED38C	36.97
SED40A	22.77
SED40B	34.634
SED41A	34.71
SED41B	296.45
SED42A	20.257
SED42B	57.52
SED43A	23.654
SED43B	3570.3
SED43C	86.94
SED44A	4.456
SED44B	7.862

NYSEG CORTLAND HOMER FORMER MGP SITE
HOMER (V), CORTLAND COUNTY, NEW YORK

WEST BRANCH TIOUGHNIOGA, SEDIMENT OVERVIEW

FIGURE 10

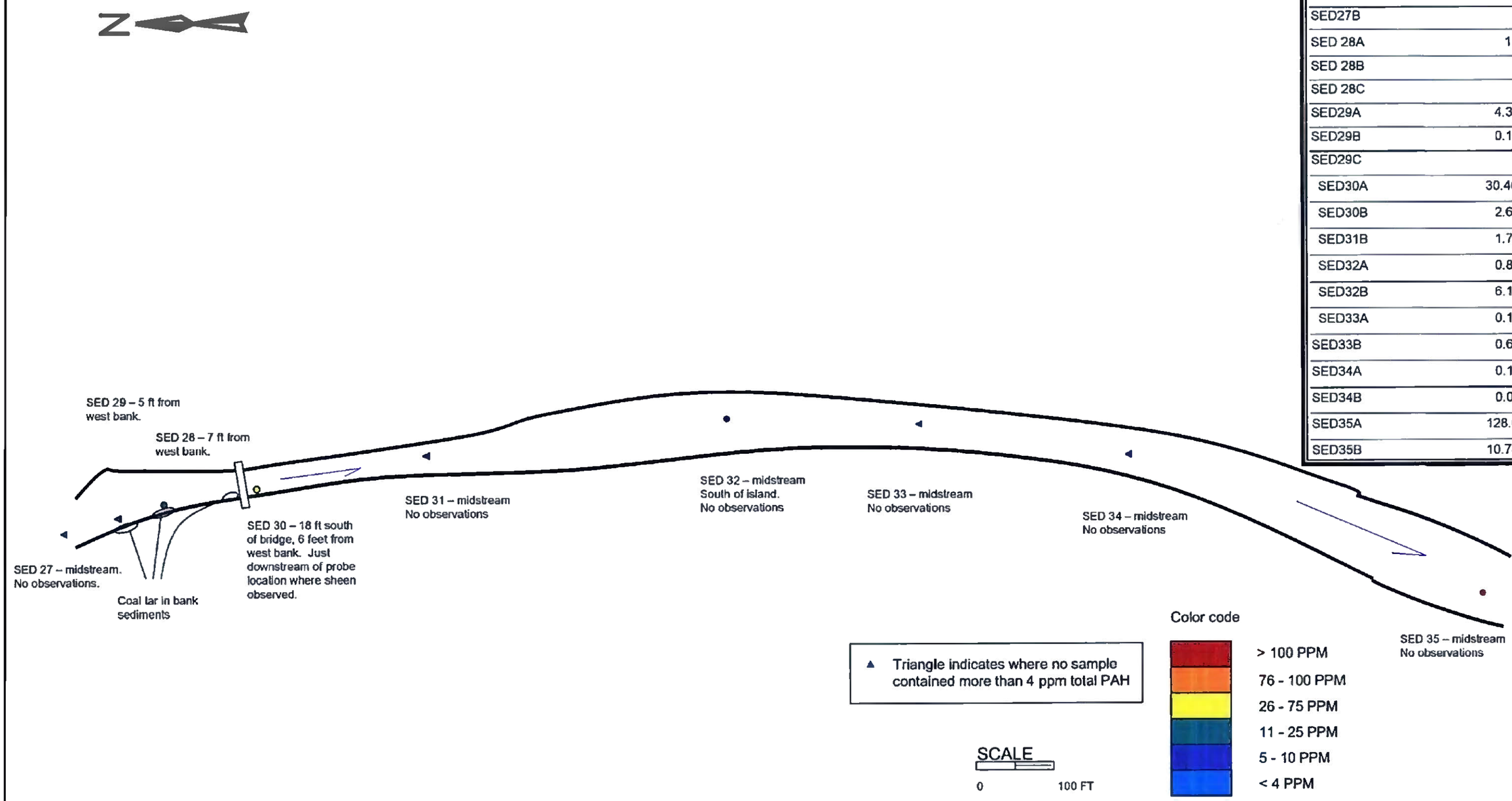


NYSEG CORTLAND HOMER FORMER MGP SITE
HOMER (V), CORTLAND COUNTY, NEW YORK

EXTENT OF SEDIMENT CONTAMINATION NEAR SITE

FIGURE 11

	Total PAH (ppm)
SED27A	0
SED27B	0
SED 28A	11.7
SED 28B	0
SED 28C	0
SED29A	4.393
SED29B	0.104
SED29C	0
SED30A	30.463
SED30B	2.602
SED31B	1.764
SED32A	0.823
SED32B	6.136
SED33A	0.186
SED33B	0.687
SED34A	0.112
SED34B	0.043
SED35A	128.02
SED35B	10.782

