PROPOSED REMEDIAL ACTION PLAN
NYSEG - Dansville MGP Site
Operable Unit No. 1
Dansville, Livingston County, New York
Site No. 8-26-012

November 2007

Prepared by:

Division of Environmental Remediation
New York State Department of Environmental Conservation

PROPOSED REMEDIAL ACTION PLAN

NYSEG – Dansville MGP Site
Operable Unit No. 1 - Former MGP site

Dansville (V), Livingston County, New York

Site No. 8-26-012

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SECTION 1: <u>SUMMARY AND PURPOSE OF THE PROPOSED PLAN</u>

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), is proposing a remedy for the NYSEG – Dansville Former Manufactured Gas Plant (MGP) Site, Operable Unit No. 1. The presence of hazardous waste has created significant threats to human health and/or the environment that are addressed by this proposed remedy. As more fully described in Sections 3 and 5 of this document, the operation of a manufactured gas plant at this site prior to January 1930 has resulted in the disposal of hazardous wastes, including: polycyclic aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and coal tar non-aqueous phase liquid (NAPL). These wastes have contaminated the surface soil, subsurface soil and groundwater at the site, and have resulted in:

- a significant threat to human health associated with and potential exposure to contaminated subsurface soil.
- a significant environmental threat associated with the current and potential impacts of contaminants to groundwater of the State of New York.

To eliminate or mitigate these threats, the Department proposes the partial excavation of contaminated subsurface soil, long term containment, and the implementation of institutional controls to limit the land use and future development of the property.

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

This Proposed Remedial Action Plan (PRAP) identifies the preferred remedy, summarizes the other alternatives considered, and discusses the reasons for this preference. The Department will select a final remedy for the site only after careful consideration of all comments received during the public comment period.

The Department has issued this PRAP as a component of the Citizen Participation Plan developed pursuant to the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375. This document is a summary of the information that can be found in greater detail in the January 2006 Supplemental Remedial Investigation of Operable Unit 1 Report (SRI), the August 2006 Feasibility Study Report (FS), the March 2007 Feasibility Study Report Addendum and other relevant documents. The public is encouraged to review the project documents, which are available at the following repositories:

Dansville Public Library
200 Main Street
Dansville, NY 14437
(585) 335-6720
Monday & Wednesday 10:00 am – 8:30 pm
Tuesday, Thursday & Friday 1:00 pm – 8:30 pm
Saturday Noon to 4:00 pm

NYSDEC
625 Broadway
Albany, NY 12233-7014
Attention: Charles Post, Project Manager
(518) 402-9662
Monday-Friday 8:15 am – 4:15 pm (by appointment)

The Department seeks input from the community on all PRAPs. A public comment period has been set from November 16, 2007 through December 17, 2007 to provide an opportunity for public participation in the remedy selection process. A public meeting is scheduled for November 27, 2007 at the Dansville Fire Hall on Franklin Street beginning at time 6:30 pm.

At the meeting, the results of the RI/FS will be presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period will be held, during which verbal or written comments may be submitted on the PRAP. Written comments postmarked by December 17, 2007 may also be sent to Mr. Charles Post at the above address.

The Department may modify the proposed remedy or select another of the alternatives presented in this PRAP, based on new information or public comments. Therefore, the public is encouraged to review and comment on all of the alternatives identified here.

Comments will be summarized and addressed in the responsiveness summary section of the Record of Decision (ROD). The ROD is the Department's final selection of the remedy for this site.

SECTION 2: <u>SITE LOCATION AND DESCRIPTION</u>

The New York State Electric & Gas (NYSEG) Dansville Former MGP facility is located at 50 Ossian Street, in the Village of Dansville, Livingston County, New York (Figures 1 and 2). The site consists of the property at 50 Ossian Street, currently owned by NYSEG. The NYSEG property is approximately 2.25 acres and contains a building used as an operational service center and storage of utility equipment.

Dansville is a small urban community located on the western end of the Finger Lake Region, the area surrounding the site is primarily residential with some commercial uses along Ossian street. A commercial property located southeast of the NYSEG property, at 56 Ossian Street, is the location of a former dry cleaning business that was recently listed as a Class 2 inactive hazardous waste disposal site. That site is presently being investigated by the Department as a separate and upgradient source of soil and groundwater contamination by chlorinated solvents. The NYSEG site is primarily level with no significant topographic or geologic features. The site surface is approximately 75 % paved or occupied by a building. The remaining portion of the surface is covered in lawn or gravel.

Operable Unit No. 1 (OU 1), which is the subject of this document, consists of the soil lying above and below the groundwater table within the portion of NYSEG's 50 Ossian Street property shown on Figure 2. An operable unit represents a portion of the site remedy that for technical or administrative reasons can be addressed separately to eliminate or mitigate a release, threat of release or exposure pathway resulting from the site contamination. The second operable unit for this site consists of groundwater and saturated soil on the site in addition to in the areas of off-site migration to the mixed commercial properties and a residential neighborhood located to the northof the site. Currently the subsurface conditions at Operable Unit No. 2 (OU 2) are being investigated under a Remedial Investigation (RI) as directed by the Department.

The soils beneath the site were evaluated through the excavation of test pits and the advancement of soil borings. These test pits identified several structures that were historically used as part of the manufactured gas plant processes. The soil borings were advanced to greater depths than the test pits to investigate the soil conditions further below the ground surface. These investigations indicate that the site has been filled with soil and debris. This fill material is underlain by layers of fine grained sand and silt, cobbles and gravel, and silt with interbedded fine grained sands. Soil beneath this material is a silty clay. The significance of the site geology is that the fine grained silty clay limits the potential for downward migration of contamination from the soil and groundwater above. Groundwater is present between nine and thirteen feet below the ground surface at this site.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

In 1861 a MGP was constructed at the site and began supplying manufactured gas to the local community. The Dansville Gas Light Company operated the MGP from 1861 until 1895. The site was then owned and operated by the Dansville Gas and Electric Company from 1895 through 1924, during which time a small electric generating station was constructed a the site. Production of manufactured gas was discontinued in January 1930. The New York Central Electric Company then assumed ownership of the site from 1924 through 1937. In 1937 NYSEG acquired this property during a merger with New York Central Electric Company. Few details are known about the plant closure activities. Figure 3 depicts the site as it appeared during the operational period.

An MGP is a facility where gas for lighting and heating homes was produced. Coal gas was produced by heating coal in retorts or beehive ovens. The heating caused the coal to become carbonized due to the absence of air. The process off-gas was then condensed and purified prior to distribution. To accomplish this process, the plant utilized an assortment of equipment and structures, some of which are still present beneath the site.

The gas manufacturing process and feed fuels were changed several times during the operational life of the MGP at the site. Oil, coal, and coke were used at various times as fuel sources. The waste generated at the site included tar, coal ash, purifier waste and other liquids. Management of wastes included the use of an in-ground tar storage vessel to hold the tar that was produced during the production of the gas. Rail cars were likely used to transport wastes from the site for refining or burning as a fuel. Little information is available regarding the disposal of process waste from the site.

In the years after MGP operations ceased, the gas house was used by NYSEG as a meter department and was later removed in 1958. Additionally, the former electric generation building was renovated, enlarged and used as the regional service center for NYSEG operations. Currently the major structure on the site is the service center. At some point after the plant was closed, soil was spread over the south end of the property to create a lawn area.

In more recent years, two underground storage tanks (USTs) were used at the site for dispensing motor vehicle fuels. These USTs were subsequently taken out of service and closed in accordance with the Department regulations.

3.2: <u>Remedial History</u>

Two soil samples collected by NYSEG's environmental consultant in 1981 indicated the presence of arsenic, barium, cadmium, lead, zinc, cresol, naphthalene, quinoline, phenols and reactive sulfides. The laboratory analytical results indicated that the presence of these chemicals was not sufficient to classify the soil as hazardous waste.

A Task-1 Investigation Report for this site was submitted to the Department by NYSEG in September 1986. This report was an initial historical review and geophysical study of the site. Subsequent reports, submitted in December 1988 and July 1990, confirmed the presence of MGP residues and unrelated chlorinated solvents in soil and groundwater. Groundwater standards were exceeded for several VOC contaminants (benzene, toluene, xylenes, vinyl chloride and 1,2-dichloroethylene). A detailed health risk assessment report was submitted in May of 1991. The report did not address the concern of chlorinated solvents in the groundwater.

SECTION 4: <u>ENFORCEMENT STATUS</u>

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

The PRP for the site, documented to date, is New York State Electric and Gas (NYSEG), a successor company to New York Central Electric Company.

The Department and NYSEG entered into a multi-site Consent Order on March 25, 1994 and a revised Consent Order (#D0-000209309) on November 21, 1996. The Orders obligate NYSEG to implement a full remedial program for 33 MGP sites.

SECTION 5: SITE CONTAMINATION

A remedial investigation/feasibility study (RI/FS) was 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 November 2003 and January 2006 by environmental consultants retained by NYSEG. The objective of the remedial investigation was to generate sufficient data to delineate the horizontal and vertical limits of hazardous materials at the site and determine the potential public health and environmental impacts as a consequence of those materials.

To determine the extent of contamination, the RI utilized knowledge of the gas manufacturing process and historic plans to target probable areas of the site where MGP wastes could have been generated, disposed or released. From those plans, areas of the site were tested for the presence of MGP wastes.

