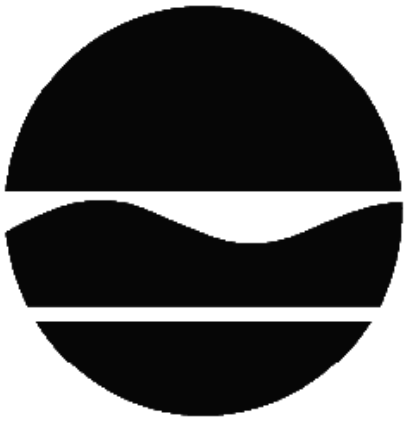
PROPOSED REMEDIAL ACTION PLAN

NYSEG - Penn Yan Water St. MGP
Penn Yan, Yates County
Site No. 862009
August 2012



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

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Site No. 862009
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SECTION 1: SUMMARY AND PURPOSE OF THE PROPOSED PLAN

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

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

SECTION 2: CITIZEN PARTICIPATION

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

Penn Yan Public Library
214 Main Street
Penn Yan, NY 14527
Phone: (315) 536-6114

NYSDEC, Region 8
6274 East Avon Lima Rd.
Avon, NY 14414
Phone: (585) 226-5326

A public comment period has been set from:

8/28/2012 to 9/27/2012

A public meeting is scheduled for the following date:

9/10/2012 at 7:00 PM

Public meeting location:

Yates County Office Building, 417 Liberty Street, Penn Yan, NY

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

Written comments may also be sent through 9/27/2012 to:

Liz Lukowski
NYS Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233
eblukows@gw.dec.state.ny.us

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

Receive Site Citizen Participation Information By Email

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

SECTION 3: SITE DESCRIPTION AND HISTORY

Location: The site is located between Water Street and the Keuka Lake Outlet in the Village of Penn Yan, Town Milo, Yates County, New York. The site is a parcel of land located on Water

Street, near the corner of Liberty Street.

Site Features: The 0.815 acre site is composed of two contiguous parcels of land. The larger parcel (Section/Block/Lot #46.17-2-68), with an area of 0.805 acres, includes a currently vacant masonry "gas house" building which was formerly used for gas manufacturing operations. This building has been designated as a historic structure by the New York State Office of Parks, Recreation, and Historic Preservation. The concrete floor slab from a former warehouse/garage is present to the west of the gas house building. The remaining areas of the parcel consist of driveways and parking area, a mowed, grass-covered area in the middle of the site, and a brush-covered riparian strip of land along Keuka Lake Outlet.

The smaller parcel (Section/Block/Lot #46.17-2-74) is located adjacent to Water Street, to the northeast of the former MGP process area. This parcel covers a total land area of approximately 0.01 acres. A small building is currently present on the parcel.

Current Zoning/Uses: Both parcels are zoned for commercial use. The site contains the original gas house (unoccupied) and a small building which is used by NYSEG as a gas regulating station; but is otherwise empty.

Historic Uses: A Manufactured Gas Plant (MGP) was constructed on the site in 1899 and operated until 1931. During this period, gas was manufactured using a coal gasification process by the Penn Yan Light Company. A gas holder and some accessory buildings were demolished sometime following the cessation of the gas manufacturing activities in 1931.

After gas manufacturing ceased, the gas house was redeveloped into a malt house and wood storage facility. At some point, a warehouse structure was erected and attached to the west side of the building. The building and warehouse were used for a wine distribution center and later as an auto sales and repair business. The warehouse was demolished in 2004, but its concrete floor was left in place. The concrete floor was recently covered with soil to deter recreational use of this area.

Site Geology and Hydrogeology: Three soil units have been identified in the subsurface beneath the site. From the ground surface downward, these are a man-made fill unit, a silt unit, and a sand unit. The fill layer is found across the site and generally ranges from 4 feet thick (around the MGP building) to 13 feet thick (adjacent to Water St.) The thickness of the fill unit adjacent to the Keuka Lake Outlet is approximately 8 feet.

Beneath the fill is a silt unit that ranges in thickness between 10-20 feet. This silt unit appears to act as a potential aquitard beneath the site, limiting downward movement of groundwater and contaminants from the site. A sand unit of unknown thickness is present below the silt. The depth to bedrock is not known; however it is likely greater than 300 feet bgs in the area of the site.

The Keuka Lake Outlet has an organic silt sediment unit approximately 4 feet thick. Beneath the silt is a clay unit of unknown thickness.

The groundwater table is present between 3 and 15 feet below ground surface (bgs) at the site.

Groundwater flows from the northwest to the southeast across the site towards the Keuka Lake Outlet.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

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

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

SECTION 5: ENFORCEMENT STATUS

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

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

NYSEG

The Department and NYSEG entered into a multi-site Consent Order (index number DO-0002-9309) on March 30, 1994, which obligates NYSEG to implement a full remedial program for 33 former MGP sites across the State, including the Penn Yan, Water Street site.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

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

The following general activities are conducted during an RI:

- Research of historical information,
- Geophysical survey to determine the lateral extent of wastes,
- Test pits, soil borings, and monitoring well installations,

- Sampling of waste, surface and subsurface soils, groundwater, and soil vapor,
- Sampling of surface water and sediment,
- Ecological and Human Health Exposure Assessments.

The analytical data collected on this site includes data for:

- groundwater
- soil
- sediment

6.1.1: Standards, Criteria, and Guidance (SCGs)

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

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

6.1.2: RI Results

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

COAL TAR	ETHYLBENZENE
BENZENE	XYLENE (MIXED)
TOLUENE	Polycyclic Aromatic Hydrocarbons (PAHs)

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

- groundwater
- soil
- sediment

6.2: Interim Remedial Measures

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

There were no IRMs performed at this site during the RI.

6.3: Summary of Environmental Assessment

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

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

The primary contaminant of concern at this site is coal tar (a condensate from the gas manufacturing process). Coal tar contains benzene, toluene, ethylbenzene, and xylene (BTEX) and polycyclic aromatic hydrocarbons (PAHs). Some soils at the site exceed the unrestricted Soil Cleanup Objectives (SCOs) for BTEX and/or PAHs. A limited amount of coal tar is present within the fill on the site. Significant quantities of coal tar were identified in and around a large below-grade tar tank located adjacent to the bank of the Keuka Lake Outlet. This tank and associated contamination were removed and disposed off-site by NYSEG in 1991.

Coal tar has migrated off-site and is observed primarily within the top 1-2 feet of sediment. Sediments with elevated PAH concentrations have been identified in an approximately 1.5 acre area in the Keuka Lake Outlet between the site and the Keuka Lake Outlet dam. The presence of PAHs at the concentrations detected does pose some level of risk for ecological receptors in the outlet.

The site presents a significant environmental threat due to the presence of coal tar in the subsurface as described above, and the release of tar-related contamination into the outlet which has contaminated the sediment. Groundwater impacts are limited to a small area of the site. Soil vapor was not sampled because the building on-site is vacant.