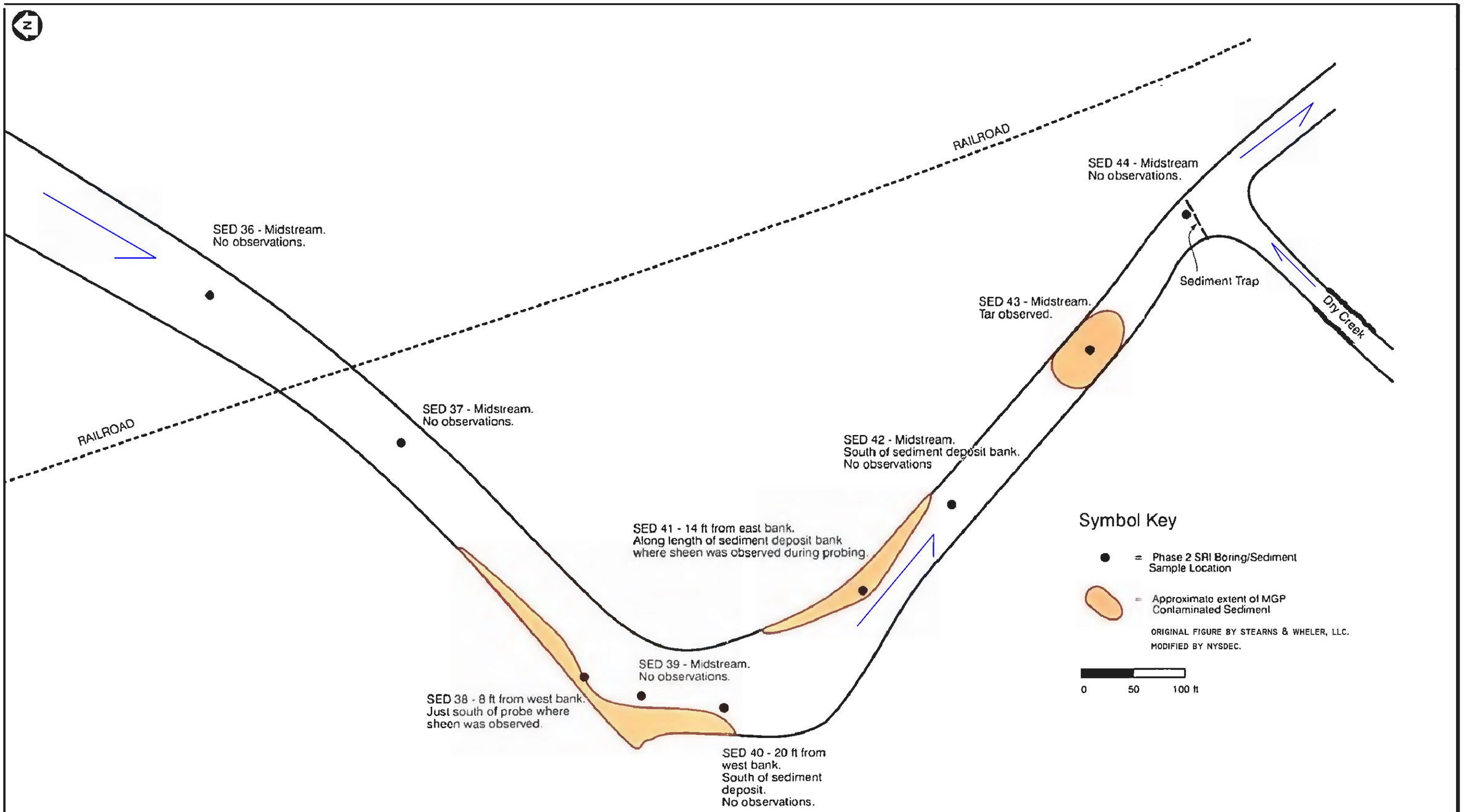


ORIGINAL FIGURE BY STEARNS & WHELER, LLC.
MODIFIED BY NYSDEC.

NYSEG CORTLAND HOMER FORMER MGP SITE
HOMER (V), CORTLAND COUNTY, NEW YORK

EXTENT OF SEDIMENT CONTAMINATION DOWNSTREAM

FIGURE 12



NYSEG CORTLAND HOMER FORMER MGP SITE
HOMER (V), CORTLAND COUNTY, NEW YORK

EXTENT OF SEDIMENT CONTAMINATION AT SEDIMENT TRAP

FIGURE 13

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

NYSEG Cortland Homer Former MGP Site
Homer (V), Cortland County, New York
Site No. 7-12-005

The Proposed Remedial Action Plan (PRAP) for the NYSEG Cortland Homer Former Manufactured Gas Plant (MGP) site, was prepared by the New York State Department of Environmental Conservation (NYSDEC) in consultation with the New York State Department of Health (NYSDOH) and was issued to the document repositories on February 25, 2005. The PRAP outlined the remedial measures proposed for the site: the excavation of site impacted sediments from the West Branch of the Tioughnioga River, and stabilization of the downgradient land area. The release of the PRAP was announced by sending a notice to the public contact list, informing the public of the opportunity to comment on the proposed remedy.

A public meeting was held on **March 10, 2005**, which included a presentation of the Remedial Investigation (RI), 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 the site. The public comment period for the PRAP was extended to March 28, 2005.

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