The Remedial Investigation of Operable Unit 1 was completed in January 2006. A Soil Vapor Intrusion (SVI) Evaluation Report detailing the soil vapor investigation of the Service Center building was submitted for the Department's review on May 30, 2006. The Feasibility Study Report of OU No.1 was completed in August 2006 and was subsequently revised in the March 2007 Feasibility Study Report Addendum.

The field activities and findings of the investigation are described in the Remedial Investigation and Supplemental Remedial Investigation Reports, which together comprise the Remedial Investigation Report (RI).

The following activities were conducted during the RI:

- Research of historic investigation;
- Completion of soil borings to observe surface geologic conditions and to collect subsurface soil samples;
- Excavation of test pits to directly observe the subsurface conditions, subsurface structures and collect soil samples;
- Collection of soil samples for chemical analyses;
- Installation of monitoring wells to evaluate groundwater conditions and determine groundwater flow directions;
- Collection of multiple rounds of groundwater elevation readings to evaluate groundwater flow and the accumulation of non-aqueous phase liquids;
- Completion of multiple rounds of sampling and analysis of the groundwater;
- Collection of ambient and indoor air samples and chemical analysis;
- Completion of a Fish and Wildlife Impact Analysis through Step II C.

5.1.1: Standards, Criteria, and Guidance (SCGs)

To determine whether the soil and groundwater in OU1 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 the Department's "Ambient Water Quality Standards and Guidance Values" and Part 5 of the New York State Sanitary Code.

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

- Concentrations of VOCs in air were evaluated using the air guidelines provided in the NYSDOH guidance document titled "Guidance for Evaluating Soil Vapor Intrusion in the State of New York," dated November 2006.

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

5.1.2: <u>Nature and Extent of Contamination</u>

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

As described in the RI Report, many soil and soil vapor samples were collected to characterize the nature and extent of contamination. As summarized on Figure 4, the main categories of contaminants that exceed their SCGs are volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs). For comparison purposes, where applicable, SCGs are provided for each medium.

Coal tar is a reddish brown oily liquid by-product which formed as a condensate as the gas cooled and does not readily dissolve in water. Materials such as coal tar are commonly referred to as non-aqueous phase liquids, or NAPLs. The terms NAPL and coal tar are used interchangeably in this document. Although most coal tars are slightly more dense than water, the difference in density is slight. Consequently, this tar can either float or sink when in contact with water. Coal tar was found during the on-site remedial investigations.

Specific volatile organic compounds (VOCs) of concern are benzene, toluene, ethylbenzene, and xylenes. These are referred to collectively as BTEX in this document. Semivolatile organic compounds of concern are the polycyclic aromatic hydrocarbons (PAHs). Total PAH concentrations are referred to in this plan as the sum of individual PAH compounds.

Tars contain high levels of PAH compounds and often approach percent levels. Tars also exceed SCGs for BTEX by several orders of magnitude. In certain tar samples, enough benzene may be present to require that the material be managed as a hazardous waste.

Chemical concentrations are reported parts per million (ppm) for soil. Air samples are reported in micrograms per cubic meter ($\mu g/m^3$).

Figure 4 summarizes the degree of contamination for the contaminants of concern in subsurface soil 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.

Waste Materials

The RI data indicate that coal tar is the major type of waste present at the site. Tars generated at the MGP were disposed, spilled or leaked from one or more gas holders, and possibly other structures, at various locations throughout the site that no longer exist. Tar is visible as sheen on a water surface or as a NAPL in soil or water.

Visual observations of sheens or NAPL in the subsurface were generally limited to the locations of former MGP structures, locations downgradient of the structures, and the gravel and sand water-bearing interval located immediately above the silty clay confining layer. Generally the NAPL was observed at depths ranging from three to 17 feet below the ground surface and was generally reddish-brown in color. Figure 5 depicts the locations where NAPL was observed within the subsurface of OU 1. The greatest NAPL impacts were encountered east and south of the service center building in the area near the former above ground gas holder. Lesser impacts were observed at the site within the saturated portion of the sandy gravel layer. Observations of NAPL were generally consistent with the flow of groundwater from the former MGP structures and contour of the silty clay confining layer.

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

Surface Soil

The surface soils at the site are generally not significantly impacted by the former MGP operations. The primary contaminants of concern for the surface soil are PAHs. The majority of site-related contaminants found above analytical detection limits are comparable to background soil sample results. One surface soil sample result (location SB13) was significantly above the SCG for six PAH compounds. PAHs are common in fuel, asphalt, combustion and coal residues and are therefore common in developed areas.

Total PAHs (TPAH) detected in the nine on-site surface soil samples ranged from below the minimum detection limit (MDL) to 120 ppm. Values for TPAH in the five background (off-site) samples collected from areas not affected by the MGP ranged from below the MDL to 2.4 ppm. Figure 6 depicts the location associated with the surface soil sampling at location SB-13.

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

Subsurface Soil

Analytical results for subsurface and saturated zone soil samples confirmed the general understanding of the nature and extent of impacts based on the visual observation of NAPL. The occurrence of soils exceeding the Department’s recommended subsurface soil cleanup objective of 1,000 ppm for total SVOCs, as was the distribution of NAPL, is consistent with location of former subsurface structures associated with the MGP operations and locations downgradient of the structures. The analytical results indicate that VOCs including benzene, toluene, ethylbenzene and xylenes (BTEX), chlorinated VOCs and SVOCs, (specifically PAHs) are the contaminants of concern at OU 1.

Total VOC concentrations in soil samples collected from the subsurface at the site ranged from less than 1 ppm to 360 ppm. Total SVOC concentrations ranged from below the MDL to 1,900 ppm.

In addition to MGP related impacts, chlorinated compounds emanating from the upgradient dry cleaner facility were also found in the subsurface soils and groundwater in OU-1.

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

Groundwater

Groundwater at the site has been impacted by dissolved-phase BTEX compounds and PAHs related to MGP residuals in the soil at the site. During the RI, groundwater was observed at depths ranging from nine to thirteen feet below the ground surface. The impacts are limited to the shallow groundwater found primarily above the silty clay confining layer. The impacted groundwater is primarily located in the central and northern portions of the site. The presence of chlorinated VOCs under the site is believed to be emanating from an offsite source, a former dry cleaning business, which was located upgradient (southeast) of the site.

Groundwater contamination identified during the OU 1 RI/FS will be further investigated in the OU 2 RI/FS and addressed in the OU2 remedy selection process.

Surface Water

No site-related surface water contamination of concern was identified during the RI/FS. Therefore, no remedial alternatives were evaluated for surface water.

Sediments

No site-related sediment contamination of concern was identified during the RI/FS. Therefore, no remedial alternatives were evaluated for sediment.

Soil Vapor/Sub-Slab Vapor/Air

A soil vapor intrusion (SVI) survey was performed in the area of the NYSEG service center building based on the findings of the RI report. The objective of the SVI investigation was to determine the potential for indoor air impacts resulting from subsurface MGP contamination and to determine if a complete pathway exists between the subsurface impacts and the indoor air.

The survey consisted of collecting air samples from inside the service center building, sub-slab vapor samples from beneath the service center slab floor, soil gas samples from outside the building foundation, and outdoor air samples. The laboratory analytical results indicated the presence of BTEX compounds in the sub-slab, indoor air, and outside (ambient) air samples. The laboratory analytical results also indicated the presence of chlorinated VOCs (tetrachloroethene, trichloroethene, and

1,2-dichloroethene) in the sub-slab and indoor air samples. The BTEX compounds are typically associated with MGP sites and petroleum products, while the chlorinated VOCs are not. Indoor air concentrations for BTEX ranged from 12.6 $\mu g/m^3$ to 123.9 $\mu g/m^3$, and sub-slab BTEX soil vapor concentrations ranged from 23 $\mu g/m^3$ to 73 $\mu g/m^3$. Sub-slab chlorinated VOC soil vapor concentrations ranged from 33.9 $\mu g/m^3$ to 20,700 $\mu g/m^3$.

Potential sources of the BTEX compounds may be subsurface soils and groundwater containing MGP residual contamination, and/or gasoline and other petroleum products stored in the attached garage. Concentrations of these compounds (and SVOCs) are generally found at the highest concentrations at the former locations of key features at the MGP (e.g. former gas holders, gas house, etc.). The potential migration pathway of vapors to the building may be from the unsaturated zone soils or volatilization of BTEX compounds dissolved in groundwater. An additional potential source of BTEX compounds in the building may be vapors from gasoline and other petroleum products stored in the attached garage.

The source of the chlorinated VOCs may be the former dry cleaning business located southeast of the site. Tetrachloroethene is a commonly used dry cleaning solvent. Other chlorinated VOCs identified in the sample results (trichloroethene and 1,2-dichloroethene) are well-known products of the degradation of tetrachloroethene.

Indoor air contamination identified during the RI/FS was addressed by NYSEG through the installation of a sub-slab depressurization system which is described in Section 5.2.

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.

A limited IRM was completed during 1988 as part of a site paving project. The remedial work included the excavation and off-site disposal of approximately 1,500 cubic yards of MGP impacted soil, source material and waste material. This contaminated soil was properly characterized and transported to a permitted hazardous waste disposal facility in Alabama.

Mitigation measures were taken at the on-site service center building to address current human exposures (via inhalation) to volatile organic compounds in indoor air associated with soil vapor intrusion. These mitigation measures were undertaken primarily to address chlorinated VOCs that are not believed to be related to the MGP. However, vapors which contained aromatic VOCs related to the MGP as well as petroleum products were also addressed through these mitigation measures.