6.4: Summary of Human Exposure Pathways

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

People are not coming into contact with the contaminated groundwater because the area is served by a public water supply that obtains its water from a different source. The site is not fenced and persons who enter the site may come into contact with contaminants in the soil by walking on the dirt, digging on or below the ground surface, and otherwise disturbing the soil. People may come

into contact with contaminants present in the shallow creek sediments while entering or exiting the creek during recreational activities. Volatile organic compounds in the groundwater may move into the soil vapor (air between soil particles), which in turn may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Because the site is vacant, the inhalation of site-related contaminants due to soil vapor intrusion does not represent a current concern. However, the potential exists for the inhalation of site contaminants for any future on-site development. Furthermore, environmental sampling indicates soil vapor intrusion is not a concern for off-site buildings.

6.5: Summary of the Remediation Objectives

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

The remedial action objectives for this site are:

Groundwater

RAOs for Public Health Protection

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

RAOs for Environmental Protection

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

Soil

RAOs for Public Health Protection

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

Sediment

RAOs for Public Health Protection

- Prevent direct contact with contaminated sediments.

RAOs for Environmental Protection

- Prevent impacts to biota from ingestion/direct contact with sediments causing toxicity or impacts from bioaccumulation through the marine or aquatic food chain.
- Restore sediments to pre-release/background conditions to the extent feasible.

Soil Vapor

RAOs for Public Health Protection

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a site.

SECTION 7: SUMMARY OF THE PROPOSED REMEDY

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

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

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

The proposed remedy is referred to as the Excavation and Dredging with Off-site Disposal remedy.

The estimated present worth cost to implement the remedy is $7,049,303. The cost to construct the remedy is estimated to be $6,738,607 and the estimated average annual cost is $10,000.

The elements of the proposed remedy are as follows:

1. A remedial design program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program. Green remediation principals and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows:

- considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- reducing direct and indirect greenhouse gas and other emissions;
- increasing energy efficiency and minimizing use of non-renewable energy;
- conserving and efficiently managing resources and materials;

- reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- maximizing habitat value and creating habitat when possible;
- fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
- integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. On-site soils which exceed site-specific SCOs will be excavated and transported off-site for disposal at an appropriately permitted facility. The site-specific SCOs are the commercial use SCOs (as defined by 6 NYCRR Part 375-6.8) for all contaminants with the following exceptions:

- sub-surface soil (greater than 1' bgs) which exceed 500 mg/kg of total SVOCs;
- sub-surface soil (greater than 1' bgs) which exceed 10 mg/kg of total VOCs; and
- soils which are visually impacted with NAPL and/or NAPL sheens (including hardened tar).

Also, former MGP structures, debris, piping, and major obstructions which remain in the subsurface will be removed to the extent practicable. It is anticipated that the maximum excavation depth will be approximately 12 feet, resulting in removal of approximately 3,340 cubic yards of soil and debris. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) for commercial use will be brought in to replace the excavated soil and establish the designed grades at the site.

3. A site cover will be required to allow for commercial use of the site. The site will be restored to its existing grade and the cover will consist either of the structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper one foot of exposed surface soil will exceed the commercial use soil cleanup objectives (SCOs). Where the soil cover is required it will be a minimum of one foot of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for commercial use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer.

4. Sediment which contains visible NAPL, sheen, or which produce a visible sheen when agitated in-situ will be removed and transported to a permitted off-site facility for treatment and disposal. Sediment in the Keuka Lake Outlet which contains total polycyclic aromatic hydrocarbons (PAH) compounds at levels above the site-specific background concentration of 43 mg/kg tPAH17 will be removed to a maximum of 2' below sediment surface (bss), and will also be properly disposed off site. The approximate extent of sediment removal is estimated to be 1.5 acres.

5. Following removal of contaminated sediments, the excavation area will be restored to its original grade. To the extent possible, restoration will be with material similar to the existing substrate. A restoration plan will be developed during design and will meet the substantive requirements of Article 15 and 6 NYCRR Part 608.

6. Material handling on-site (dewatering and/or blending operations) will be performed under a temporary fabric structure, as necessary, to control vapor, odor and dust emissions. Odor suppression materials such as foam will be available on site at all times. Excavated soils will either be directly loaded into transport trucks, if waste characterization has been performed, or staged on-site for waste characterization prior to transportation off site. A Community Air Monitoring Plan (CAMP) will be implemented which will include real-time monitoring for volatile organic compounds and particulates (i.e., dust) at the downwind perimeter of each designated work area.

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

a) requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8(h)(3);
b) will allow the use and development of the controlled property for commercial or industrial use as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
c) restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the Department or NYSDOH;
d) will prohibit agriculture or vegetable gardens on the controlled property; and
e) will require compliance with the Department approved Site Management Plan.

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

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

Institutional Controls: The Environmental Easement discussed in Paragraph 7 above.

Engineering Controls: The site cover discussed in Paragraph 3 above.

A copy of the Site Management Plan will be provided to the appropriate property owners. This plan will include, but may not be limited to:

i. an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
ii. descriptions of the provisions of the environmental easement including any land use and groundwater use restrictions;
iii. a provision for evaluation of the potential for soil vapor intrusion should the on-site buildings become occupied or should any buildings be developed on the site and to implement actions recommended (e.g., mitigation or monitoring) recommended to address exposures related to soil vapor intrusion;
iv. provisions for the management and inspection of the identified engineering controls;
v. maintaining site access controls and Department notification; and

vi. the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

b) A Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

i. monitoring of groundwater to assess the performance and effectiveness of the remedy;
ii. monitoring of sediment COCs to assess the effectiveness of the remedy;
iii. a pre-remedy baseline measurement and post remedy monitoring of the biotic community as a measure or remedy effectiveness;
iv. restoration success monitoring; and
v. a schedule of monitoring and frequency of submittals to the Department.

Exhibit A

Nature and Extent of Contamination

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

For each medium, a table summarizes the findings of the investigation. The tables present the range of contamination found at the site in the media and compares the data with the applicable SCGs for the site. The contaminants are arranged into two categories: volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs). For comparison purposes, the SCGs are provided for each medium that allows for unrestricted use. For soil, the Restricted Use SCGs identified in Section 6.1.1 are also presented.

Waste/Source Areas

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

Wastes are defined in 6 NYCRR Part 375-1.2 (aw) and include solid, industrial and/or hazardous wastes. Source Areas are defined in 6 NYCRR Part 375 (au). Source areas are areas of concern at a site were substantial quantities of contaminants are found which can migrate and release significant levels of contaminants to another environmental medium. Wastes and source areas were identified at the site and include liquid coal tar and hardened tar. Liquid coal tar was observed in both upland sub-surface soils as well as in the sediment of the adjacent Keuka Lake Outlet (outlet.) Some NAPL was observed in subsurface piping related to the former MGP structures. Limited areas of hardened tar were observed at the ground surface on-site.

As noted in Figure 3, on the upland portion of the site coal tar is primarily located in the subsurface near the former gas holder and the former Tar Tank B. In the outlet, coal tar is located in the sediments directly adjacent to the site.

Coal tar does not readily dissolve in water and is thus referred to as non-aqueous phase liquid or NAPL. The term NAPL and coal tar are used interchangeably in this document. Although most coal tars are slightly denser than water, the difference in density is slight. Consequently, they can either float or sink when in contact with water. Coal tar which contains the VOCs benzene, toluene, ethylbenzene and xylene (BTEX) and the SVOCs polycyclic aromatic hydrocarbons (PAHs) migrated from the former MGP site through preferential pathways in the subsurface, into the sediments of the outlet.