COMMENT 1: Please tell me a little more about how the monolith of stabilized soil in the downgradient area will be created? Is it a chemical, electrical, or physical process?

RESPONSE 1: The full details of the process will be partially dependent on the results of the field treatability study, the design documents, and the contractor selected to implement the work. Conceptually it would be both a chemical and physical process. In general chemical reagents, such as portland cement, would be physically mixed with the soils in place, typically by large diameter augers. The reagents would then chemically bind the contaminants and surrounding soils into a solid monolith.

COMMENT 2: Has this been done before (with coal tar contamination)?

RESPONSE 2: This approach has been employed successfully at coal tar sites in other states, notably New Hampshire and Georgia. As the majority of coal tar sites in New York State are still undergoing investigation or design, it is being considered at several sites but has yet to be implemented. Part of the basis for the treatability study is to confirm the technology will perform satisfactorily at the Cortland Homer MGP off-site location.

COMMENT 3: What is the depth of the monolith? What impact will there be on NYS Route 11?

RESPONSE 3: The monolith will go down to the silt/clay layer underlying the site, at approximately 40 feet below the ground surface. No impacts to NYS Route 11 are anticipated from the work proposed for this operable unit. Remediation of the contaminants under NYS

Route 11 and the MGP site property will be addressed in the remedy for Operable Unit 1.