A NYSEG contractor was retained to install a sub-foundation depressurization system in October 2006. The purpose of the system was to eliminate a migration pathway for vapor from the subsurface soils into the working area of the building. This was accomplished by applying a vacuum to the sub-foundation soils, thereby breaking the migration pathway from the soil to the indoor air. Indoor air monitoring conducted in 2007 after the system began operating indicates that it effectively reduced indoor air contamination to acceptable levels.

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 7.0 of the Final Supplemental Remedial Investigation Report for Operable Unit 1 (January 2006). This document is available for review at the document repositories. An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has five elements: [1] a contaminant source, [2] contaminant release and transport mechanisms, [3] a point of exposure, [4] a route of exposure, and [5] a receptor population.

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

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

Site-related contamination has impacted soils and groundwater both on-site and off-site. Site workers who dig or enter any excavations at the site could potentially be exposed to coal tar, and contaminated soils, soil gas, and groundwater through incidental inhalation and/or dermal contact. The same potential routes of exposure exist for utility workers who dig or enter any excavations off-site where contamination is present.

MGP-related contamination from the site is present in soil vapor, subslab vapor and indoor air. Chlorinated VOC contamination from an upgradient source is present in soil vapor, sub-slab vapor, and indoor air. A sub-slab soil vapor extraction system (as described in Section 5.2) was installed at the Service Center to mitigate possible exposure to this contamination.

5.4: Summary of Environmental Assessment

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

The Fish and Wildlife Impact Analysis, which is included in Section 8.0 of the Final Supplemental Remedial Investigation Report for Operable Unit 1 (January 2006), presents a detailed discussion of the existing and potential impacts from the site to fish and wildlife receptors.

Operable Unit No. 1 of the site is located within a highly developed portion of Dansville, with either a building or pavement occupying a large portion of the area. Due to the limited size and industrial nature of the OU 1 there are very limited opportunities for wildlife resources.

Subsurface soil contamination at the site has negatively impacted the groundwater resource in the unconsolidated geologic units beneath OU 1. The impacted soil has been an ongoing leaching source of contamination resulting in the downward migration of contamination into the groundwater of OU 2.

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

- Site contamination has adversely impacted the groundwater resource in the overburden so as to render the aquifer unusable without treatment.

SECTION 6: <u>SUMMARY OF THE REMEDIATION GOALS</u>

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. At a minimum, the remedy selected must eliminate or mitigate all significant threats to public health and/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 this OU1 of the site are to eliminate or reduce to the extent practicable:

- exposures of persons at or around the site to VOCs, SVOCs, PAHs, and NAPL in soil;

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

- the release of contaminants from the soil and groundwater into indoor air, outside air, off-site soil and groundwater through soil vapors.

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

- soil cleanup objectives;

- ambient water quality standards.

SECTION 7: <u>SUMMARY OF THE EVALUATION OF ALTERNATIVES</u>

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 OU1 of the NYSEG Dansville MGP Site were identified, screened and evaluated in the FS report which is available at the document repositories established for this site.

The proposed remedy also must take into consideration the groundwater contamination identified in OU 2 resulting from the solvent release from the Pappas Dry Cleaner property. The remedy for OU 1 should not exacerbate the conditions in OU 2 while at the same time addressing the remedial goals.

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

7.1: <u>Description of Remedial Alternatives</u>

The following potential remedies were considered to address the contaminated soils above and below the groundwater table at the site.

Alternative 1: No Further Action

The No Further Action alternative recognizes remediation of the site conducted under previously completed IRMs. To evaluate the effectiveness of the remediation completed under the IRM, only continued monitoring is necessary. This alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment. There would be no costs associated with this alternative.

Alternative 2: Containment, NAPL Removal, Asphalt/Soil Cover, and Institutional Controls

Alternative 2 would involve construction of a perimeter subsurface barrier wall around the OU1 area, limited extraction and off-site disposal of groundwater and NAPL, maintenance of the existing surface cap/cover, and institutional controls. Also, a limited volume of surface soil in the immediate vicinity of boring SB13 would be excavated and disposed off-site.

The perimeter isolation/containment component of Alternative 2 would involve the installation of a physical subsurface barrier around OU 1 to greatly reduce or eliminate groundwater movement through grossly contaminated soils below the water table. This containment of groundwater within the source area would mitigate the potential for continued migration of both NAPL and dissolved phase contaminants from the site to downgradient areas of OU-2.

The FS estimates that a slurry wall, approximately 20 feet deep and 1,000 feet in length along the perimeter of OU1, would be required, although another form of physical barrier such as a sheet pile wall could be substituted during design. Slurry walls are installed by excavating a narrow vertical trench to bedrock or a low permeability confining layer. During excavation, the trench is filled with slurry consisting of a mixture of bentonite, cement and water. Maintaining the trench full of slurry prevents caving or sloughing of the trench walls. After excavation, the slurry-filled trench is backfilled with a soil/bentonite/cement/water mixture to create a low permeability barrier. Other barrier types such as *in-situ* stabilization barrier, sheet piling, jet grout wall, may also be viable. The type, location and depth of the barrier would be finalized during remedial design. The presence of active underground gas mains that extend through the OU 1 area would complicate the design and installation of the containment system.

The subsurface barrier would also prevent the migration of contaminated groundwater from the upgradient, non-MGP source (i.e., the former Pappas Cleaners facility) from continuing to impact OU-1 groundwater with chlorinated compounds. However, the barrier could alter the groundwater flow pattern such that non-MGP dissolved phase contaminants from the upgradient off-site source may migrate into previously un-impacted areas.

Extraction wells would be installed inside of the containment area to remove coal tar NAPL that may accumulate and to maintain an inward hydraulic gradient, if necessary. The conceptual locations of the wells are depicted on Figure 6. Periodically, total fluids (both NAPL and groundwater) would be extracted and disposed off-site. The FS estimates that approximately 4,000 gallons of total fluids would be extracted per month over a 20-year period.

Because the surface soil sample from location SB13 exceeded soil cleanup guidelines for PAHs, this alternative would include a limited excavation in this area with off-site disposal. Clean soil from an off-site source would be used as backfill material where needed. Maintenance of the existing surface cover (soil and asphalt) would occur to limit potential exposure to contaminants in subsurface soil.

To prevent exposure to contaminants that would remain at the site, site use restrictions would be placed on the site to control land use, future excavations and groundwater use at the site. These restrictions would be in the form of an environmental easement granted to the Department. A Site Management Plan (SMP) would be developed to describe these restrictions in detail, along with procedures for the maintenance and monitoring of the site remedy. The easement and SMP would require the property owner to periodically certify that the institutional and engineering controls (IC/ECs) necessary to protect public health and the environment are still in place and are effective. The certification would be prepared and submitted by a professional engineer or other environmental professional acceptable to the Department. This alternative would require approximately 1 year to design and 6 months to construct.

Present Worth:	$2,513,400
Capital Cost:	$1,521,900
Annual Costs:	$64,500

Alternative 3 – Excavation of Subsurface Structures and MGP Source Material from Above and Below the Groundwater Table, and Institutional Controls

Alternative 3 would involve excavation of MGP source material from the soil above and below the groundwater table to the depth of the subsurface confining layer of soil. The excavation would be performed within a construction/excavation barrier (e.g. sheet piling). The construction barrier may be installed as a temporary or permanent structure, as discussed below. This excavation would include the former MGP subsurface structures and adjoining areas that contain source material. Source material is defined as any of the following: 1) Visible tar or oil; or 2) Soil with total PAH concentration of 1,000 ppm with the presence of sheens or odors. This alternative would also include land and groundwater use restrictions and site management as noted in Alternative 2.

The general areas for the excavation activities are identified on Figure 7. The FS provides an estimated size of the subsurface barrier similar in dimensions as Alternative 2. The wall would be approximately 20 feet deep and 1,000 feet in length along the perimeter of OU1.

Because the excavation would extend below the groundwater table a significant amount of groundwater is likely to be generated during the remedial work. This alternative includes the installation of a construction barrier and groundwater (hydraulic) controls to support the excavation activities. For evaluation purposes, installation of a self-hardening slurry wall around the excavation areas at the location depicted on Figure 8 was considered.

The excavation would extend into the soil beneath the groundwater table to the top of the confining unit. An estimated 20,500 tons of impacted soil would be removed under this alternative. An excavation depth of 16 feet within a surface area of approximately 23,000 square feet has been assumed for evaluation purposes. The extent of soil excavation would be finalized during the remedial design phase, with consideration given to critical infrastructure present at the active service center, such as underground gas mains that extend through the excavation areas. In addition, surface soil in the immediate vicinity of boring SB13 would be excavated. Under this alternative soil would be excavated above and below the water table elevation.

Excavated MGP source material from above and below the groundwater table would be transported off-site to a DEC approved treatment and disposal facility. Debris would be transported to a local landfill for disposal. Soil within the construction barrier with concentrations that are less than the cleanup criteria will be excavated to access source material at a greater depth. This soil will be stockpiled and evaluated for reuse as fill material within the excavation. Clean soil from an off-site source would be used as the uppermost layer of backfill to bring the site back to the pre-excavation elevation.

Following the completion of the excavation activities the construction barrier may be left in place. If the barrier is left in place it would prevent impacted groundwater from the upgradient source of chlorinated compounds (i.e., the former Pappas Cleaners facility) from re-contaminating the backfilled portion of the excavation. However, the barrier may alter groundwater flow patterns such that impacted groundwater from the former Pappas Cleaners property may migrate to previously uncontaminated areas. Therefore, depending on the type of subsurface barrier that would be utilized, removal or modification of the hydraulic controls may be necessary following the excavation. The implementation of this alternative would require coordination with any planned remedial actions at the former Pappas Cleaners property by the Department.