Between the years of 1991-1992, former Tar Tank A was drained of NAPL, and former Tar Tank B was removed along with some contaminated soils.

The waste/source areas identified will be addressed in the remedy selection process.

Groundwater

Groundwater samples were collected from eleven overburden groundwater monitoring wells. The samples were collected to assess shallow groundwater conditions on and off-site. The results indicate MGP

site-related, dissolved-phase groundwater impacts are limited to the area around the tank pit for former Tar Tank B. A well installed between the tank pit and the outlet was the only site well to have compounds in concentrations greater than the SCGs for VOCs and SVOCs. The highest concentrations detected were only slightly greater than the groundwater standards.

Table 1 - Groundwater

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCs			
BENZENE	0-7.9	1	2/12
SVOCs			
NAPHTHALENE	0-13	10	2/12
BENZO(B)FLUORANTHENE	0-0	0.002	0/12
FLUORANTHENE	0-0.7	50	0/12

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

The primary groundwater contaminants are PAHs and BTEX compounds. Significant groundwater contamination is limited to the area around the former Tar Tank B.

Based on the findings of the RI, the presence of coal tar has resulted in the contamination of groundwater. The site contaminants that are considered to be the primary contaminants of concern which will drive the remediation of groundwater to be addressed by the remedy selection process are: PAHs and BTEX compounds.

Soil

Surface and subsurface soil samples were collected at the site during the RI. Surface soil samples were collected from a depth of 0-2 inches to assess direct human exposure. Subsurface soil samples were collected from a depth of 2 - 30 feet to assess soil contamination impacts to groundwater. The results indicate that some soils at the site exceed the unrestricted SCO for volatile and semi-volatile organics. One soil sample collected in native soil contained arsenic in concentrations greater than commercial use SCOs. The source of the arsenic is unknown but impacts do not appear to be widespread at the site.

Table 2 - Soil

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Commercial Use SCG[c] (ppm)	Frequency Exeeding Restricted SCG
VOCs					
BENZENE	0-2	0.06	2/40	44	0/40
ETHYLBENZENE	0-22	1	2/40	390	0/40
TOLUENE	0-4	0.7	2/40	500	0/40
SVOCs					
BENZO(A)ANTHRACENE	0-15	1	8/44	5.6	3/44
BENZO(A)PYRENE	0-22	1	9/44	1	9/44
BENZO(B)FLUORANTHENE	0-29	1	9/44	5.6	3/44
BENZO(K)FLUORANTHENE	0-10	0.8	5/44	56	0/44
CHRYSENE	0-14	1	8/44	56	0/44

DIBENZ(A,H)ANTHRACENE	0-6	0.33	4/44	0.56	3/44
INDENO(1,2,3-C,D)PYRENE	0-22	0.5	9/44	5.6	2/44
NAPHTHALENE	0-44	12	1/44	500	0/44
Inorganics					
ARSENIC	1.7-36.2	13	1/44	16	1/44

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
b - SCG: Part 375-6.8(a), Unrestricted Soil Cleanup Objectives.
c - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Public Health for Commercial Use, unless otherwise noted.

The primary soil contaminants are PAHs and BTEX, which are associated with the coal tar by-product from the operation of the former MGP. As illustrated on Figures 3 and 4 the primary soil contamination is associated with the former MGP structures including the gas holders and tar tanks.

PAH surface soil contamination was found above the SCO for a commercial property.

Based on the findings of the Remedial Investigation, the presence of coal tar has resulted in the contamination of soil. The site contaminants identified in soil which are considered to be the primary contaminants of concern, to be addressed by the remedy selection process are: PAHs and BTEX compounds.

Sediment

Sediment samples were collected during the RI from locations upstream, adjacent and downstream of the site along the Keuka Lake outlet. The samples were collected to assess the potential for impacts to outlet sediment from the site. The results indicate that the MGP site has contaminated sediments adjacent to the site and downstream from the site with PAH compounds. Visible droplets of MGP tar were noted in some samples. Contaminant levels decline rapidly outside the area of visible tar contamination.

Not all of the PAH compounds detected in the sediment samples are related to the MGP site. The concentrations of PAHs obtained in upstream locations were considered in determining site background. Total PAH 17 concentration (tPAH17) is calculated by adding the 16 PAHs on USEPA Priority Pollutant List plus 2-methylnaphthalene. Sixteen (16) shallow sediment samples from upstream locations, which are not affected by the MGP site, were used to calculate a 90th percentile background tPAH17 concentration (with statistical outliers removed). The calculated 90th percentile for the site-specific background data was 43 mg/kg tPAH17. The presence of tPAH17 at elevated levels in upstream samples, which are not affected by the MGP, appears to result from the discharge of storm sewers in the downtown portion of Penn Yan, immediately upstream from the MGP site. PAH compounds are commonly found at low levels in street runoff.

Figure 2 presents the limits of sediment impacted by past MGP operations.

Table 3 - Sediment

Detected Constituents	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)	Frequency Exceeding SCG	Site Derived Value[c] (ppm)	Frequency Exceeding Site Derived Value
SVOCs					
tPAH17	ND - 3900	4	47/62	43	24/62

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

b - SCG: The Department's "Technical Guidance for Screening Contaminated Sediments."
c – Site Derived Value: background sediment tPAH17 concentration calculated using the upstream sediment data collected during the Remedial Investigation

The primary sediment contaminants are PAHs associated with coal tar from the site. The primary sediment contamination is found adjacent to the site and continues downstream to the Keuka Lake outlet control system. In general, the results of the PAH analyses for the deeper samples confirm the results of the visual characterization which indicated that significantly elevated concentrations of MGP-related constituents do not appear to be present at depths greater than 5 feet below the sediment surface in the area near the site, and that the MGP-impacted zone becomes shallower moving away from this area. The results of the deeper coring provide additional information indicating that the impacts are shallow and are likely due to overflow spills from the site, not from deeper migration from the site to the outlet through the subsurface soils. Sediments with elevated PAH concentrations have been identified in an approximately 1.5 acre area in the Keuka Lake outlet between the site and the Keuka Lake outlet dam.

Based on the findings of the Remedial Investigation, the presence of coal tar has resulted in the contamination of sediment. The site contaminants that are considered to be the primary contaminants of concern which will drive the remediation of sediment to be addressed by the remedy selection process are: PAHs.

Exhibit B

Description of Remedial Alternatives

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

Upland (On-site) Remediation Alternatives

Alternative U1: No Action

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. This alternative leaves the site in its present condition and does not provide any additional protection to public health and the environment.

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

Alternative U2: Site Management

The Site Management Alternative requires only institutional controls for the site. This alternative includes institutional controls, in the form of an environmental easement and a site management plan, necessary to protect public health and the environment from any contamination identified at the site.