COMMENT 4: How close will the monolith come to NYS Route 11?

RESPONSE 4: That is a detail that will be determined in the design, based on the details and location of the NAPL interceptor trench. Conceptually, the trench would be constructed between the stabilized soil monolith and NYS Route 11.

COMMENT 5: Will all of the area between the I.D. Booth building and the river be stabilized?

RESPONSE 5: The full limits of the stabilization will be determined in the design. Conceptually, the downgradient land area to be stabilized will be within the parcel of property between New York State (NYS) Route 11 and the Tioughnioga River. This parcel of land is owned by NYSEG and is directly across NYS Route 11 from the I.D. Booth building. The entire area on the parcel that is contaminated above remedial criteria would be stabilized, except for the Non Aquoues Phase Liquid (NAPL) interceptor trench on the river side edge of NYS Route 11, a soil cover to protect the monolith from frost and dermal contact, and the river bank that would be restored consistent with New York State Article 15 of the Environmental Conservation Law (which applies to stream bank disturbances). Please refer to Figure 9 for a preliminary delineation of this area on the downgradient parcel. It is designated by the blue line which identifies those soils containing volatile organic compounds (VOCs) and semi volatile organic compounds (SVOCs) in exceedance of the recommended NYSDEC soil cleanup objectives (TAGM 4046).

COMMENT 6: Will odors be a problem during the remedial construction? Will there be any sort of air monitoring during the remedial work?

RESPONSE 6: As the contamination is generally subsurface, the potential for odor and vapor problems would be generally limited to intrusive activities, such as during excavation or stabilization. Engineering controls and a community air monitoring plan will be developed and implemented during the remedial work. The anticipated engineering controls would be dependent on remedial construction details and could include: vapor suppressing sprays, limiting the size and duration of the excavation, shrouding the excavation, and performing the work in colder weather to reduce the potential for vapors. Air monitoring for particulates and volatile organic compounds will be conducted continuously during intrusive activities. If action limits are exceeded, work will stop immediately or be modified to reduce emissions below the action limits.

COMMENT 7: Would the odors be temporary or permanent? Did you say they would smell like driveway sealer?

RESPONSE 7: The odors would be a temporary condition and the potential presence of odors is associated with intrusive remedial activities. See Comment/Response 6. It is also important to note that the odors associated with coal tar can be discerned at very low levels, well below those that would be considered of concern from an exposure aspect. The smell is similar to coal tar driveway sealer.

COMMENT 8: Can you provide more information on the extent of excavation and fill for the downgradient area and the sediment areas?

RESPONSE 8: For the downgradient area, the excavation would be limited to grading. As we add reagents to the subsurface, the soil volume will bulk up and the excess would have to be removed to maintain the site's current grade. Since the reagents and volumes are to be determined during the treatability study, the volumes of material added and removed are unknown. There will also be soil brought in for the final soil cover. For the sediment areas, the excavation is estimated to be 3,700 cubic yards. The fill will be dependent on the stream restoration details which are to be determined in the remedial design.

COMMENT 9: What are the implications to the air quality of mixing this earthen material to make it a stabilized material? Is there going to be a lot of dust generated and will there be contaminated particulate matter in the dust?

RESPONSE 9: Most of the mixing is planned to be under the ground surface so the potential for dust is minimal. Regardless of the actual method utilized, engineering controls and air monitoring would be implemented to minimize any vapors or dust. Please refer back to RESPONSE 6.

COMMENT 10: What is the time line for the work?

RESPONSE 10: The full details of the schedule will be partially dependent on the results of the field treatability study to determine what stabilization method works best, the final design and bid documents, resolution of access issues and selection of the construction contractor. The estimate is 4 months to physically complete the remedial work as outlined in the PRAP, however, setup and restoration makes it likely that actual field work will take closer to 9 months.

COMMENT 11: What kind of equipment would be utilized?