To prevent exposures to source material that cannot be excavated due to the presence of critical infrastructure, soil that does not exceed the clean-up criteria,, and contaminated groundwater, the site and groundwater use restrictions described in Alternative 2 would be a component of this alternative.

The initial cost to implement Alternative 3 is estimated at $4,845,700, to cover excavation costs with groundwater controls and institutional controls. The estimated total present worth cost of Alternative 3 is $4,953,300. Table 1 provides the detailed cost estimate for this alternative. This alternative would require approximately 1 year to design and 9 months to construct. Because contaminated groundwater would be removed during the excavation de-watering, this alternative would achieve the project remedial goals when construction is completed.

Present Worth:	$4,953,300
Capital Cost:	$4,845,700
Annual Costs:	$7,000

Alternative 4 – Excavation of Subsurface Structures and MGP Source Material from Above the Groundwater Table, Containment, and Institutional Controls

Alternative 4 would involve the excavation of and removal of former MGP related subsurface structures, excavation and removal of MGP source material to the depth of groundwater, containment of the entire OU 1 subsurface using a subsurface barrier, maintenance of the ground surface cap/cover, and institutional controls. MGP source material is defined as: 1) Visible tar or oil; and 2) Soil with total PAH concentration of 1,000 ppm with the presence of sheens or odors.

The extent of the excavation areas and location of the subsurface physical barrier used for evaluation purposes are depicted on Figure 8. Groundwater is present at depths ranging from nine to thirteen feet below the ground surface. For estimation purposes, an average depth of ten feet below the ground surface was used. In addition, soil in the immediate vicinity of boring SB13 would be excavated.

An estimated 10,000 tons of material would be excavated as part of this alternative. Excavated source material would be transported off-site to a permitted treatment and disposal facility. Debris would be transported to a local landfill for disposal. The excavation would include a significant volume of unimpacted material above the watertable. Soil that is excavated to access source material at a greater depth would be stockpiled and reused as fill material within the excavation. Clean soil from an off-site source would be used as the upper layer of backfill to bring the site back to the pre-excavation elevation. The extent of the soil excavation would be finalized during the remedial design phase, along with further evaluation of access at the former gas holder locations. Similar to Alterative 3, the feasibility of installing a containment system and excavating near the underground gas mains would also be evaluated during the remedial design phase.

The containment element of Alternative 4 involves installation of a physical barrier within the OU1 area to greatly reduce or eliminate groundwater movement through the area that has coal tar NAPL contamination. For evaluation purposes, installation of a barrier approximately 1,000 feet in length along the perimeter of the OU1 area has been assumed (see Figure 8). The proposed physical barrier location is tentative at this time, and would be determined based on information obtained during the remedial design investigation. This type of containment would address possible movement of NAPL by eliminating the movement of groundwater. This containment may also mitigate the potential for continued migration of dissolved phase constituents from the source areas.

Maintenance of the existing ground surface cap/cover would occur to limit potential soil exposures beyond the excavation areas and to maintain groundwater control within the isolated area of OU1 by minimizing infiltration of water from the surface. To prevent exposures to source material that would remain at the site, residual, low-level contamination used for backfill, and contaminated groundwater, the site and groundwater use restrictions described in Alternative 2 would be a component of this alternative.

The cost estimate of this alternative includes costs for initial construction, as well as periodic maintenance of the cover, soil management, and certification. The initial cost to implement Alternative 4 is estimated to be $3,005,300 for excavation, installation of the containment barrier around OU1, and institutional controls. Annual costs for cap/cover maintenance, and soil management and certification are estimated to be $16,500. Over a 30-year period, the estimated total present worth cost is approximately $3,258,900. Table 1 provides the detailed cost estimate for Alternative 4. This alternative would require approximately 1 year to design and 9 months to construct. Because a source of groundwater contamination would remain within the containment structure, achieving remedial goals would require 30 years or more.

Present Worth:	$3,258,900
Capital Cost:	$3,005,300
Annual Costs:	$16,500

7.2 Evaluation of Remedial Alternatives

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

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

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

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

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

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

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

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

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

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

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

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

SECTION 8: SUMMARY OF THE PROPOSED REMEDY

The Department is proposing Alternative 3, Excavation of Subsurface Structures and MGP Source Material from Above and Below the Groundwater Table, and Institutional Controls as the remedy for this site. The elements of this remedy are described at the end of this section.

The proposed remedy is based on the results of the RI and the evaluation of alternatives presented in the FS. The evaluation takes into consideration each comparative analysis criteria described in Section 7.2, in addition to the overall project consideration. Alternative 3 is being proposed because this alternative would provide the highest level of protection to human health and the environment and would comply with New York State SCGs. Further, it would provide the best balance of the primary balancing criteria, as described in Section 7.2, by: 1) removing the soils that create the most significant threat to public health and the environment, 2) greatly reducing the source of contamination to groundwater within OU1 and OU2, and 3) creating the conditions to restore groundwater quality in OU-1 to the extent practicable. Alternative 3 would provide the best long term effectiveness and permanence to address the source material. Although this approach would be the most difficult to implement, the technology and resources required to perform this alternative are readily available and it could be reasonably implemented. Additionally, Alternative 3 would eliminate the source of offsite impacts and enable the development of a remedial approach for offsite impacts in OU-2. This approach would attain the highest level of protection of the public health and the environment and would achieve remedial goals to the extent practicable in the shortest time frame.

Alternative 1 would not satisfy the threshold criteria of protecting public health and the environment and would not comply with New York State standards, criteria and guidance because it would leave uncontrolled contamination at the site. Alternatives 2 and 4 would provide similar degrees of overall protection of public health and the environment. For these two alternatives potential contaminant migration would be controlled by using a subsurface containment barrier. The potential for human exposure to NAPL would be substantially eliminated with these alternatives by maintenance of a surface cover, and the use of institutional controls. Potential exposure to recovered NAPL during implementation of Alternative 2 can be addressed using routine procedures. Although there is a limited potential for short-term exposures to the impacted soils during implementation of Alternative 4, routine procedures are available to assure adequate protection of workers and the community. However, MGP source material would remain below the water table within OU1, and would pose a continued threat of environmental impacts under Alternative 4. Alternative 3 is the most protective of public health and the environment because impacted soil and subsurface structures from above and below the water table in OU1 would be removed.

Alternatives 2 and 4 include the installation of a subsurface containment barrier around OU1, maintenance of a surface cap/cover and institutional controls. The difference in these two alternatives involves how source material within the subsurface barrier would be addressed. Installation of extraction points and periodic extraction would occur with Alternative 2. Active remediation by excavation above the water table would occur with Alternative 4. Alternative 2 would involve less short-term impacts than Alternative 4. However, Alternative 4 would provide better compliance with SCGs. Grossly contaminated soil and subsurface structures with significant visual NAPL content would be addressed, which should significantly reduce or eliminate material acting as a source of MGP-related groundwater impacts on-site and off-site. Alternative 3 would comply with the standards, criteria and guidance established for this project.

Aside from the no action alternative, each of the alternatives would have short-term impacts which would need to be controlled with health and safety plans and engineering controls. The time needed to achieve the remediation goals and potential for adverse short term impacts for this operable unit are largely a function of the duration and specific activities required by each remedial alternative. Excavation alternatives would present the greatest potential for short-term exposures to both site remediation workers and the surrounding community. Alternative 3 includes extending the excavation below the water table to remove MGP source material from the saturated zone. Handling the significant volume of wet excavated material would result in the longest duration to complete remedial construction activities and the greatest potential for short-term impacts. However, routine procedures are available to monitor and mitigate odor and dust resulting from the construction activities. Because construction activities for Alternatives 2 and 4 would require a shorter duration of excavation, the potential short-term impacts would be less than for Alternative 3. Implementation of "no action" (Alternative 1) would not affect the community or remediation workers, and implementation would not cause any short-term adverse environmental effects.

Alternatives 2 and 4 have similar degrees of long-term effectiveness and permanence, since both alternatives rely primarily on containment and exposure controls. However, excavation of contamination above the water table within the containment barrier (a component of Alternative 4) is more reliable than long-term NAPL extraction in Alternative 2. Excavation of NAPL-impacted material above and below the water table to the extent practicable (Alternative 3) provides the most effective and permanent long-term solution to address the sources of MGP-related contamination. Alternative 2 primarily relies on containment to address contaminant mobility, with direct treatment limited to removal via periodic extraction and disposal of total fluids (both NAPL and groundwater). Alternative 4 includes excavation of the former MGP subsurface structures and impacted soils above the water table. In comparison to Alternative 2, the excavation component is comparable to long-term extraction and disposal of total fluids from within the barrier. Alternative 3 would provide the greatest reduction of toxicity and mobility of the NAPL. Direct volume reduction of constituents within OU1 would be achieved through physical removal of NAPL-impacted subsurface structures soil located above and below the water table. Because NAPL located below the water table would be removed, the associated potential for MGP-related groundwater impacts and dissolved phase constituent mobility would be eliminated.