Present Worth: ..... *$ 27,000*
Capital Cost: *$0*
Annual Costs: ..... *$ 900*

Alternative U3: Restoration to Pre-Disposal / Unrestricted Conditions; Excavation of Surface Soil and Sub-surface Soil which exceeds Unrestricted Use SCOs, and Removal of Sub-Surface Piping

This alternative achieves all of the SCGs discussed in Section 6.1.1 and Exhibit A and soil meets the unrestricted soil cleanup objectives (SCOs) listed in Part 375-6.8 (a). This alternative would include: excavation and off-site disposal of all source material and surface and sub-surface soil contamination above the unrestricted soil cleanup objectives. The total quantity of soil to be excavated and sent off-site for treatment or disposal is estimated to be 4,940 cubic yards (CY). The existing concrete pad, gas holder, and associated structures including piping would be removed and disposed of off-site. The gasworks building would remain in place. Excavation of all contaminated material should result in immediate restoration of groundwater in that area. When excavation is complete, excavation areas will be backfilled to original grade using clean imported fill. Vegetated areas will receive a six inch layer of topsoil.

This alternative removes all contamination above unrestricted SCOs therefore no institutional controls will be necessary and no annual cost will be incurred.

Capital Cost: *$2,989,540*

Alternative U4: Excavation of Surface Soil, Removal of Sub-Surface Piping, Soil Cover and Groundwater Monitoring

This alternative includes excavation limited to exposed surface soil to a depth of one foot and removal of sub-surface piping which contains NAPL. The total quantity of soil to be excavated and sent off-site for treatment or disposal is estimated to be 1,010 CY. When excavation is complete, excavation areas will be backfilled to original grade using clean imported fill. Vegetated areas will receive a six inch layer of topsoil.

Institutional controls, in the form of an environmental easement and a site management plan (SMP) will be implemented to protect public health and the environment from any contamination identified at the site. Groundwater monitoring will be conducted as required in the SMP.

Present Worth: ..... *$ 688,000*
Capital Cost: ..... *$ 523,000*
Annual Costs: ..... *$ 6,000*

Alternative U5: Excavation of Surface Soil and Sub-Surface Soil, Removal of Sub-Surface Piping, and Groundwater Monitoring

This alternative includes excavation limited to exposed surface soil exceeding commercial SCOs and excavation of visually impacted sub-surface soils and subsurface soils which exceed 500 mg/kg of total SVOCs or 10 mg/kg of total VOCs. The total quantity of soil to be excavated and sent off-site for treatment or disposal is estimated to be 3,340 CY. The existing concrete pad, gas holder, and associated structures including all subsurface piping would be removed and disposed of off-site. When excavation is complete, excavation areas will be backfilled to original grade using clean imported fill. Vegetated areas will receive a six inch layer of topsoil.

Institutional controls, in the form of an environmental easement and a site management plan (SMP) will be implemented to protect public health and the environment from any contamination identified at the site, by limiting the site to its current commercial use. Groundwater monitoring will be conducted as required in the SMP.

Present Worth: ..... *$ 2,475,046*
Capital Cost: ..... *$ 2,309,651*
Annual Costs: ..... *$ 6,000*

Sediment (Keuka Lake Outlet) Remediation Alternatives

Alternative S1: No Action

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. This alternative leaves the site in its present condition and does not provide any additional protection to public health and the environment.

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

Alternative S2: Site Management

The Site Management Alternative requires only institutional controls for the site. This alternative includes institutional controls, including a site management plan (SMP), necessary to protect public health and the environment from any contamination identified in the sediment. This SMP will describe the following:

(a) known locations of NAPL and elevated PAHs within the sediments of the outlet;
(b) protocols for sediment monitoring;
(c) protocols (including health and safety requirements) for conducting intrusive (i.e., subsurface) activities within the impacted area and managing potentially impacted material encountered during these activities; and
(d) restrictions on intrusive activities to mitigate potential exposures to impacted sediments.

Because NAPL containing and toxic sediments will remain in the outlet, this alternative will also include establishment of institutional controls. Institutional controls will be in the form of governmental, enforcement, or permit controls, and/or informational devices. For example, potential institutional controls could include, but not necessarily be limited to, designating "no anchor" zones in the impacted area. Annual reports will be submitted to the NYSDEC to document that institutional controls are maintained and remain effective.

Present Worth: ..... *$ 27,000*
Capital Cost: *$0*
Annual Costs: ..... *$ 900*

Alternative S3: Restoration to Pre-Disposal or Unrestricted Conditions; Full Excavation/Dredging of Impacted Sediment and Placement of Backfill

This alternative achieves all of the SCGs discussed in Section 6.1.1 and Exhibit A. This alternative would include removal and off-site disposal of all source material and contaminated sediment located between the site and the Keuka Lake outlet control structure with concentrations of contaminants of concern (COCs) above the site-specific background concentration of 43 mg/kg.

Removal of sediments will be conducted using either conventional earth moving equipment or by mechanical or hydraulic dredging. Methods for sediment removal will be determined during design. A temporary watertight sheet-pile cofferdam would be required to permit excavation as deep as the low permeability clay layer. Dewatering and construction water treatment systems will be required to maintain dry conditions during excavation and backfill. The total quantity of sediment to be removed and sent off-site for treatment or disposal is estimated to be 6,690 cubic yards (CY).

The dredged areas will be backfilled to restore original bathymetry. The restoration of the shoreline and riverbed will meet the substantive requirements of 6 NYCRR Part 608 Use and Protection of Waters.

This alternative removes all contamination above unrestricted SCOs therefore no institutional controls will be necessary and no annual cost will be incurred.

Capital Cost: ..... *$ 5,531,761*

Alternative S4: Excavation/Dredging of Impacted Shallow Sediment and Visually Impacted Sediment, Placement of Backfill and Monitoring

This alternative includes removal and off-site disposal of all source material and the top two-feet of sediment where PAHs are above site-specific background concentrations. In areas where visual impacts extend deeper than two feet below the sediment surface, only the sediments which are visibly impacted will be removed. No impacts have been found in the clay layer underlying the site, so it appears to serve as a confining layer and will serve as a natural limit of excavation.

The total quantity of sediment to be removed and sent off-site for treatment or disposal is estimated to be 4,500 CY. As with Alternative S4, methods of sediment removal will be considered during design. A temporary watertight sheet-pile cofferdam would be required to permit excavation as deep as the low permeability clay layer. Dewatering and construction water treatment systems will be required to maintain dry conditions during excavation and backfill.

The dredged areas will be backfilled to restore original bathymetry. The restoration of the shoreline and riverbed will meet the substantive requirements of 6 NYCRR Part 608 Use and Protection of Waters.

Once site construction is complete a SMP will be developed which will require implementation of sediment monitoring and reporting.

Present Worth: ..... *$ 4,985,257*
Capital Cost: ..... *$ 4,839,956*
Annual Costs: ..... *$ 5,000*

Alternative S5: Excavation/Dredging of Impacted Surface Sediment and Subaqueous Capping

This alternative includes: removal and off-site disposal of surface sediment above site-specific background concentrations; capping of impacted sediment; and reactive capping of visibly impacted sediments. Final excavation depth will be based on the final cap design to maintain current bathymetry.

As with Alternative S3 and S4, methods of sediment removal will be considered during design. A temporary watertight sheet-pile cofferdam would be required to permit excavation and accurate cap placement. Dewatering and construction water treatment systems will be required to maintain dry conditions during excavation and backfill. The total quantity of sediment to be removed and sent off-site for treatment or disposal is estimated to be 2,540 CY.