RESPONSE 11: The excavation work, both for the Tioughnioga River and downgradient land area, would likely be completed with standard construction equipment, such as a backhoe, trucks, and vacuum lines. The stabilization work would likely be performed using tanker trucks, and a large diameter drill rig with an auger. However, actual equipment will be dependent on the contractor selected to complete the work.

COMMENT 12: You are proposing to use a vacuum truck to suction groundwater during the sediment excavation? Will the liquid be treated the same as the sediments?

RESPONSE 12: The details of the sediment removal will be dependent on the results of the design and the contractor selected to implement the work. Any water removed with the sediment will be separated and treated to NYSDEC discharge limits.

COMMENT 13: What sort of health problems do the site contaminants pose?

RESPONSE 13: The primary site contaminants are polycyclic aromatic hydrocarbons (PAHs) and BTEX (benzene, toluene, ethylbenzene and xylene). These are very common chemicals which we could potentially be exposed to in our daily lives. The Department of Health and Human Services (DHHS) classifies benzene as a known human carcinogen. Six of the PAHs are considered probably human carcinogens. Health effects associated with exposure to a chemical depend on the dose, duration of the contact, personal habits and genetics, and other factors. Health effects can not occur without an exposure. The NYSDOH believes the remedy will minimize the potential for exposure. For more information regarding the toxicity of site-related chemicals you may contact the NYSDOH or visit the following website: http://www.atsdr.cdc.gov/tfacts85.html

COMMENT 14: Is there any cyanide on the site?

RESPONSE 14: Yes, there is cyanide present on the site. Cyanide is a common byproduct of manufactured gas plant processes. It is typically present as complexed cyanide compounds, which are a relatively stable and non reactive form of cyanide.

COMMENT 15: Is the cyanide a health risk? Does it generate vapors?

RESPONSE 15: There does not appear to be a completed exposure pathway to the cyanide observed at the site. Without a completed pathway, there is no exposure posed by a contaminant. Complexed cyanide compounds are not the same as the more widely known hydrogen cyanide. Complexed cyanide compounds do not produce toxic vapors like hydrogen cyanide.

COMMENT 16: Are the carcinogens a risk to people who go into the river?

RESPONSE 16: As noted in Comment/Response 13, health effects associated with exposure to a chemical depend on the dose, duration of the contact, personal habits and genetics, and other factors. Health effects cannot occur without an exposure. The NYSDOH believes the remedy will minimize the potential for exposure. Any exposures to these contaminants in the river sediments would be considered short in duration and would likely be minimal due to the dilution and washing effect of the water flow in the river.

COMMENT 17: There are several private wells on Miller Avenue extention. Are they impacted?

RESPONSE 17: Based on the existing well network and analytical data, this area appears to be well outside of the identified area of groundwater contamination from the site.

COMMENT 18: Can you please confirm that you have identified the full extent of the contamination?

RESPONSE 18: The NYSDEC and the NYSDOH are confident that the general extent and nature of the contamination has been defined to a degree that will allow for the selection and implementation of a remedy that will effectively mitigate and/or eliminate the environmental and health risks posed by the site contamination. Further, the remedial design work will provide additional information and additional sampling will be completed where needed.

COMMENT 19: Is there a problem with the contamination found in monitoring well MW-27D on the motel property?

RESPONSE 19: Limited impacts were identified in a gravel layer above the silt/clay, at 20 feet below the ground surface. Specifically, tar blebs, sheens and odors were observed in the boring and analytical groundwater results from the installed well indicated groundwater standards were exceeded for xylene and several PAHs. Based on the geology and overall contamination distribution at the site, this contamination appears to be a stringer of a small volume of contamination.

COMMENT 20: Does the contamination pose a health risk at the motel? What about the soil vapor at the hotel?

RESPONSE 20: The contamination on the motel property is 20 feet below the ground surface, appears to be limited in volume, and has no exposure pathways. Therefore, there is no current risk to public health. Similarly, soil vapor sampling at the site performed during the RI, did not identify a pathway from the site or downgradient area. However, the soil vapor pathway will be further evaluated as part of the pre design investigation.