Because of the planned excavation work within the saturated zone, Alternative 3 would be the most difficult alternative to implement. In addition to sidewall stability and excavation water handling issues, underground utilities would need to be addressed during the remedial design phase and implementation of construction activities. The utility concerns include the gas mains located within the planned excavation area. These gas mains would have to remain operational. Alternative 4 would be easier to implement than Alternative 3 because Alternative 4 excavation does not extend below the water table. Alternatives 2 and 4 would have similar implementability due to the presence of underground utilities along the alignment of the containment wall. Alternative 4 would be somewhat more difficult to implement due to the excavation component. Alternative 1 would not have implementability constraints and would be the easiest alternative to implement technically; however, it is unlikely to be acceptable to the regulatory agencies and the community.

Comparative cost estimates for the remedial alternatives are provided in Table 1, including the estimated initial cost, annual cost, and total present worth cost. Alternative 3 would have the highest total cost to implement. With Alternative 3 the long-term O&M costs after implementation would be minimal when compared with Alternatives 2 and 4. Alternative 4 involves excavation above the water table combined with containment to address saturated zone impacts, resulting in lower initial costs than Alternative 3. Post-excavation costs for Alternative 4 would be involved, however, because of the surface cap/cover maintenance and soil management requirements.

Alternative 2 would have significantly lower initial costs (approximately $1.5 million less) than Alternative 4. Each of these two alternatives would include installation of a containment barrier around OU1 and maintenance of a surface cap/cover. However, the cost to install extraction points within OU1 would be significantly less than the cost to excavate the former MGP subsurface structures and associated areas with impacts below the water table. Alternative 2 would have the highest long-term costs due to the extraction and disposal of total fluids collected from within the barrier for an extended period of time. Alternative 1 (no active remediation, with institutional controls) would involve minimal initial costs and no annual costs, resulting in the lowest overall cost. The estimated present worth cost to implement the proposed remedy is $4,953,300. The cost to construct the remedy is estimated to be $4,845,700 and the estimated average annual costs for 30 years is $7,000.

The elements of the proposed remedy are as follows:

1. A remedial design program would be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program. Any uncertainty identified during the RI/FS would be resolved, including a more precise delineation of the lateral and vertical extent of the proposed excavation.

2. Installation of a construction barrier and hydraulic control system to ensure a stable excavation and provide groundwater management required to perform the excavation below the water table. The self-hardening slurry wall, or other viable construction barrier, may be left in place following the completion of the soil removal activities, or may be placed temporarily during the excavation work. The groundwater management system would be developed based on site-specific information and would be adequate to manage all dewatering handling, treatment, or disposal needs of the site.

3. Demolition of the southern portion of the on-site building as necessary to enable the excavation of contaminated soils. The northern portion of the current site building would remain in place.

4. Excavation of MGP waste, NAPL and contaminated soils meeting one or more of the following criteria: visible tar or oil; the presence of sheens or odors with total PAHs over 1,000 ppm; or total BTEX concentration above 10 ppm. It is estimated that this would result in the excavation of contaminated soils to a depth of 16 feet below the ground surface, however soil excavation would proceed deeper if soils exceed one or more of the above criteria. Treatment and/or disposal of excavated materials meeting the above criteria would occur at an off-site facility.

5. Excavated materials which are below the criteria would be stockpiled and evaluated for reuse on-site. The excavation would be backfilled with stockpiled soils and clean soil which is soil that meets the Division of Environmental Remediation's criteria for backfill or local site background, and the ground surface would be prepared to meet future land use requirements.

6. A soil cover would be constructed over all vegetated areas to prevent exposure to contaminated soils. The one-foot thick cover would consist of clean soil underlain by an indicator such as orange plastic snow fence to demarcate the cover soil from the subsurface soil. The top six inches of soil would be of sufficient quality to support vegetation. Clean soil would constitute soil that meets the Division of Environmental Remediation's criteria for backfill or local site background. Non-vegetated areas (buildings, roadways, parking lots, etc.) would be covered by a paving system or concrete at least 6 inches thick. Non-vegetated areas (buildings, roadways, parking lots, etc.) would be covered by a paving system, concrete, or gravel.

7. Imposition of an institutional control in the form of an environmental easement that would require: (a) commercial use, which would also permit industrial use, (b) compliance with the approved site management plan, and; (c) restricting the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by NYSDOH.

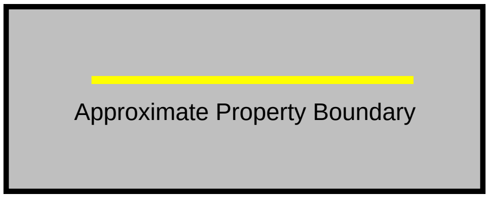
8. Development of a site management plan which would include the following institutional and engineering controls: (a) management of the final cover system to restrict excavation below the soil cover's demarcation layer, pavement, or buildings. Excavated soil would be tested, properly handled to protect the health and safety of workers and the nearby community, and would be properly managed in a manner acceptable to the Department; (b) continued evaluation of the potential for vapor intrusion for any buildings developed on the site, including provision for mitigation of any impacts identified; (c) identification of any use restrictions on the site; and a monitoring plan to monitor the effectiveness of the remedy.

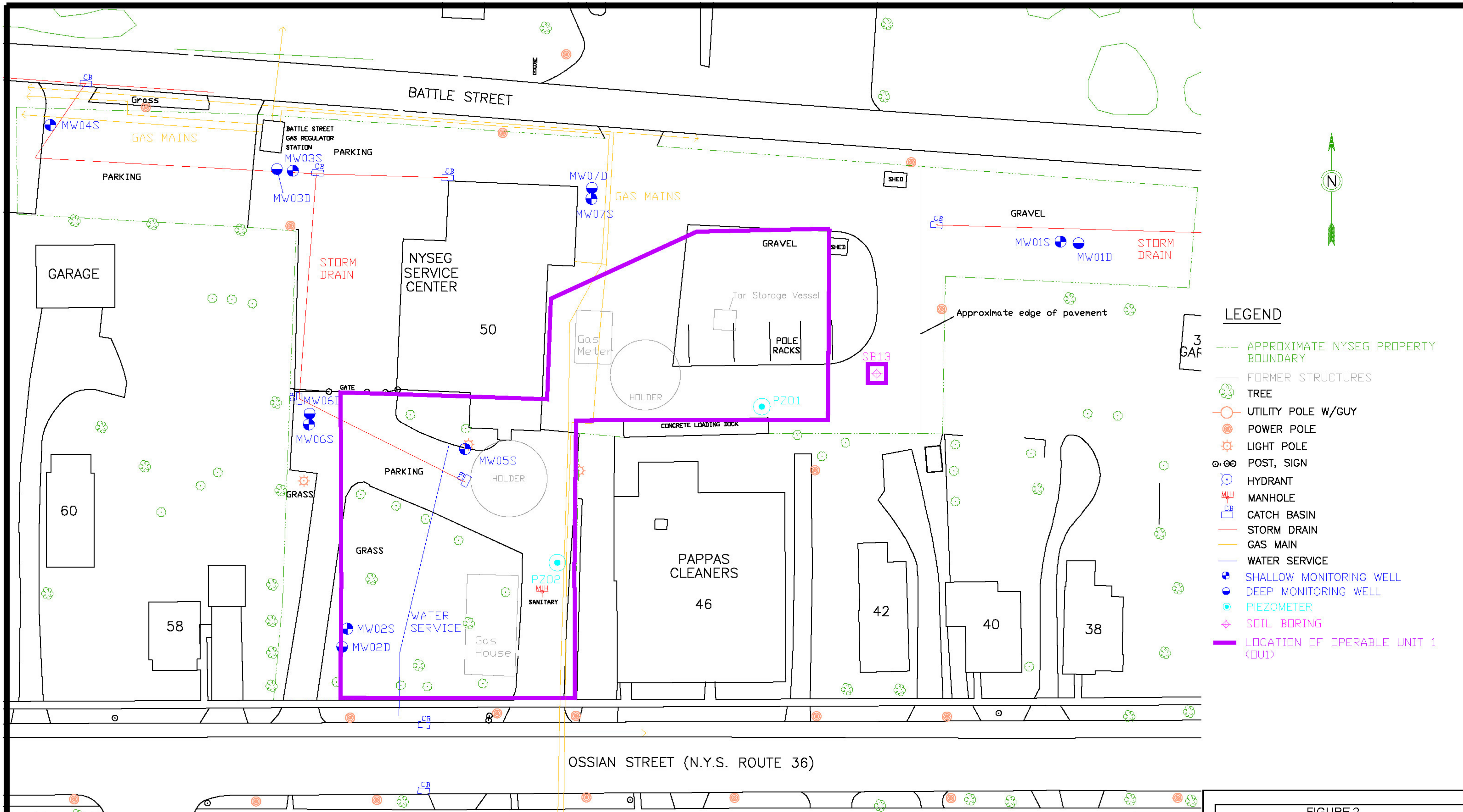
9. The property owner would provide a periodic certification of institutional and engineering controls, prepared and submitted by a professional engineer or such other expert acceptable to the Department, until the Department notifies the property owner in writing that this certification is no longer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

Table 1_
Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
No Action			
Alternative 1 (without institutional controls)	$0	$0	$0
Alternative 2 Containment, NAPL Removal, Asphalt/Soil Cover and Institutional Controls	$1,521,900	$64,000	$2,513,400
Alternative 3 Excavation of Subsurface Structures and MGP Source Materials Above and Below the Water Table, and Institutional Control	$4,845,700	$7,000	$4,953,300
Alternative 4 Excavation of Subsurface Structures and MGP Source Material Above the Water Table, Containment, Maintenance of Surface Cap/Cover, and Institutional Controls	$3,005,300	$16,500	$3,258,900

FIGURE 1
AERIAL PHOTO (approximately 1991)
NYSEG FORMER MGP SITE
DANSVILLE, NY





0 25 50 75
Scale SCALE REFERENCE Feet

Notes:
1) Base map provided by NYSEG surveying department.
2) The boundaries of OU1 are tentative at this time, and will be refined as necessary based on the findings of a remedial design investigation.

FIGURE 2

OPERABLE UNIT 1 - BOUNDARY MAP

NYSEG FORMER MGP SITE
DANSVILLE, NEW YORK

DATE: 3/02/07 FILE NAME: DANSFIGURE1

ISH INC. / MTR, INC.

FIGURE 3
Dansville Manufactured Gas Plant Historic Photo
NYSEG Former Dansville MGP Site
Dansville, New York

DP22	12.5–14	14–16	14–16	26.5–28	55–56
Total VOCs	31,000	2,900	4,900	8	ND
Total CPAHs	2,800	2,300	16,000	ND	ND
Total SVOCs	24,000	24,000	100,000	ND	ND
Tetrachloroethene	980	540	300	ND	ND
Total Cyanide	NA	NA	NA	NA	NA

SB08	12–14	21–22
Total VOCs	6,600	1,300
Total CPAHs	75,000	2,200
Total SVOCs	200,000	21,000
Tetrachloroethene	ND	ND
Total Cyanide	ND	ND

SB04	12–14
Total VOCs	26,000
Total CPAHs	97,000
Total SVOCs	1,100,000
Tetrachloroethene	1,100
Total Cyanide	ND

SB07	10–14	10–14	22–24	22–24	46–48	74–76
Total VOCs	16,000	8,000	180	440	9	16
Total CPAHs	15,000	26,000	ND	ND	ND	ND
Total SVOCs	200,000	250,000	460	ND	ND	ND
Tetrachloroethene	ND	ND	ND	ND	9	14
Total Cyanide	ND	ND	ND	ND	ND	ND

TP–101	
Total VOCs	80
Total CPAHs	55,000
Total SVOCs	310,000
Tetrachloroethene	ND
Total Cyanide	ND

SB14	12–14
Total VOCs	2,500
Total CPAHs	ND
Total SVOCs	ND
Tetrachloroethene	2,300
Total Cyanide	ND

DP04	10–12
Total VOCs	2,000
Total CPAHs	52,000
Total SVOCs	370,000
Tetrachloroethene	320
Total Cyanide	ND

SB02	14–16	22–24
Total VOCs	4,400	14
Total CPAHs	ND	ND
Total SVOCs	1200	ND
Tetrachloroethene	3,200	2
Total Cyanide	ND	ND

SB09	12–14	22–24
Total VOCs	29,000	19
Total CPAHs	230,000	ND
Total SVOCs	1,900,000	1,400
Tetrachloroethene	11,000	4
Total Cyanide	ND	ND

SB20	12–14	18–20
Total VOCs	80	630
Total CPAHs	20,000	ND
Total SVOCs	120,000	410
Tetrachloroethene	ND	ND
Total Cyanide	ND	ND

TP–113	
Total VOCs	1,600
Total CPAHs	15,000
Total SVOCs	49,000
Tetrachloroethene	ND
Total Cyanide	ND

DP02	12–14
Total VOCs	1,400
Total CPAHs	15,000
Total SVOCs	120,000
Tetrachloroethene	ND
Total Cyanide	ND

SB06	12–14	22–24	82–84
Total VOCs	32	28	46
Total CPAHs	ND	ND	ND
Total SVOCs	65,000	ND	ND
Tetrachloroethene	ND	ND	ND
Total Cyanide	ND	ND	ND

SB05	12–13	22–24
Total VOCs	47,000	41
Total CPAHs	51,000	ND
Total SVOCs	520,000	ND
Tetrachloroethene	ND	ND
Total Cyanide	24	11

SB18	12–14	19–21
Total VOCs	42	470
Total CPAHs	42,000	ND
Total SVOCs	200,000	160
Tetrachloroethene	ND	ND
Total Cyanide	ND	ND

SB01	12–14	20–22
Total VOCs	320,000	430
Total CPAHs	95,000	ND
Total SVOCs	1,300,000	320
Tetrachloroethene	ND	210
Total Cyanide	ND	ND

SB19	7–10	14–16
Total VOCs	12	16
Total CPAHs	530	ND
Total SVOCs	2,700	ND
Tetrachloroethene	ND	ND
Total Cyanide	ND	ND

SB03	10–12
Total VOCs	9
Total CPAHs	ND
Total SVOCs	ND
Tetrachloroethene	2
Total Cyanide	ND

TP–114	
Total VOCs	8
Total CPAHs	ND
Total SVOCs	ND
Tetrachloroethene	ND
Total Cyanide	ND

SB13	10–12
Total VOCs	15
Total CPAHs	ND
Total SVOCs	ND
Tetrachloroethene	5
Total Cyanide	ND

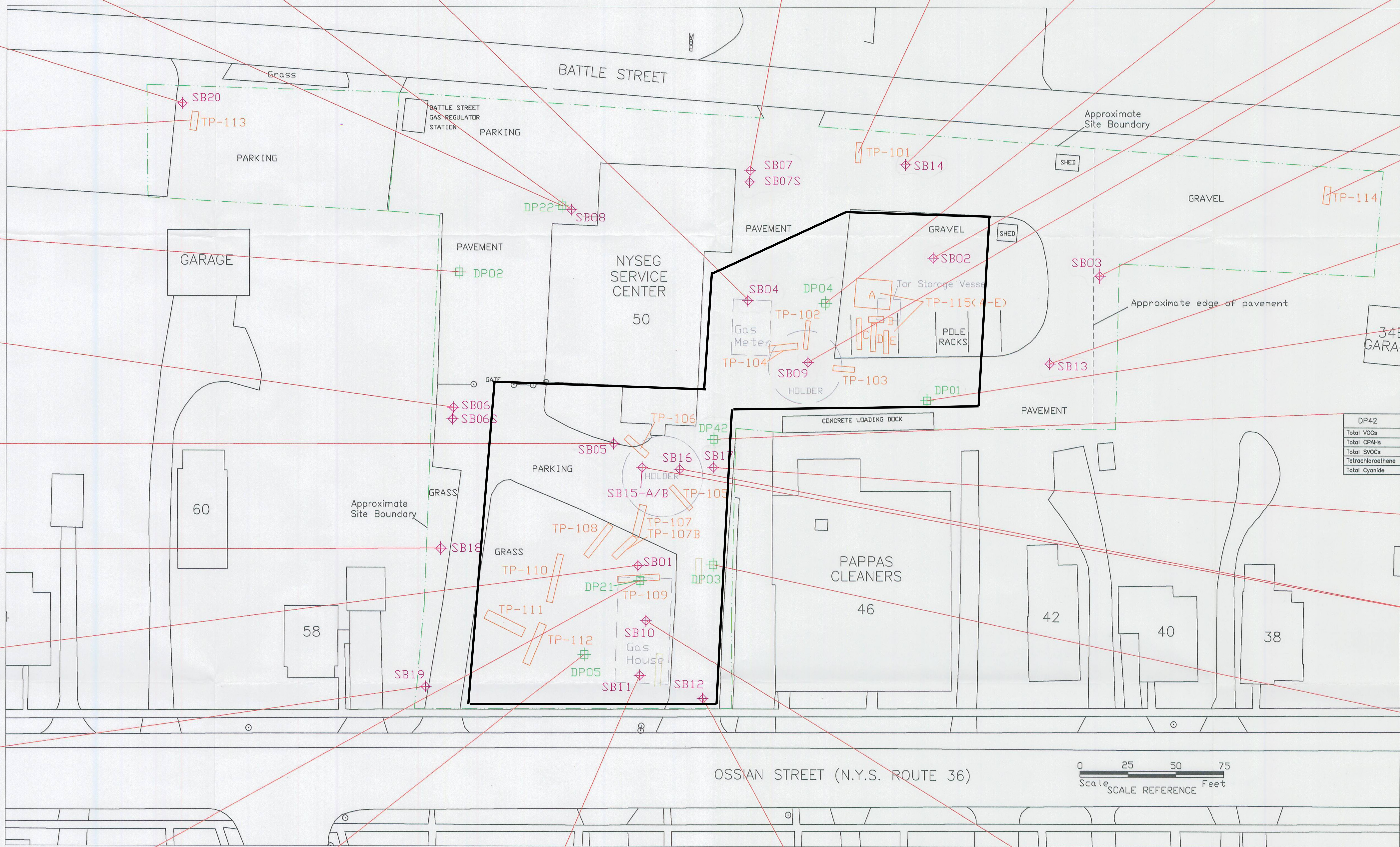
DP01	12–14
Total VOCs	86
Total CPAHs	ND
Total SVOCs	ND
Tetrachloroethene	79
Total Cyanide	ND

DP42	11.5–12	11.2–13.4	21.5–22.5	22.5–23.5	48–50	50–52
Total VOCs	NA	56,000	30	NA	1	NA
Total CPAHs	NA	88,000	NA	ND	NA	ND
Total SVOCs	NA	980,000	NA	130	NA	ND
Tetrachloroethene	NA	4,400	ND	NA	ND	NA
Total Cyanide	ND	NA	ND	NA	ND	NA

SB17	12–14	21–22
Total VOCs	780	250
Total CPAHs	790	19,000
Total SVOCs	27,000	210,000
Tetrachloroethene	130	5
Total Cyanide	ND	ND

SB15/16	6–8.8
Total VOCs	15,000
Total CPAHs	6,000
Total SVOCs	50,000
Tetrachloroethene	ND
Total Cyanide	ND

DP03	12–14
Total VOCs	13,000
Total CPAHs	18,000
Total SVOCs	180,000
Tetrachloroethene	ND
Total Cyanide	ND



DP21	10–12	12–13	26.5–28	38–40	58–60
Total VOCs	31,000	360,000	2	2	ND
Total CPAHs	17,000	74,000	ND	ND	ND
Total SVOCs	150,000	1,100,000	190	200	ND
Tetrachloroethene	ND	ND	ND	ND	ND
Total Cyanide	ND	NA	NA	NA	NA

DP05	12–16
Total VOCs	440
Total CPAHs	21,000
Total SVOCs	120,000
Tetrachloroethene	ND
Total Cyanide	ND

SB11	12–16
Total VOCs	24
Total CPAHs	5,100
Total SVOCs	25,000
Tetrachloroethene	ND
Total Cyanide	ND

SB12	10–12
Total VOCs	12
Total CPAHs	6,600
Total SVOCs	31,000
Tetrachloroethene	ND
Total Cyanide	3.7

SB10	12–14	16–18
Total VOCs	91,000	51,000
Total CPAHs	40,000	2,900
Total SVOCs	600,000	30,000
Tetrachloroethene	ND	ND
Total Cyanide	ND	ND

N

LEGEND

- Soil Boring
- Test Pit
- Direct Push Boring

ND= not detected above method limit

NA= not analyzed

Sample ID	Depth in feet
Total VOCs	ug/Kg
Total CPAHs	ug/Kg
Total SVOCs	ug/Kg
Tetrachloroethene	ug/Kg
Total Cyanide	mg/Kg

Sample Box

Notes:

Values shown in red exceed applicable NYS TAGM #4046 Recommended Soil Clean Up Objectives.

Base map provided by NYSEG surveying department.

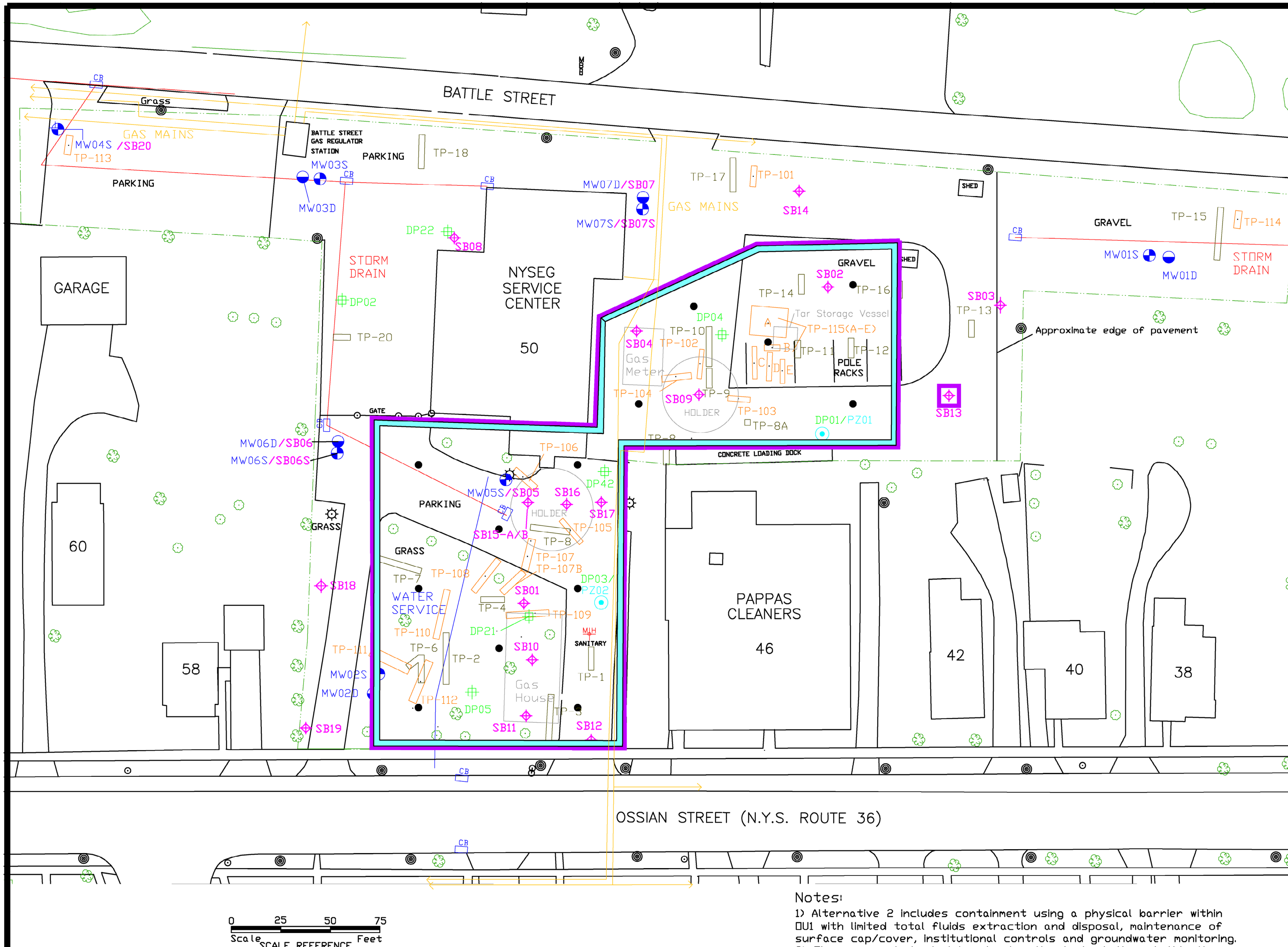
Supplemental Remedial Investigation
Dansville Former MGP Site
50 Ossian Street, Dansville, New York

Project: DANSVILLE/103023	Client: NYSEG	Ish Inc./META

Figure 4
Subsurface Soil Concentrations (ug/kg)

Filename: Dansville SRI	Drawn by: LMG	Approved by: PJD	Date: 1/13/2006

Observed in well (MW04S) when developed and sampled; sheens observed in boring
12-17
BATTLE STREET
Grass
PARKING
BATTLE STREET GAS REGULATOR STATION
GARAGE
NYSEG SERVICE CENTER
50
60
58
46
42
40
38
PAPPAS CLEANERS
GRAVEL
POLE RACKS
Tar Storage Vessel
Gas Meter
HOLDER
CONCRETE LOADING DOCK
GATE
GRASS
OU1
Approximate edge of pavement
SB20
TP-113
SB07
SB07S
SB14
TP-101
TP-17
SB08
DP22
DP02
TP-20
SB06
SB06S
SB05
SB16
SB17
DP42
SB15-A/B
SB04
TP-10
TP-102
TP-104
SB09
TP-103
TP-8A
TP-8
DP04
TP-115(A-E)
TP-12
TP-14
SB02
TP-16
SB03
TP-13
SB13
DP01
TP-15
TP-114
MW01S
MW01D
MW03D
TP-18
TP-106
TP-105
TP-5
TP-107
TP-107B
TP-7
TP-108
DP03
SB01
TP-110
TP-109
DP21
TP-1
TP-111
TP-2
SB10
TP-6
MW02S
MW02D
TP-112
DP05
SB11
TP-3
SB12
SB18
SB19
OSSIAN STREET (N.Y.S. ROUTE 36)
0 25 50 75
Scale Feet
SCALE REFERENCE
N
LEGEND
EXISTING SHALLOW MONITORING WELL
EXISTING DEEP MONITORING WELL
SOIL BORING
DIRECT PUSH BORING
PREVIOUS TEST PIT LOCATION (APPROXIMATE)
TEST PIT
APPROXIMATE SITE BOUNDARY
FORMER STRUCTURES
VISUAL OBSERVATIONS
SHEEN
SMALL NAPL GLOBULES
EXTENSIVE NAPL GLOBULES
DEPTH INTERVAL OF OBSERVED IMPACTS (Feet)
Note:
1. This figure was previously presented as Figure A-15 in the Supplemental RI Report for OU1 (Ish Inc., January 2006).
FIGURE 5
EXTENT OF NAPL CONTAMINATION
NYSEG FORMER MGP SITE
DANSVILLE, NEW YORK
DATE: 5/12/06
FILE NAME: DANSFIG2-3
ISH INC. / MTR, INC.



LEGEND

- APPROXIMATE NYSEG PROPERTY BOUNDARY
- FORMER STRUCTURES
- TREE
- UTILITY POLE W/GUY
- POWER POLE
- LIGHT POLE
- POST, SIGN
- HYDRANT
- MANHOLE
- CATCH BASIN
- STORM DRAIN
- GAS MAIN
- WATER SERVICE
- SHALLOW MONITORING WELL
- DEEP MONITORING WELL
- PIEZOMETER
- SOIL BORING
- DIRECT PUSH BORING
- TEST PIT
- OPERABLE UNIT 1 (OU1)
- TENTATIVE PHYSICAL BARRIER LOCATION (TO BE DETERMINED DURING RD INVESTIGATION)
- EXTRACTION POINT

Notes:
1) Alternative 2 includes containment using a physical barrier within OU1 with limited total fluids extraction and disposal, maintenance of surface cap/cover, institutional controls and groundwater monitoring.
2) The proposed physical barrier location is tentative at this time, and will be determined based on information obtained during remedial design investigation.

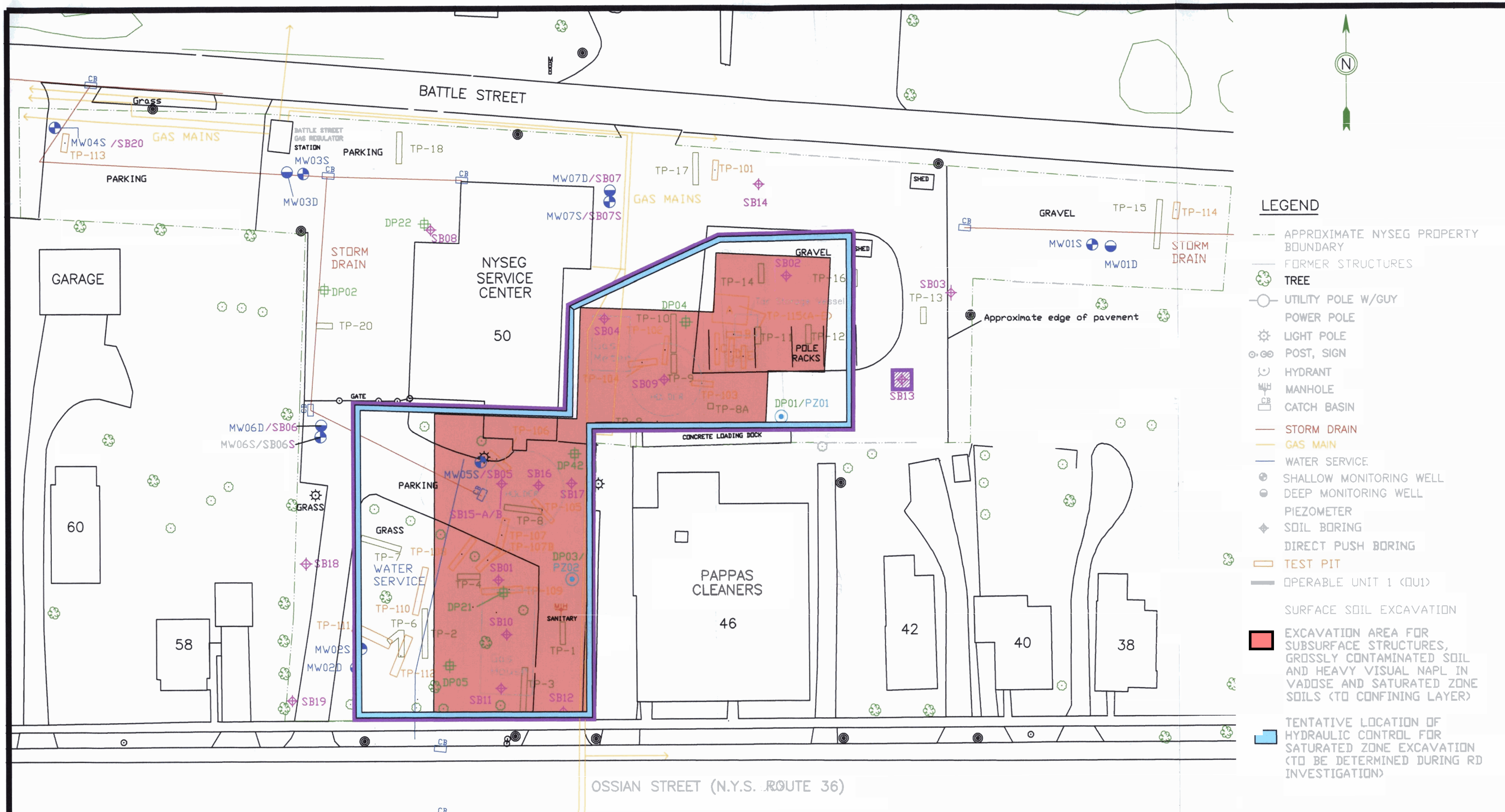
FIGURE 6

CONTAINMENT APPROACH FOR ALTERNATIVE 2

NYSEG FORMER MGP SITE
DANSVILLE, NEW YORK

DATE: 3/02/07 FILE NAME: DANSFIGURE2

ISH INC. / MTR, INC.



0 25 50 75
Scale SCALE REFERENCE Feet

Notes:
1) Alternative 3 includes excavation of subsurface structures, grossly contaminated soil and heavy visual NAPL in vadose and saturated zone soils, and institutional controls.
2) The proposed excavation areas and location of hydraulic controls are tentative at this time, and will be determined based on information obtained during remedial design investigation.

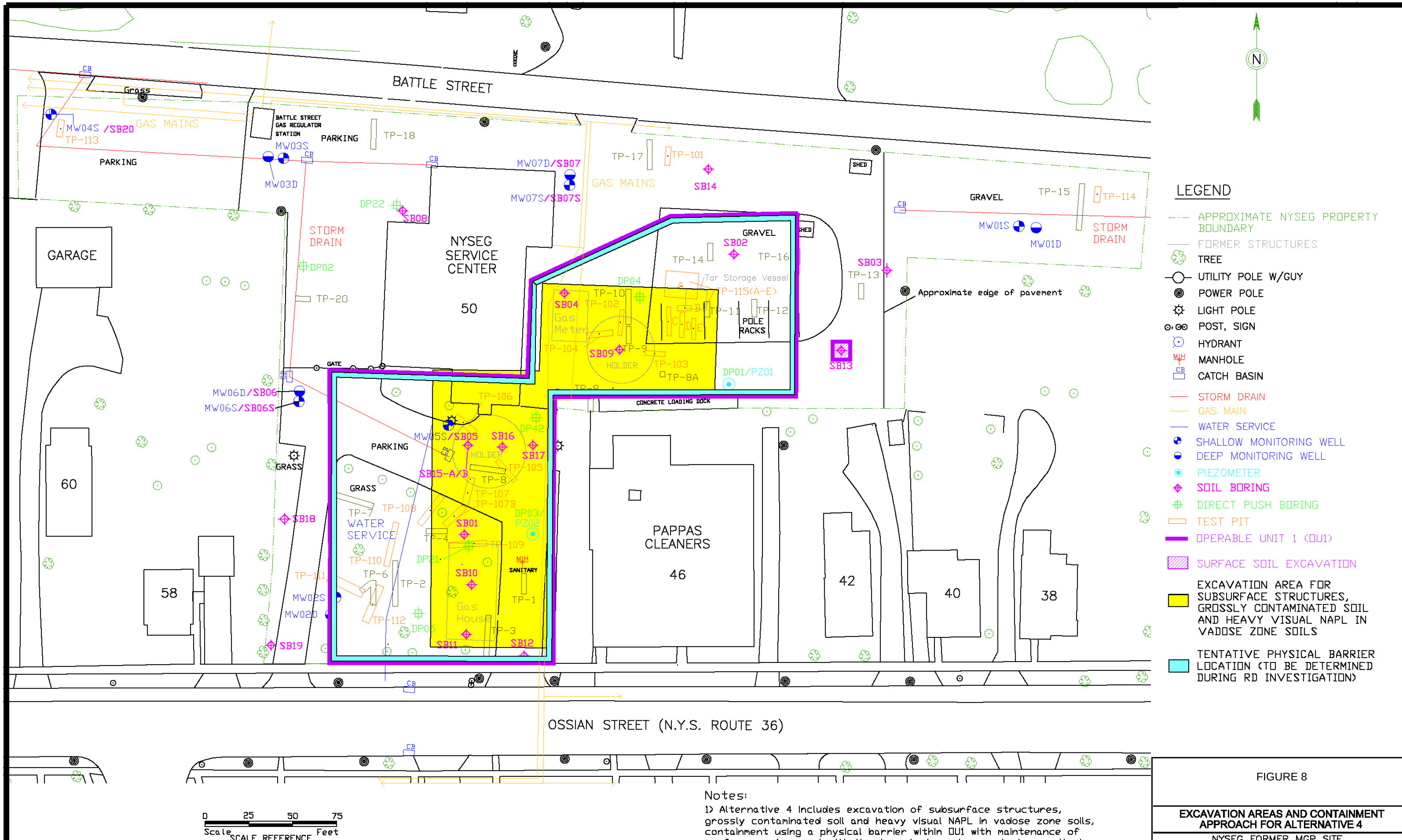
FIGURE 7

EXCAVATION AREAS FOR ALTERNATIVE 3

NYSEG FORMER MGP SITE
DANSVILLE, NEW YORK

DATE: 3/22/07 FILE NAME: DANSFIGURE3

ISH INC. / MTR, INC.



Notes:

1) Alternative 4 includes excavation of subsurface structures, grossly contaminated soil and heavy visual NAPL in vadose zone soils, containment using a physical barrier within OU1 with maintenance of surface cap/cover, institutional controls and groundwater monitoring.

2) The proposed physical barrier location and excavation areas are tentative at this time, and will be determined based on information obtained during remedial design investigation.

FIGURE 8

EXCAVATION AREAS AND CONTAINMENT APPROACH FOR ALTERNATIVE 4

NYSEG FORMER MGP SITE
DANSVILLE, NEW YORK

DATE: 3/02/07 FILE NAME: DANSFIGURE4

ISH INC. / MTR, INC.