When excavation is complete a subaqueous cap would be installed on excavated areas. In areas where visual impacts remain, a combined cap incorporating a reactive cap and a sand cap would be installed. A reactive cap incorporates reactive or adsorptive materials such as (e.g., activated carbon, organoclay) to provide treatment of contaminants. The restoration of the shoreline and riverbed will meet the substantive requirements of 6 NYCRR Part 608 Use and Protection of Waters.

Once site construction is complete a SMP will be developed which will require implementation of sediment monitoring and reporting.

Present Worth: ..... *$ 3,764,775*
Capital Cost: ..... *$ 3,600,087*
Annual Costs: ..... *$ 6,000*

Exhibit C
Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
Upland (on-site) Alternatives			
U1 - No Action	0	0	0
U2 - Site Management	0	$ 900	$ 27,000
U3 - Restoration to Pre-Disposal / Unrestricted Conditions; Excavation of Surface Soil and Sub-surface Soil which exceeds Unrestricted Use SCOs, and Removal of Sub-Surface Piping	$2,989,540	0	$2,989,540
U4 - Excavation of Surface Soil, Removal of Sub-Surface Piping, Soil Cover and Groundwater Monitoring	$523,000	$6,000	$ 688,000
U5 - Excavation of Surface Soil and Sub-Surface Soil, Removal of Sub-Surface Piping, and Groundwater Monitoring	$2,309,651	$6,000	$2,475,046
Sediment (outlet) Alternatives			
S1 - No Action	0	0	0
S2 - Site Management	0	$ 900	$ 27,000
S3 - Restoration to Pre-Disposal or Unrestricted Conditions; Full Excavation/Dredging of Impacted Sediment and Placement of Backfill	$5,531,761	0	$5,531,761
S4 - Excavation/Dredging of Impacted Shallow Sediment and Visually Impacted Sediment, Placement of Backfill and Monitoring	$4,839,956	$ 5,000	$4,985,257
S5 - Excavation/Dredging of Impacted Surface Sediment and Subaqueous Capping	$3,600,087	$ 6,000	$3,764,775
Proposed Remedy – Alternatives			
U5&S4 Excavation & Dredging with Off-site Disposal	$6,738,607	$ 10,000	$7,049,303

Exhibit D

SUMMARY OF THE PROPOSED REMEDY

The Department is proposing a combination of Alternatives U5 “Excavation of Surface Soil and Sub-surface Soil, Removal of Sub-surface Piping, and Groundwater Monitoring” and Alternative S4 “Excavation/Dredging of Impacted Shallow Sediment and Visually Impacted Sediment, Placement of Backfill and Monitoring.” as the remedy for this site. Alternatives U5 and S4 would achieve the remediation goals for the site by removing source material on-site and in the Keuka Lake outlet as well as removing surface soils exceeding Commercial SCOs and shallow sediments above site-specific background criteria. The elements of this remedy are described in Section 7. The proposed remedy is depicted in Figure 2.

Basis for Selection

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

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

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

Alternatives U1 and S1 (No Action) do not provide any additional protection to public health and the environment and will not be evaluated further. Alternative U2 and S2 would provide a level of protection to public health through implementation of institutional controls, but would provide no additional protection to the environment. Alternatives U3 and S3 by removing all soil and sediments contaminated above the “unrestricted” soil cleanup objectives, meets the threshold criteria. Alternatives U4 and S5 would also comply with this criterion but to a lesser degree as some residual contamination will remain.

The proposed remedy Alternative U5 will satisfy this criterion by removing impacted surface soils and sub-surface soils containing source material. Removing surface soils will eliminate the potential for exposure to public. Removal of source material along with institutional controls will further limit exposure to include utility and construction workers. Alternative U5 addresses the source of the groundwater contamination as well. By removing these materials, additional impacts to groundwater will cease.

Alternative S4 will satisfy this criterion by removing impacted sediments in the biologically active zone as well as sediments containing source material at depth.

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.

On-site Alternatives U3 and U5 comply with SCGs. They address source areas of contamination and comply with the restricted use soil cleanup objectives at the surface through construction of a cover system. They also create the conditions necessary to restore groundwater quality to the extent practicable.

Outlet Alternatives, S3 and S4 also comply with SCGs to the extent practicable. Alternatives U2, U4, S2, and S5 comply with this criterion but to a lesser degree or with lower certainty. Because Alternatives U2, U3, U4 and U5, as well as S2, S3, S4, and S5 satisfy the threshold criteria, the remaining criteria are particularly important in selecting a final remedy for the site.

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

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

Long-term effectiveness is best accomplished by removal of the contaminated soils/sediments and source materials. Alternatives U3 and U5 call for the removal and off-site management of the majority of the impacted upland materials. Those impacts that remain would not pose a significant exposure. The small amount of contamination which would remain in groundwater would result in minimal exposure and should be quickly reduced by natural attenuation. Alternative U4 calls for a less extensive removal of impacted surface soils and NAPL containing structures; those impacts that remain in subsurface soil would be addressed by institutional controls. An environmental easement would be required to ensure that these measures continue to be effective. Alternative U2 would manage potential exposure to impacted materials exclusively through institutional controls. However, because all impacted materials would remain in place in Alternative U2, the contamination at the surface would continue to be accessible to human and environmental receptors and the exposure is higher. Institutional controls would not adequately protect trespassers from exposure to contaminated surface soil

Sediment Alternatives S3 and S4 call for removal and off-site management of the great majority of the impacted materials in the outlet. The small amount of contaminants of concern (COC) which would remain in the sediment would be covered with clean backfill materials and would thus result in minimal exposure. Alternative S5 calls for the removal and off-site management of impacted shallow sediments and the installation of an engineered sediment cap; the impacts that remain in the deeper sediments would be addressed by institutional controls. Similarly, Alternative S2 would manage potential exposure to impacted materials solely through institutional controls. The long term effectiveness of this is questionable. All impacted materials would remain in place in Alternative S2, so the COCs would continue to be accessible to human and environmental receptors and the risk of exposure is higher. Institutional controls would do little to adequately protect the public or ecological receptors from exposure to COCs in shallow sediments.

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

Alternatives which remove contaminated materials offer the highest degree of mobility, toxicity, and volume reduction. Upland Alternatives U3 and U5 will significantly reduce the volume of impacted material on-site. The total amount of soils to be excavated and sent off-site for Alternative U3 and U5 is approximately 8,150 tons and 5,510 tons, respectively. For the overall remedy to be fully protective, the on-site alternative must

prevent re-contamination of the sediments in the outlet. Both Alternative U3 and Alternative U5 remove the sources of any additional NAPL impacts to the outlet, as well as preventing groundwater contamination which could migrate toward the outlet. Alternative U2 would control potential exposures with institutional controls only and will not reduce the toxicity, mobility or volume of contaminants remaining. Alternative U4, by removing only surface soils and the gas holder piping, would meet the criteria to a lesser extent than Alternatives U3 and U5. Alternative U4 leaves source material in place and will do little to prevent groundwater contamination.

Sediment Alternatives S3 and S4 will significantly reduce the volume of impacted sediment and waste material in the outlet. The total amount of sediments to be removed and sent off-site for Alternative S3 and S4 is approximately 11,040 tons and 8,160 tons, respectively. Both Alternative S3 and Alternative S5 remove NAPL source areas in the outlet as well and sediment with COCs above site-specific background concentrations. Alternative S2 would control potential exposures with institutional controls only and would not reduce the toxicity, mobility or volume of contaminants remaining. Alternative S5, by removing only surface sediments and then capping over any additional impacts, would meet the criteria to a lesser extent than Alternatives S3 and S5. Alternative S5 leaves source material in place.