The following comment was received in a letter dated March 22, 2005 from Mr. Patrick Reidy of the Cortland County Soil and Water Conservation District:

COMMENT 21: The proposed in situ stabilization appears adequate to contain contamination where it is know to exist. However, this method does not allow for verification in the field of the actual extent of contamination as excavation would. The proposed remedy should provide a better-defined means of confirming that the full extent of contamination will be addressed.

RESPONSE 21: During the pre design investigation, additional borings and test pits will be drilled and dug to better define the limits of the contamination for soil stabilization. This should confirm the full extent of contamination and allow for its solidification during construction.

The site management plan will include long term monitoring to verify that the remedy was effective and no significant areas of contamination, either unidentified or untreated, are still present at the site. Please refer back to Comment/Response 18.

The following comments were received in a letter dated March 15, 2005 from Mr. Patrick Snyder, Attorney at Law.

COMMENT 22: My client has an automobile painting and detail business adjacent to the site. He is very concerned about the potential for dust or other airborne substances affecting his business. Consequently, we will be very interested in being informed as the remediation plans are developed.

RESPONSE 22: The NYSDEC appreciates your interest and recognizes your concerns. During the remedial work, controls and air monitoring would be implemented to minimize any vapors or dust. Please refer back to Comment/Response 9. The NYSDEC will also

perform public outreach, similar to those performed as part of the PRAP process, to keep the public informed.

COMMENT 23: Please provide a copy of the graphs which you showed at the meeting.

RESPONSE 23: Almost all of the visuals were taken directly from the PRAP and other documents that are available at the document repositories, the locations of which are identified in Section 1, page 2 of the PRAP. The NYSDEC has also transmitted the requested information.

APPENDIX B

Administrative Record

Administrative Record

NYSEG Cortland Homer Former MGP Site
Homer (V), Cortland County, New York
Site No. 7-12-005

1. "Cortland Including McGraw, Cortland County, New York," January 1926, Sanborn Map Company.

2. "Investigation of Former Coal Gasification Sites, Cortland/Homer Homer, New York, Task 2 Investigation Report, Initial Field Investigation Report, New York State Electric and Gas (NYSEG)", July 1987, E.C. Jordan Co.

3. Investigation of the Former Coal Gasification Site, Cortland/Homer Homer New York, Task 3 Report Expanded Problem Definition Program, New York State Electric and Gas Corporation", May 1989, E.C. Jordan Co.

4. Order on Consent, Index No. D0-0002-9309, between NYSDEC and New York State Electric and Gas Corporation (NYSEG), executed on March 30, 1994.

5. "Historical Summary NYSEG Cortland/Homer Former MGP, Cortland County", April 2001, Stearns and Wheler.

6. "New York State Electric and Gas, Interim Remedial Measures Final Engineering Report, Storm Drain Construction Activities Adjacent to Cortland/Homer South Main Street (Route 11) Former Manufactured Gas Plant (MGP) Site", March 2002, NYSEG

7. "Supplemental Remedial Investigation (SRI), NYSEG Cortland/Homer Former MGP, Cortland County, New York", December 2003, Stearns & Wheler Corporation.

8. "New York State Electric and Gas Corporation, Former Cortland/Homer Former Manufactured Gas Plant, Homer, New York, Feasibility Study Report", April 2004, URS Corporation.

9. Proposed Remedial Action Plan, NYSEG Cortland Homer Former MGP Site, Homer (V), Cortland County, New York, Site No. 7-12-005, Operable Unit 2, dated February, 2005, prepared by the New York State Department of Environmental Conservation (NYSDEC).

10. A letter from Mr. Patrick M. Snyder of Patrick M. Snyder, Attorney at Law, to Mr. John Helmeset, NYSDEC, dated March 15, 2005.

11. A letter from Mr. Patrick Reidy of Cortland County Soil and Water Conservation District to Mr. John Helmeset, NYSDEC, dated March 22, 2005.