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

On-site Alternatives U3, U4, and U5 all have short-term impacts involving the excavation, handling, and transportation of soils. These impacts could easily be controlled. However, because soil excavation would be much less extensive for Alternative U4, it would have the smallest impact of the three. In addition, Alternative U4 will result in a lesser amount of material to be disposed off-site which is in line with the Department's Green Remediation Policy (DER-31) concept of reducing waste when feasible. Alternative U2 would have no short-term impacts because it involves primarily administrative actions. The time needed to achieve the remediation goals is the shortest for Alternative U2 and longest for Alternative U3.

All of the alternatives which include excavation and handling of impacted material (Upland Alternatives U3, U4, and U5 as well as Sediment Alternatives S3, S4, and S5) have the potential to cause nuisance odors. Odor management during excavation and/or dredging will be a critical element for successful implementation of the excavation, due to the proximity to nearby residents and businesses. Odors can be managed through the use of odor control sprays and foams or by modifying work procedures.

Sediment Alternatives S3, S4, and S5 all have short-term impacts to wildlife receptors due to disruption of the streambed and short term impacts to surrounding residents due to the excavation, handling, and transportation of sediments. The impacts to wildlife in the outlet would be temporary, with the new, cleaner riverbed likely to be recolonized quickly by bottom-dwelling organisms. Maximizing habitat value and creating habitat are also green remediation concepts encouraged by the Department's DER-31. There will be some temporary loss of use of the parkland across the outlet during the construction activities.

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.

Upland Alternative U2 is readily implementable as it requires only implementation of institutional controls. All upland Alternatives, with the exception of Alternative U3; Restoration to Unrestricted conditions, will require institutional controls. Institutional controls are easily implementable, but will require coordination with NYSEG and the NYSDEC to file an environmental easement on the site.

Alternatives U3 and U5 will require excavation below the water table that will require dewatering, a temporary water treatment plant and discharge technology during construction. These technologies are routinely implemented and can be easily implemented at this site.

Alternatives U3 and U5 will require some portions of the excavation to be shored to protect adjacent structures, roadways, and/or utilities and to provide protection from the Keuka Lake outlet. A pre-design investigation will be necessary to further investigation potential obstructions. To protect the MGP building during excavation, the specific type of shoring used near the building will be determined during the design phase. Because of these complexities, it may be necessary to reevaluate the achievable limits of excavation during the design and construction processes.

Of the excavation alternatives, Alternative U4 is the most easily implementable as it will likely not require temporary water treatment, water discharge technology, or shoring for excavation. Alternatives U3 and U5 will take more effort, but are both fully implementable.

Sediment Alternative S2 is readily implementable as it requires only implementation of institutional controls. All sediment alternatives, with the exception of Alternative S3; Restoration to Unrestricted conditions, will require institutional controls. Institutional controls, which will include a site management plan, may be in the form of governmental, enforcement, permit controls, and/or informational devices; and are easily implementable.

Alternatives S3 and S4 include sediment excavation/dredging which will present engineering and coordination challenges to be overcome. Excavation work in the outlet should take place during the low flow months of the year (July – October,) if practical. During installation of cofferdams turbidity control measures will be needed in open water to prevent significant impacts downstream. A pre-design investigation will be required to determine geotechnical design parameter.

Coordination with adjacent property owners for access to their land will be necessary for cofferdam layout and configuration. Coordination with the Village of Penn Yan will be necessary, as access and construction of an access road through the village park will be necessary for completion of the excavation activities on the southern shore of the outlet.

Sediment removal will require a number of local, state, and federal permits, which will require significant lead time to obtain. Permitting for the sediment work is expected to take approximately 6-12 months.

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

The costs of the upland alternatives vary significantly. The least expensive upland alternative is Alternative U2 because it has no capital cost associated with it and relies only on institutional controls. With the large volume

of soils to be handled, Alternatives U3 and U5 have the highest present worth of the on-site alternatives. Alternative U3 will only marginally increase in protectiveness over Alternative U5, but will result in over a half-million dollars (approximately 20%) more in cost.

The costs of the sediment alternative also vary significantly. The least expensive sediment alternative is Alternative S2 because it has no capital cost associated with it and relies only on institutional controls. Sediment Alternatives S3, S4, and S5 all have significantly higher present worth than Alternative S2; with Alternative S3 being the highest. Alternative S4 is considered more cost effective than Alternative S3 because the additional costs associated with Alternative S3 are not matched by a comparable increase in effectiveness. Although Alternative S5 has a lower present worth it removes very little material relative to Alternative S4 and S5.

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

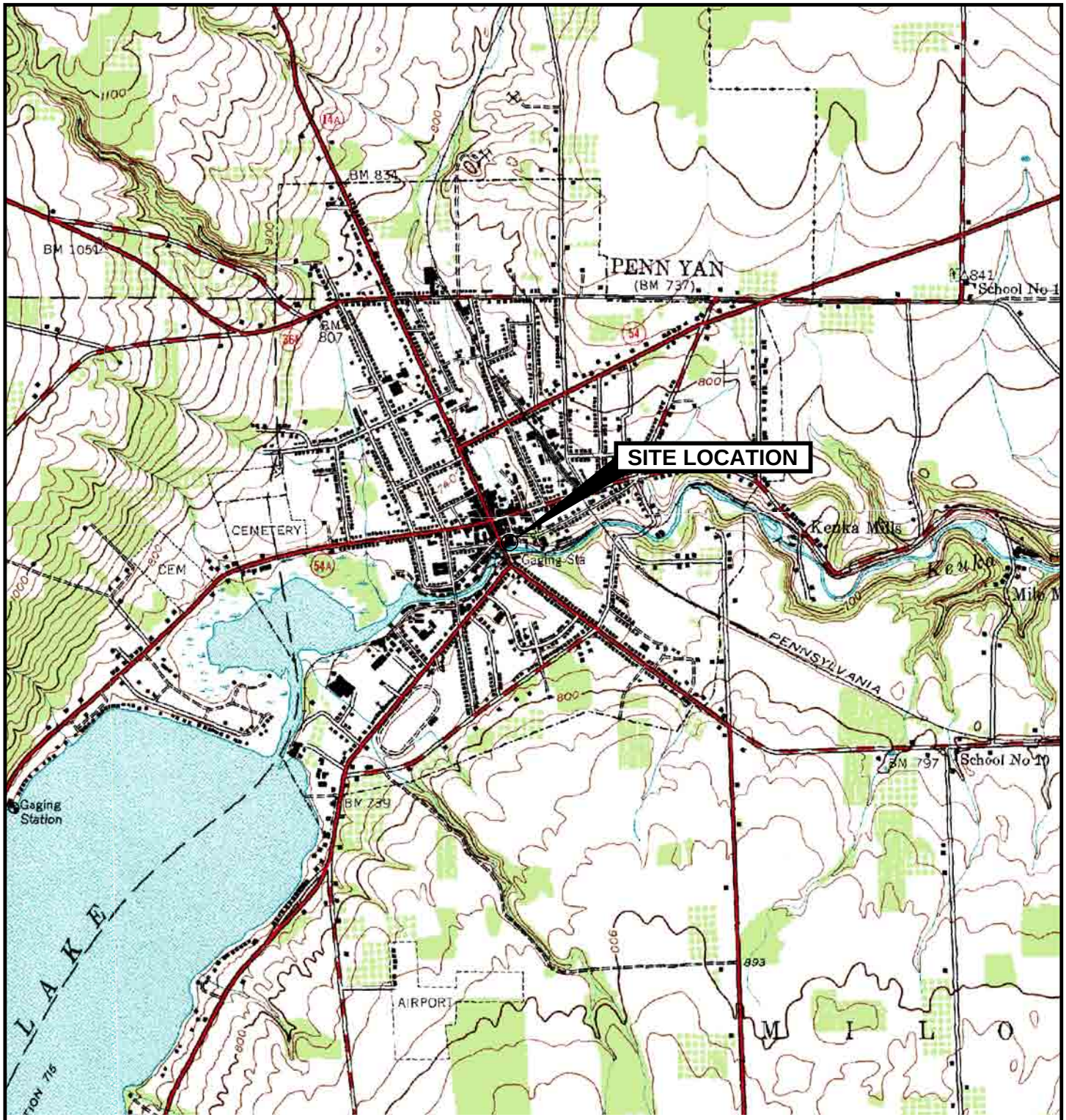
The anticipated future use of the site is commercial This designation is consistent with the current use of the site and the current use of adjacent properties, as well as the recommended future use of the site under the waterfront revitalization plan. On-site Alternatives U3-U5 will allow use of the site for commercial purposes. Alternatives U4 will be less desirable because at least some contaminated soil will remain on the property, whereas Alternatives U3 and U5 will remove or treat contaminated soil permanently. Alternative U5 will have a less restrictive environmental easement than U4. Alternative U2 will have the strictest environmental easement. Restrictions on the site use will not be necessary with Alternative U3.

Sediment Alternatives S3-S5 would allow future use consistent with the current use of the outlet, as well as the the contemplated future use of the site.

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

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

Alternatives U5 and S4 are being proposed because, as described above, they satisfy the threshold criteria and provide the best balance of the balancing criterion.



UNITED STATES GEOLOGIC SURVEY
PENN YAN QUADRANGLE
NEW YORK
7.5 MINUTE SERIES (TOPOGRAPHY)

PENN YAN, NY.
1983
PHOTOREVISED 1995

SCALE 1:24000

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1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

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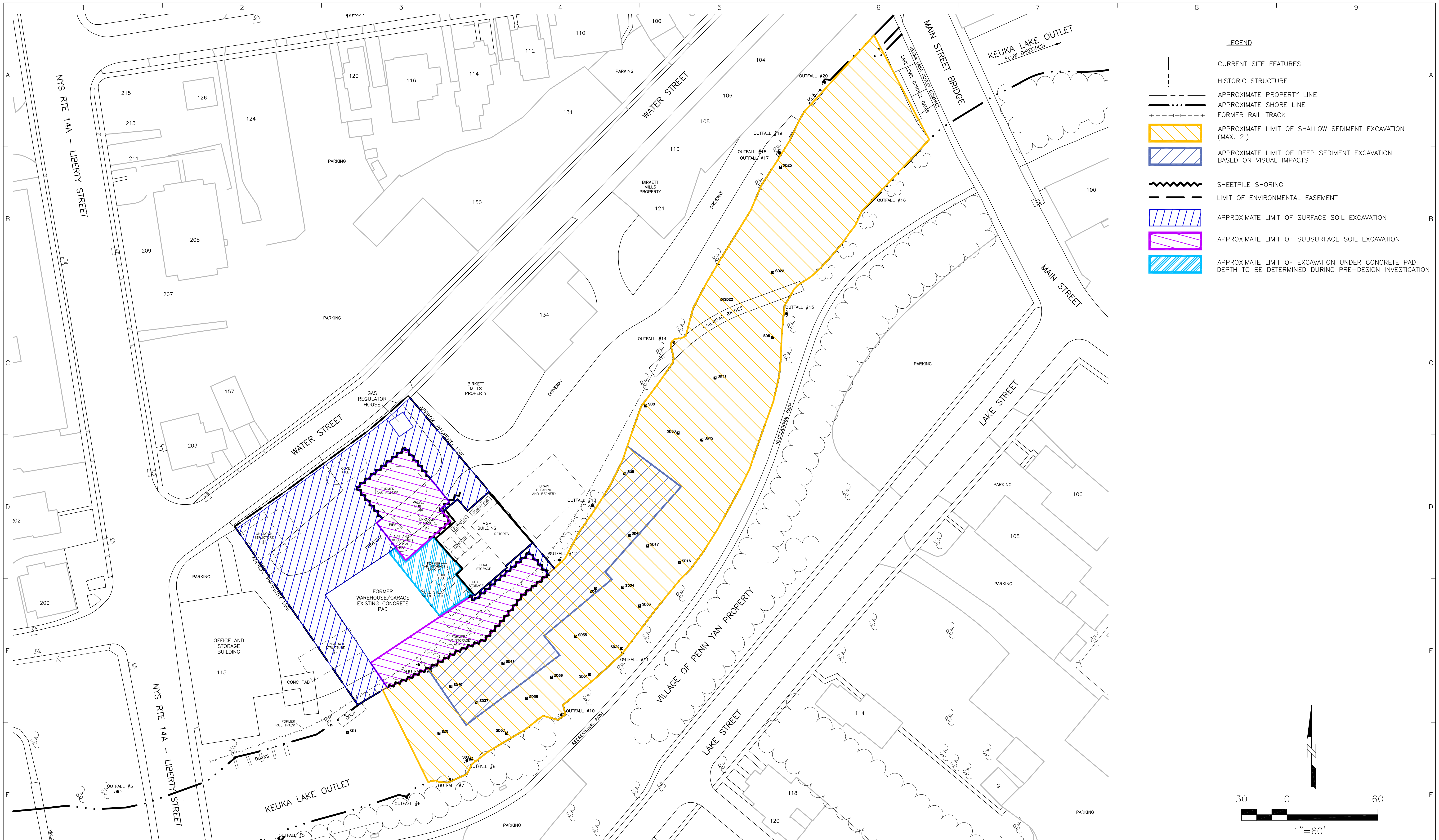
PENN YAN WATER STREET
FORMER MGP SITE

DATE: 05/14/10 | DRWN: KPB

SITE LOCATION MAP

Figure 1

File: J:\Rem_Eng\Project Files\Iberdrola\NYSEG - Penn Yan\CADD\FS_2010\SITE_LOC.dwg Layout: Figure 1-1 User: vershonb Plotted: Jun 30, 2010 - 9:13am Xref's:



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AECOM

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PENN YAN WATER STREET
FORMER MGP SITE
PENN YAN, NEW YORK

PROJ. NUMBER: 60149563

DATE: 08/20/2012

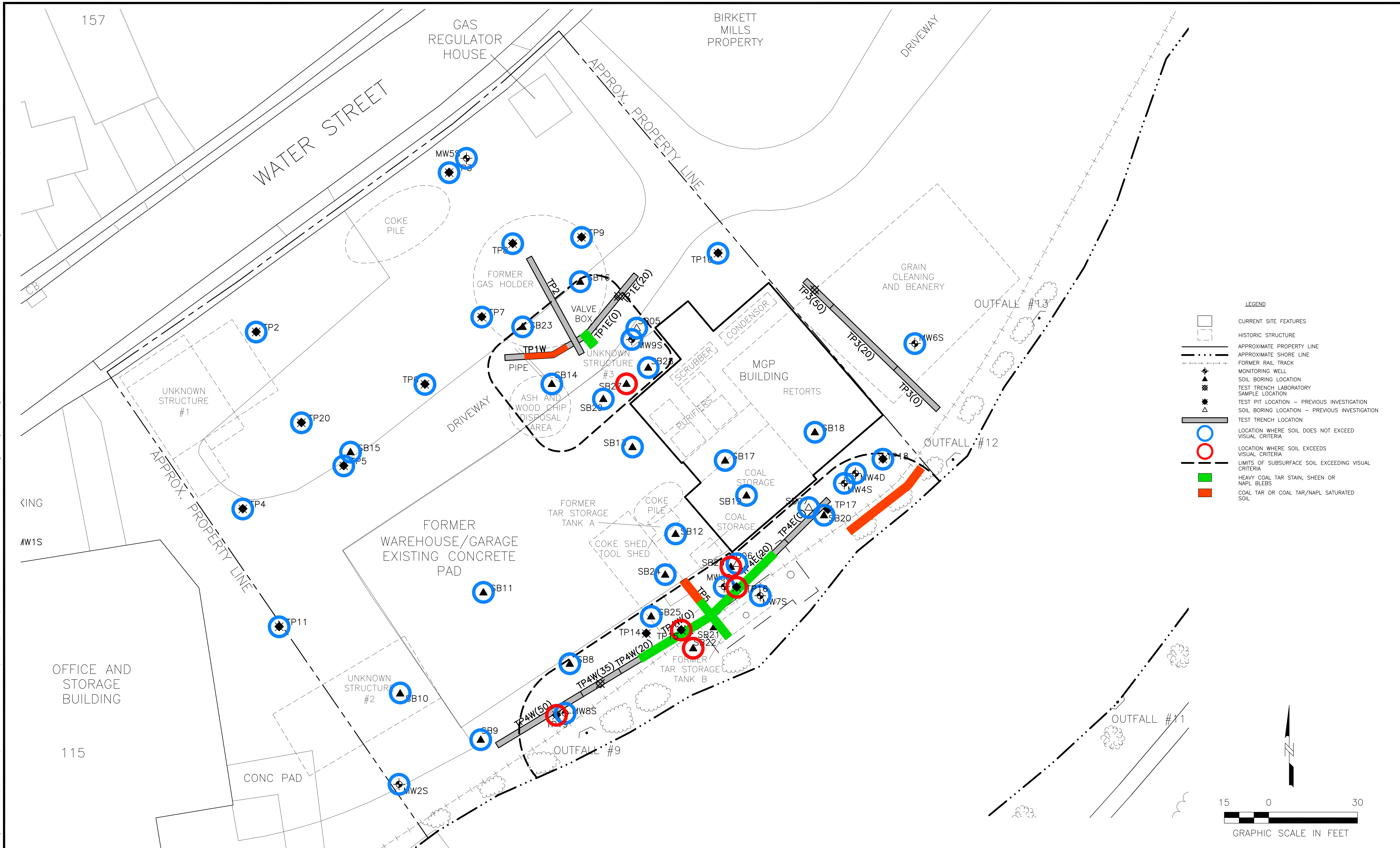
RECOMMENDED ALTERNATIVE

Figure 2

DRAWING NUMBER: 6-1

SHEET NUMBER: 1

REVISION: 0



157
GAS REGULATOR HOUSE
BIRKETT MILLS PROPERTY
DRIVEWAY
WATER STREET
APPROX. PROPERTY LINE
COKE PILE
FORMER GAS HOLDER
VALVE BOX
PIPE
UNKNOWN STRUCTURE #3
ASH AND WOOD CHIP DISPOSAL AREA
CONDENSOR
SCRUBBER
PURIFIERS
MGP BUILDING
RETORTS
GRAIN CLEANING AND BEANERY
OUTFALL #13
OUTFALL #12
OUTFALL #11
OUTFALL #9
UNKNOWN STRUCTURE #1
COAL STORAGE
FORMER TAR STORAGE TANK A
COKE SHED/TOOL SHED
FORMER WAREHOUSE/GARAGE EXISTING CONCRETE PAD
FORMER TAR STORAGE TANK B
UNKNOWN STRUCTURE #2
OFFICE AND STORAGE BUILDING
115
CONC PAD
DOCK
FORMER RAIL TRACK
MW5S
TP9
TP8
TP7
TP2
TP20
TP4
TP11
TP10
TP1W
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SB23
SB14
SB05
MW9S
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SB27
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SB15
SB18
SB17
SB19
SB12
SB24
SB25
SB21
SB22
SB11
SB8
SB10
SB9
SB20
TP17
TP18
MW4D
MW4S
MW6S
MW7S
MW8S
MW2S
LEGEND
CURRENT SITE FEATURES
HISTORIC STRUCTURE
APPROXIMATE PROPERTY LINE
APPROXIMATE SHORE LINE
FORMER RAIL TRACK
MONITORING WELL
SOIL BORING LOCATION
TEST TRENCH LABORATORY SAMPLE LOCATION
TEST PIT LOCATION – PREVIOUS INVESTIGATION
SOIL BORING LOCATION – PREVIOUS INVESTIGATION
TEST TRENCH LOCATION
LOCATION WHERE SOIL DOES NOT EXCEED VISUAL CRITERIA
LOCATION WHERE SOIL EXCEEDS VISUAL CRITERIA
LIMITS OF SUBSURFACE SOIL EXCEEDING VISUAL CRITERIA
HEAVY COAL TAR STAIN, SHEEN OR NAPL BLEBS
COAL TAR OR COAL TAR/NAPL SATURATED SOIL
N
15 0 30
GRAPHIC SCALE IN FEET
AECOM

File: J:\Rem_Eng\Project Files\Iberdrola\NYSEG - Penn Yan\CADD\2012\LIMITS_SUBSURF_VISUAL_CRITERIA.dwg Layout: Figure 3-4 User: vershonb Plotted: Aug 20, 2012 - 1:15pm Xref's:

PENN YAN WATER STREET FORMER MGP SITE FS REPORT	**LIMITS OF SUBSURFACE SOIL EXCEEDING NAPL CRITERIA PENN YAN, NEW YORK**

Figure 3

AECOM

PENN YAN WATER STREET FORMER MGP SITE FS REPORT	**LIMITS OF SUBSURFACE SOIL EXCEEDING REMEDIAL ACTION CRITERIA PENN YAN, NEW YORK**

Figure 4

File: J:\Rem_Eng\Project Files\Iberdrola\NYSEG - Penn Yan\CADD\FS_2010\LIMITS_SUBSURF_CRITERIA.dwg Layout: Figure 3-2 User: vershonb Plotted: Jun 30, 2010 - 10:53am Xref's: