Watertown (Anthony Street) Former MGP Site

JEFFERSON COUNTY, NEW YORK

Site Management Plan

NYSDEC Site Number: V00473

Prepared for:
Niagara Mohawk Power Corporation (d/b/a National Grid)
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Revisions to Final Approved Site Management Plan:

Revision #	Submitted Date	Summary of Revision	DEC Approval Date

MARCH 2017 DRAFT

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* Not included with this March 2017 DRAFT

LIST OF ACRONYMS

Acronym	Definition
ASP	Analytical Services Protocol
bgs	below ground surface
BTEX	Benzene, Toluene, Ethylbenzene, and Xylene
CAMP	Community Air Monitoring Plan
COC	Certificate of Completion
CP	Commissioner Policy
DER	Department of Environmental Remediation
EC	Engineering Control
ECL	Environmental Conservation Law
EWP	Excavation Work Plan
GFSP	Generic Field Sampling Plan
GQAPP	Generic Quality Assurance Project Plan
HASP	Health and Safety Plan
IC	Institutional Control
MGP	Manufactured Gas Plant
NAPL	Non-Aqueous Phase Liquid
NYCRR	New York Codes, Rules and Regulations
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PAH	Polycyclic Aromatic Hydrocarbons
ppb	parts per billion
ppm	parts per million
PRR	Periodic Review Report
QA/QC	Quality Assurance/Quality Control
RAO	Remedial Action Objective
RI	Remedial Investigation
RP	Remedial Party (National Grid)
SCOs	Soil Cleanup Objectives
SMP	Site Management Plan
SVOC	Semi-Volatile Organic Compounds
TCL	Target Compound List
USEPA	United States Environmental Protection Agency
VCO	Voluntary Consent Order
VCP	Voluntary Cleanup Program
VOC	Volatile Organic Compounds

CERTIFICATION STATEMENT

I, Terry W. Young, certify that I am currently a NYS registered professional engineer and that this *Site Management Plan* for the Watertown (Anthony Street) Former MGP Site (NYSDEC Site Number V00473) was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the *DER Technical Guidance for Site Investigation and Remediation* (DER-10) (NYSDEC, 2010).

_____ _____

Signature Date

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SITE MANAGEMENT PLAN

1.0 INTRODUCTION AND DESCRIPTION OF REMEDIAL PROGRAM

1.1 INTRODUCTION

This Site Management Plan (SMP) is required as an element of the remedial program at Niagara Mohawk Power Corporation (d/b/a National Grid) Watertown (Anthony Street) Former Manufactured Gas Plant (MGP) site (hereinafter referred to as the "Site") under the New York State (NYS) Voluntary Cleanup Program (VCP) administered by New York State Department of Environmental Conservation (NYSDEC). The Site is being addressed in accordance with Voluntary Consent Order (VCO) # D0-0001-0011, Site # V00473, which was executed on January 25, 2002; and consistent with the NYSDEC Decision Document for the Site issued on September 2, 2014. As presented in the Decision Document, the NYSDEC selected remedy for the Site is Site Management with Institutional Controls.

1.1.1 General

As identified above, National Grid entered into a VCO with the NYSDEC to investigate and remediate MGP-impacted media at the Site located in Watertown, Jefferson County, New York. Figures showing the Site location and boundaries of this approximately 1.6-acre Site are shown on Figures 1 and 2, respectively. The boundaries of the Site are more fully described in the metes and bounds descriptions that are part of the Deed Restrictions (Appendix A).

Some MGP-related impacts remain in the subsurface at this Site. This Site Management Plan (SMP) was prepared to manage remaining MGP-related impacts at the Site until the Deed Restrictions are extinguished in accordance with ECL Article 71, Title 36. All reports associated with the Site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State.

This SMP was prepared by Arcadis of New York, Inc. (herein referred to as Arcadis), on behalf of National Grid, in accordance with the requirements in NYSDEC DER-10 Technical

Guidance for Site Investigation and Remediation, dated May 2010, and the guidelines provided by NYSDEC. This SMP addresses the means for implementing the Institutional Controls (ICs) and the Engineering Control (EC) that are required by the Deed Restrictions for the Site.

1.1.2 Purpose

Some MGP-related impacts remain in the subsurface beneath the Site as discussed in subsequent sections of this SMP. An Engineering Control (i.e., Site cover) has been incorporated into the Site remedy to control exposure to remaining MGP-related impacts during the use of the Site to ensure protection of public health and the environment. Deed Restrictions required by the NYSDEC, shall be recorded with the Jefferson County Clerk, and shall require compliance with this SMP and all instituted ECs and ICs placed on the Site remain in effect. The ICs place restrictions on Site use, and mandate maintenance, monitoring and reporting measures for all instituted ECs and ICs. This SMP specifies the methods necessary to ensure compliance with all EC and ICs required by the Deed Restrictions for the MGP-related impacts that remain at the Site. This plan has been approved by the NYSDEC, and compliance with this plan is required by the Deed Restrictions and the respective Property Owner's successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

This SMP provides a detailed description of all procedures required to manage remaining MGP-related impacts at the Site inclusive of: (1) implementation and management of all ICs and the EC; (2) media monitoring; and (3) performance of periodic inspections, certification of results, and submittal of Periodic Review Reports.

To address these needs, this SMP includes two plans: (1) an Engineering and Institutional Control Plan for implementation and management of EC/ICs; and (2) a Monitoring Plan for implementation of Site Monitoring.

This SMP also includes a description of Periodic Review Reports for the periodic submittal of data, information, recommendations, and certifications to NYSDEC.

It is important to note that:

- This SMP details the Site-specific implementation procedures that are required by the Deed Restrictions. Failure to properly implement the SMP is a violation of the Deed Restriction, which is grounds for revocation of the Certificate of Completion (COC) or equivalent document; and

- Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6NYCRR Part 375 and the VCO (Index #D0-0001-0011; Site #V00473) for the Site, and thereby subject to applicable penalties.

1.1.3 Revisions

Revisions to this plan will be proposed in writing to the NYSDEC's project manager. In accordance with the Deed Restrictions for the Site, the NYSDEC will provide a notice of any approved changes to the SMP, and append these notices to the SMP that is retained in its files.

1.2 SITE BACKGROUND

This section describes the Site location, history, and nature and extent of remaining MGP-related impacts at the Site.

1.2.1 Site Location and Description

The Site is located in the City of Watertown, County of Jefferson, New York. The Site is located on approximately 1.6 acres of land, approximately 150 feet southwest of City Center Drive, 200 feet northeast of Court Street and 300 feet southwest of the Black River (Figure 2). The boundaries of the Site are more fully described in Appendix A – Deed Restrictions.

The Site is currently occupied by the Empsall Plaza and another commercial building, and a portion of J.B. Wise Place, including a City of Watertown municipal parking lot/picnic pavilion. The Site and surrounding area are currently zoned for commercial uses, with multi-family dwellings (except on any street level floor). As presented in the NYSDEC's September 2014 Decision Document, the Brighton Apartments are currently located on the upper floors of the Empsall Plaza located in the southern portion of the Site.

Readily apparent evidence of the former MGP does not exist at the ground surface of the Site. Based on review of available Sanborn Fire Insurance Maps (Sanborn maps), it appears that most of the below grade structures associated with the former MGP are overlain by the two existing on-site buildings; however, the location of the northernmost (and largest) former gas holder appears to be mostly or entirely covered by parking/driveway areas (Figure 3).

1.2.2 Site History

The MGP was constructed in or before 1884 and operated for approximately 25 years based on review of the Sanborn maps. The 1884 Sanborn map shows that the MGP consisted of two gas holders, nine retorts, one gas house, one storage shed and one 2-story coal house with railroad tracks across Anthony Street to the east of the Site. The MGP was apparently expanded in 1890 to include a purifying house, purifiers and other associated structures; and again in 1902 with a third gas holder. MGP-related operations appear to have stopped between 1902 and 1909 with other businesses (auto repair facility, drug store) occupying some of the gas plant buildings. Between 1909 and 1949, all remnants of the MGP-related structures were removed. The approximate locations of the former MGP structures from the Sanborn maps are shown on Figure 3. Between 1949 and 1971, Anthony Street was renamed J.B. Wise Place.

1.2.3 Geologic Conditions

As detailed in the December 2012 Remedial Investigation (RI) Report (Arcadis, 2012; approved by NYSDEC in a letter dated January 15, 2013), and summarized in the January 2015 Alternative Analysis Report (AAR) (Arcadis, 2014; approved by NYSDEC in a letter dated December 18, 2014), the geologic and hydrogeologic setting of the Site is as follows in descending order.

Fill. Uppermost unit is comprised of mostly artificial fill and reworked native deposits that lie on the bedrock surface. The unit is approximately 9 to 15 feet thick and contains perched water in isolated pockets (minimum depth below grade is approximately 6 feet). Where encountered, the perched water generally exists in a thin layer on the rock surface and leaks downward into the bedrock.

Rockland Limestone. This is the uppermost bedrock unit. This unit is approximately 10 to 15 feet thick; however, only the lower approximately 1 to 2 feet of this unit is saturated. This unit is highly weathered and contains voids and solution-widened horizontal and vertical fractures (i.e., karst features). Groundwater flow in this unit is northeast toward the Black River and occurs primarily through a network of intersecting horizontal bedding plane fractures and vertical fractures (i.e., joints). Although only a few feet of this unit is saturated, the majority of groundwater beneath the Site is expected to flow through this unit given its karstic characteristics and resultant high permeability.

Chaumont Limestone. This unit is approximately 25 feet thick and directly underlies Rockland Limestone. This unit is fully saturated and is distinguished from the overlying Rockland by its thick beds and lack of fracturing/weathering beneath the Site. Although Chaumont Limestone is known to form karst in the Watertown region, the unit does not appear to exhibit karstic characteristics beneath the Site. However, the unit does appear to have significant karstic features near the riverbank just to the northeast of the Site. The lack of fracturing/weathering, observed in this unit beneath the Site, combined with the thick bedding, suggests that the permeability of this unit is negligible compared to the overlying Rockland Limestone. Given the karstic features observed along the riverbank, the permeability of Chaumont Limestone is expected to significantly increase near the river.

1.3 SUMMARY OF REMEDIAL INVESTIGATION FINDINGS

Between 2004 and 2011, a RI comprised of several investigations was performed by National Grid to characterize the nature and extent of MGP-related impacts at the Site. The results of the RI are described in detail in the NYSDEC-approved December 2012 RI Report. Additionally, National Grid's September 23, 2013 and February 24, 2016 letters to NYSDEC presented the results of the June 2013 and December 2015 groundwater sampling events, respectively. Generally, the RI work was divided into four broad categories:

- Soil, bedrock and groundwater investigations;
- Sewer line evaluation;
- Soil vapor investigation; and
- Riverbank investigation

The work performed under these categories, and the resulting findings, as summarized below.

1.3.1 Soil, Bedrock, and Groundwater Investigations

These investigations characterized the geologic and hydrogeologic settings of the Site and the nature and extent of MGP-related impacts to the subsurface. As described above, the results of the investigations identified the following three units, in descending order: Fill; Rockland Limestone; and Chaumont Limestone. The Fill Unit contains perched water in isolated

pockets (minimum depth below grade is approximately 6 feet). The majority of groundwater beneath the Site is expected to flow through the Rockland Limestone Unit even though only the lower approximately 1 to 2 feet of this unit is saturated. Groundwater flow in this unit is northeast, toward the Black River.

Overburden soils which contain MGP-related constituents at concentrations greater than the 6 NYCRR Part 375-6 restricted use residential and/or the commercial use soil cleanup objectives (SCOs) are shown on Figure 4 and consist primarily of those soils that contained visible coal tar (i.e., at MW-5R, TP-3 and SB-1) and/or historical fill comprising incomplete combustion by-products (e.g., cinders, ash, coal, soot). Coal tar was only observed in trace quantities at three of the 27 RI locations, and each of these three locations contained BTEX and/or PAHs at levels above SCOs. Coal tar and potential purifier waste were also observed in the overburden and shallow bedrock during the City's Reconstruction Project in front of the commercial three-story brick building. Some soil samples without coal tar also exceeded SCOs for one or more PAH compounds. The PAH exceedances in these samples may, in part, result from the historical fill materials found throughout this area. Cyanide was not detected in any soil samples at levels above the 6 NYCRR Part 375-6 restricted, residential, and/or the commercial use SCOs. A summary of the subsurface impacts is provided in Table 1 of Appendix H.

Some of the constituents in coal tar and purifier wastes appear to have minimally affected the quality of groundwater, as documented in the RI Report and National Grid's September 23, 2013 and February 24, 2016 letters to NYSDEC presenting the results of the June 2013 and December 2015 groundwater sampling events. Two overburden monitoring wells (MW-1 and MW-2) and two bedrock monitoring wells (MW-4R and MW-5R) contained BTEX and/or PAHs at concentrations above regulatory levels (Figure 5); with the exception of MW-5R, the concentrations detected in groundwater slightly exceeded regulatory levels. The slight exceedances in these wells are attributed to the presence of coal tar observed at and near MW-5R. No exceedances were detected in any of the bedrock monitoring wells located between MW-4R/MW-5R and the river. Groundwater from overburden well MW-1 was the only groundwater sample containing cyanide above regulatory levels, and as noted above, cyanide was not detected in any soil samples at levels above the 6 NYCRR Part 375-6 restricted, residential, and/or the commercial use SCOs. NAPL has not been observed in any of the monitoring wells during any of the groundwater sampling events. A summary of the groundwater impacts is provided in Table 2 of Appendix H.

The extent of MGP-related constituents in groundwater at levels exceeding regulatory criteria appears to be constrained primarily to the immediate vicinity of the former MGP structures (gas holders). No off-site impacts to groundwater were found. There is no groundwater usage at or in the immediate area of the Site; all businesses and residences at/near the Site are supplied by city water.

1.3.2 Sewer Line Evaluation

A sewer line evaluation was conducted in 2009 to assess whether or not the sewer lines present at and near the Site could pose a potential collection point and/or preferential pathway for NAPL migration. The sewer invert elevations and bedrock surface elevations for the 2009 assessment demonstrated that sewer invert elevations in the vicinity of the Site (including City Center Drive) are consistently higher than bedrock elevations observed in nearby borings/test pits. As such, it appears that previous sewer lines near the Site were likely installed on top of bedrock or above the bedrock-overburden interface, and the bedrock was not likely removed during the installation of these utilities.

Approximately 230 feet of bedrock was excavated during the City's 2011 Reconstruction Project to facilitate the installation of sewer lines within the project area (Figure 6). The bedrock was excavated to maintain a proper pitch of the new sewer line in front of the Empsall Plaza building. Approximately 1 to 4.5 feet of bedrock were removed in this area. Should mobile NAPL be present in the immediate vicinity of the new sewer line, then the associated bedrock trench below the sewer line could serve as a potential collection point. Mobile NAPL was not observed during the RI or the City's Reconstruction Project.

1.3.3 Soil Vapor Investigation

A soil vapor investigation was completed during the RI inside the two existing on-site buildings (Empsall Plaza and the other commercial building). The investigation was conducted to evaluate whether or not MGP-related volatile organic compounds (VOCs) were present in sub-slab soil vapor beneath these buildings. The investigation found that several VOCs were present in sub-slab samples at low concentrations; however, the VOCs appeared not to be related to the former MGP. National Grid and NYSDEC/NYSDOH concluded that the sub-slab vapor is not being impacted by MGP-related constituents, and that no further evaluation or actions are needed at these properties. Moreover, as presented in the NYSDEC Decision Document, the concentrations of all

the compounds measured in the sub-slab vapor samples were below levels that would present a concern for soil vapor intrusion and effects on indoor air quality.

1.3.4 Riverbank Investigation

A sediment and seep sampling program was conducted northeast of the Site, along the southern riverbank of the Black River. The program consisted of probing sediment and collecting three sediment samples, one sample resembling roofing shingles and four seep samples for laboratory analysis. Results of the riverbank investigation concluded that the former MGP has not affected the quality of river sediments or groundwater seeping from the riverbank adjacent to the Site.

1.4 SUMMARY OF REMEDIAL ACTIONS COMPLETED

1.4.1 Underground Vessel Closure

An underground storage vessel was discovered on September 16, 2008 (during the RI) while attempting to advance the boring for monitoring well MW-4R (Figure 3). The initial boring for MW-4R penetrated the upper surface of the vessel and terminated on the floor of the vessel. The top of the vessel was encountered at approximately 2.8 feet bgs and the bottom of the vessel was encountered at approximately 6 feet bgs.

National Grid videotaped and probed the inside of the vessel through the initial MW-4R borehole. Based on this work, the vessel appeared to be square (6 feet by 6 feet) and approximately 3 feet deep. Approximately 8 inches of water and 2 inches of sludge were observed in the bottom of the vessel. National Grid collected one grab sample of water from the vessel. The water analytical results indicated a total BTEX concentration of 31,063 micrograms per liter (µg/L). No other VOCs were detected. In addition, eight SVOCs (phenol, 2-methylphenol, 4-methylphenol, 2,4-dimethylphenol, naphthalene, 2-methlynaphthalene, phenanthrene and carbazole) were detected at concentrations ranging from 1.2 to 440 µg/L.

National Grid also completed four soil borings around the vessel. Each boring was positioned approximately 2 feet from the corners of the vessel and was advanced to bedrock refusal, which ranged in depth from 6.7 to 8.4 feet bgs. Soils recovered from the borings indicated only a faint coal-tar-like odor above bedrock. Based on the analytical results and observations made while drilling the soil borings completed around the vessel, it did not appear that the contents of the vessel impacted the surrounding soils.

It was not conclusively determined if the vessel was part of the former MGP operations, however, National Grid, in order to mitigate potential groundwater impacts, contracted with Clean Harbors to complete closure of the vessel on October 1, 2008. Arcadis provided oversight of the work performed by Clean Harbors to confirm that the work was completed in accordance with correspondence between National Grid and the NYSDEC. The vessel was pumped free of any residual water and subsequently filled with flowable fill material. The water from the tank exhibited a petroleum-like odor, but no sheens or NAPL were observed on the water. Once the fill was allowed to set up for 24 hours, an asphalt patch was installed to match the surrounding surface cover.

1.4.2 City Reconstruction Project

MGP-impacted soil was addressed during the City of Watertown's Reconstruction Project completed in 2011. As summarized below, approximately 510 tons of MGP-impacted soil/debris were excavated and treated/disposed off-site during the City's Reconstruction Project which included the following components:

- installation of a new sanitary sewer;
- water main improvements;
- new storm water quality basins;
- new sidewalks and lighting;
- pavement and parking lot reconstruction; and
- installation of numerous amenities (e.g., pavilion, landscape features, benches, bike racks, restroom facility, etc.).

The construction work within the Site boundary generally consisted of excavating trenches down to the top of bedrock (encountered at 8 to 10 ft bgs), and at times slightly into bedrock, for the removal of old utility lines or the installation of new utilities. During the excavation activities, discrete areas containing MGP-related impacts were identified (Figure 6). Impacted soils encountered during the intrusive work were segregated from clean soils and temporarily staged in the on-site materials management area prior to off-site treatment/ disposal. As identified above, approximately 510 tons of MGP-impacted soil/debris were excavated and treated/disposed off-site.

Following installation or removal of the utility line the trench was backfilled with clean gravel and the next section of trench was advanced. Heavy equipment used to remove impacted materials was decontaminated prior to handling clean soils. Final restoration to the surface included repaving the parking lot.

Further details regarding the City's Reconstruction Project are discussed in the Summary Report (National Grid's October 19, 2012 letter to NYSDEC, copy provided in Appendix C of the RI Report). NYSDEC's approval of the Summary Report was presented in a letter to National Grid dated November 21, 2012.

1.5 REMAINING MGP-RELATED IMPACTS

As described in the Decision Document, the following MGP-related constituents were identified at the Site: coal tar (a reddish-brown to black non-aqueous phase liquid [NAPL]); benzene, toluene, ethylbenzene, and xylenes (collectively, "BTEX"); polycyclic aromatic hydrocarbons (PAHs); and cyanide (soluble cyanide salts). These constituents exceed applicable standards, criteria or guidance for subsurface soil and/or groundwater.

Most of the remaining MGP-related impacts are generally within or proximate to the three former gas holder foundations just above and immediately below the bedrock surface. Subsurface soil concentrations of MGP-related constituents ranged from non-detect to 170 ppm BTEX; non-detect to 1,700 ppm PAHs; and non-detect to 21 ppm total cyanide. These impacts ranged from 6 to 15 feet bgs and were generally present on the bedrock surface and within the subsurface foundations of the three former gas holders (Figure 4). Table 1 of Appendix H summarizes the results of all soil samples that comprise the remaining MGP-related impacts at the Site, and the highlighted concentrations exceed applicable SCOs. These sample locations for the remaining MGP-related impacts are shown on Figure 7.

In groundwater, only benzene at 1.4 ppb and cyanide at 210 ppb of cyanide were most recently (December 2015; Figure 5) detected in excess of regulatory levels in monitoring wells screened in the perched overburden groundwater. One on-site bedrock monitoring well (MW-5R) contained the following MGP-related constituent concentrations: 8,340 ppb BTEX and 2,321 ppb PAHs (December 2015; Figure 5). NAPL has not been observed in any of the monitoring wells during any of the groundwater sampling events and no off-site impacts to groundwater were found. A summary of the groundwater impacts is provided in Table 2 of Appendix H and

concentrations exceeding regulatory values have been highlighted. Well construction logs are provided in Appendix G, and construction details are summarized in Table 1 of that appendix.

1.6 REMEDIAL ACTION OBJECTIVES

The remedial action objectives (RAOs) for the Site are presented in Table 1. RAOs represent medium-specific goals that are protective of public health and the environment.

Table 1: Remedial Action Objectives

Environmental Media	Remediation Objectives	
	Public Health Protection	**Environmental Protection**
Groundwater	Prevent ingestion of groundwater with MGP-related constituent levels exceeding drinking water standards. Prevent contact with, or inhalation of volatiles from, groundwater containing levels of MGP-related constituents exceeding groundwater standards.	Restore groundwater aquifer to pre-disposal/pre-release conditions, to the extent practicable. Prevent the discharge of MGP-related constituents to surface water.
Soil	Prevent ingestion/direct contact of soil containing levels of MGP-related constituents exceeding applicable SCOs.	Prevent the migration of MGP-related impacts that would result in groundwater or surface water exceeding standards.

1.7 SUMMARY OF NYSDEC SELECTED REMEDY

As presented in the NYSDEC Decision Document, the NYSDEC selected remedy for the Site is Site Management with Institutional Controls. The following is a summary the NYSDEC selected remedy elements:

1. Implementation of green remediation principles and techniques to the extent feasible in the implementation and site management of the remedy as per DER-31/Green Remediation (NYSDEC, 2011).
2. Maintenance of the existing Site cover (i.e., engineering control) to allow for restricted-residential use of the Site. Any Site development will maintain a Site cover, which may consist either of the structures such as buildings, pavement, sidewalks comprising the Site development or soil cover in areas where the upper two feet of exposed soil will exceed the applicable SCOs for restricted-residential use of the Site. Where a soil cover is required, it will be a minimum of 2 feet of soil, meeting the SCOs for cover material

as set forth in 6 NYCRR Part 375-6.7(d) for restricted-residential use. The soil cover will be placed over a demarcation layer, with the upper six inches of soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the Site will meet the requirements for restricted-residential Site use as set forth in 6 NYCRR Part 375-6.7 (d).

3. Execution and recording of Deed Restrictions (for each property comprising the Site) that: 1) allow the use and development of the Site for restricted-residential, commercial, and industrial uses as defined by 6 NYCRR Part 375-1.8(g) and consistent with local zoning laws; 2) require compliance with a NYSDEC-approved Site Management Plan; 3) restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH; and 4) require periodic certification to NYSDEC of the institutional and engineering controls in accordance with 6 NYCRR Part 375-1.8(h)(3).
4. Development and implementation of a Site Management Plan for long term management of remaining MGP-related impacts as required by the Deed Restrictions, which includes the following: (1) Institutional and Engineering Controls Plan; (2) Excavation Plan; (3) provision in the Excavation Plan for further investigation and remediation by National Grid if either of the two existing commercial buildings is demolished, or if the subsurface is otherwise made accessible; (4) Site Monitoring Plan (groundwater and Site cover); and (5) reporting.

2.0 ENGINEERING AND INSTITUTIONAL CONTROL PLAN

2.1 INTRODUCTION

2.1.1 General

As described the sections above, an EC (Site cover) and ICs (Deed Restrictions) have been established within the Site boundary to protect human health and the environment from MGP-related impacts in subsurface soil and groundwater beneath the Site. This section provides additional information regarding the specific function and intended role of each EC and IC on the Site and describes the procedures required to implement and manage those controls. The EC/IC Plan is one component of the SMP. The contents and requirements of this plan may be revised, pending approval by the NYSDEC.

2.1.2 Purpose

This plan describes the following:

- All EC/ICs on the Site;
- Basic implementation and intended role of each EC/IC;
- Key components of the ICs set forth in the Deed Restrictions;
- Features to be evaluated during each required inspection and periodic review;
- Plans and procedures to be followed for implementation of EC/ICs, such as the implementation of the Excavation Work Plan for the proper handling of remaining MGP-related impacts that may be disturbed during maintenance or redevelopment work on the Site; and
- A description of the roles and responsibilities of each party with respect to this SMP; and

- Any other provisions necessary to identify or establish methods for implementing the EC/ICs required by the Site remedy, as determined by the NYSDEC in conjunction with National Grid.

2.2 ENGINEERING CONTROLS

2.2.1 Engineering Control System - Site Cover

Exposure to remaining MGP-related impacts in subsurface soil/fill at the Site is prevented by the cover (i.e., structures such as buildings and pavement) that currently exists over the Site. A cover will be maintained by the Property Owners over the Site which may consist of either: 1) a soil cover (i.e., minimum of 24 inches of soil meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for restricted residential use, and placed over a demarcation layer, with the upper six inches of soil of sufficient quality to maintain a vegetation layer); or 2) structures such as buildings, pavement, sidewalks comprising the Site development. The Excavation Work Plan provided in Appendix B outlines the procedures required to be implemented in the event the Site cover is breached, penetrated or temporarily removed, and any underlying MGP-related impacts are disturbed. As identified in Section 1.7 (Summary of NYSDEC Selected Remedy) and in the Excavation Work Plan, if either of the two existing commercial buildings is demolished, or if the subsurface is otherwise made accessible, provision shall be made for further investigation and remediation by National Grid.

Procedures for the inspection and maintenance of the Site cover are provided in the monitoring plan included in Section 4 of this SMP.

2.3 INSTITUTIONAL CONTROLS

The Site has a series of ICs in the form of Deed Restrictions - one for each tax parcel comprising the Site (Figure 2). The ICs are required by the Decision Document to: (1) maintain and monitor the EC (Site cover); (2) prevent future exposure to remaining MGP-related impacts by controlling disturbances of the subsurface soils; and, (3) limit the use and development of the Site to restricted-residential, commercial, and industrial uses only as defined by 6 NYCRR Part 375-1.8(g) and consistent with local zoning laws. Adherence to the ICs on the Site is required by the Deed Restrictions.

The specific administrative and procedural ICs to be implemented under this SMP include those listed below and a matrix of the responsibilities identified in this SMP for the Property Owners and National Grid (Remedial Party) is provided in Table 2 located at the end of this subsection:

- Compliance with the Deed Restriction and this SMP by the respective Property Owners and their successors and assigns;
- The EC must be maintained as specified in this SMP;
- The EC within the Site boundary must be inspected at a frequency and in a manner defined in the SMP;
- Groundwater monitoring must be performed as defined in this SMP; and
- Data and information pertinent to management of the Site must be reported at the frequency and in a manner defined in this SMP.

The Site also has a series of ICs in the form of activity or use restrictions. Adherence to these ICs is required by the Deed Restrictions. The activity or use restrictions that apply to the Site are as follows:

- The property may only be used for restricted-residential, commercial, or industrial uses as defined by 6 NYCRR Part 375-1.8(g) provided that the long-term EC and ICs included in this SMP are employed.
- The property may not be used for a higher level of use, such as unrestricted use without the express written waiver of such prohibition by the NYSDEC, or additional remediation and amendment of the Deed Restriction(s), as approved by the NYSDEC;
- All future activities on the Site that will disturb remaining MGP-related impacts must be conducted in accordance with this SMP;
- The use of the groundwater underlying the Site is prohibited without treatment rendering it safe for intended use, as determined by the NYSDOH or County DOH;
- Vegetable gardens and farming on the Site are prohibited; and
- National Grid shall submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Site are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; (2)

nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP for this Site; and (3) access to the Site will continue to be provided to NYSDEC to evaluate the continued maintenance of any and all controls. This certification will be submitted annually, or an alternate period of time that NYSDEC may allow and will be made by an expert that the NYSDEC finds acceptable. This certification will be qualified to the extent that National Grid or its representatives are only at the Site on an intermittent basis.

A matrix of the responsibilities identified in this SMP for the Property Owners and National Grid (Remedial Party) is provided in the table below.

Table 2: Matrix of Responsibilities

Responsible Party	Responsibilities
Site Owner	• Comply with the Deed Restriction • Follow the SMP provisions regarding construction/excavation (i.e., ground intrusive activities) • Periodically certify to Remedial Party (RP) that the EC and ICs remain in place/are complied with • Maintain Site cover • If Site is delisted, certify to RP that ICs remain in place/are complied with • Grant access to RP and NYSDEC and their agents • Assure security of remedial components of Site • Notify RP in event of an emergency that reduces or has potential to reduce the effectiveness of the Site cover • If remedial components are damaged, notify RP • If Owner action/inaction adversely impacts Site, notify RP • If either of the two existing commercial buildings are planned to be demolished or the subsurface is otherwise made accessible, notify RP • If change in ownership, notify RP

Responsible Party	Responsibilities
Remedial Party (National Grid)	• Follow the SMP provisions regarding construction/excavation (i.e., ground intrusive activities) • Implement Groundwater Monitoring Program • Comply with reporting and certification requirements • Notify Owner of Site access and work to be completed • Provide Site visit data generated to Owner and NYSDEC • Conduct Site-wide inspection of all remedial components on an annual (minimum) basis • Submit NYSDEC-approved changes to SMP to Owner • If change in RP ownership, notify NYSDEC and Owner • Notify NYSDEC in event of emergency that reduces or has potential to reduce the effectiveness of the Site and provide follow-up status report • If known damage/modification to remedial components, notify NYSDEC • If proposed change in use of Site, notify NYSDEC and submit amended SMP to NYSDEC • If significant changes to SMP/legal documents, contact NYSDEC

2.3.1 Excavation Work Plan

Any future intrusive (e.g., excavation) work that will penetrate the Site cover, or encounter or disturb the remaining MGP-related impacts, including any modifications or repairs to the existing cover system will be performed in compliance with the Excavation Work Plan (EWP) that is attached as Appendix B to this SMP.

Any work conducted pursuant to the EWP will also be conducted in accordance with a task-specific Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP), which will be prepared by the party performing the work. A task-specific HASP prepared for the remedial field activities identified in the NYSDEC Decision Document (i.e., groundwater monitoring and site inspection) is attached as Appendix C to this SMP, and is in current compliance with DER-10, and 29 CFR 1910, 29 CFR 1926, and other applicable Federal, State and local regulations. The attached HASP will be updated (as necessary) based on future changes to state and federal health and safety requirements.

Additionally, a site-specific Community Air Monitoring Plan is provided in Appendix D of this SMP. The attached HASP and CAMP may be used as guides or templates by the party

performing ground-intrusive work under the EWP. The party performing the work is responsible for addressing task-specific hazards/hazard controls, and must verify that its HASP is in current compliance with DER-10, Title 29, Section 1910 of the Code of Federal Regulations (29 CFR 1910), 29 CFR 1926, and other applicable federal, state, and local regulations. Based on future changes to State and federal health and safety requirements, and specific methods employed by future contractors, the HASP and CAMP will be updated and re-submitted by National Grid with the notification provided in Section A-1 of the EWP. Any intrusive construction work will be performed in compliance with the EWP, HASP and CAMP, and will be included in the periodic inspection and certification reports submitted under the Site Management Reporting Plan (See Section 5).

The Site Property Owners and/or associated parties preparing remedial documents related to planned Site improvements or redevelopment that shall be submitted to National Grid and the NYSDEC, and the parties performing this work are jointly and completely responsible for the safe performance of all intrusive work, the structural integrity of excavations, proper disposal of excavation de-water, control of runoff from open excavations into remaining MGP-related impacts, and for structures that may be affected by excavations (such as building foundations). The Site owner(s) will ensure that Site development activities will not interfere with, or otherwise impair or compromise, the EC (Site cover) described in this SMP.

2.4 INSPECTIONS AND NOTIFICATIONS

2.4.1 Inspections

A comprehensive Site-wide inspection of all remedial components at the Site will be conducted by National Grid on an annual basis, regardless of the frequency of the Periodic Review Report, in accordance with the procedures described in Section 3 of this SMP. If an emergency, such as a natural disaster or an unforeseen failure of the EC (Site cover) occurs, an inspection of the Site will be conducted by National Grid within 5 days of notification by the respective Property Owner of the event to verify the continued effectiveness of the EC/ICs implemented at the Site. The inspection will be conducted by a qualified environmental professional, as determined by National Grid.

Inspections will be conducted in accordance with the procedures set forth in the Monitoring Plan of this SMP (Section 3). The results of each inspection will be documented by National Grid in

the Periodic Review Report, in accordance with the reporting requirements outlined in Section 5.3 of this SMP.

The inspections will determine and document the following:

- Whether the EC continues to perform as intended;
- If the EC continues to be protective of human health and the environment;
- Compliance with requirements of this SMP and the Deed Restrictions;
- Sampling and analysis of appropriate media during monitoring events;
- If Site records are complete and up to date; and
- Changes, or needed changes, to the remedial or monitoring system.

2.4.2 Notifications

As necessary, NYSDEC will be notified by National Grid for the reasons and in the timeframes identified below. Timely notifications will be submitted by the Property Owner to National Grid to support these notifications.

- 60-day advance notice of any proposed changes in Site use that are required under the terms of the VCO, 6NYCRR Part 375, and/or Environmental Conservation Law (ECL).
- 15-day advance notice of any proposed ground-intrusive activities pursuant to the EWP.
- Notice within 48-hours of any damage or defect to the EC (Site cover) that reduces or has the potential to reduce the effectiveness of the EC and likewise any action to be taken to mitigate the damage or defect.
- Verbal notice by noon of the following day of any emergency, such as a fire, flood, or earthquake that reduces or has the potential to reduce the effectiveness of the EC in place at the Site, with written confirmation within 7 days that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.

- Within 45 days of any emergency requiring on-going responsive action, submittal of a follow-up status report to the NYSDEC that describes and documents the actions taken to restore the effectiveness of the EC at the Site.

In addition to the above, NYSDEC will be notified by National Grid in writing at least 60 days prior to any change in the ownership of the Site or the responsibility for implementing this SMP. In the case of a change in ownership, the written notification will include a certification that the prospective purchaser has been provided with a copy of the VCO, and all approved work plans and reports, including this SMP. Within 15 days after the transfer of all or part of the Site, the new owner's name, contact representative, and contact information will be confirmed in writing by National Grid to NYSDEC. Timely notifications will be submitted by the Property Owner to National Grid to support these notifications.

2.5 CONTINGENCY PLAN

This Contingency Plan identifies the general procedures for responding to emergencies that may arise at the Site during the implementation of this SMP. An emergency is a situation that poses immediate risk to health, life, property, or the environment. The potential emergency situations addressed in this section may include environmental release, fire and explosion, severe weather conditions (including flooding), and injury to personnel.

The party implementing this SMP on behalf of National Grid will prepare and have on-site (while performing field work) a Site-specific HASP that provides additional details for controlling Site- and task-specific hazards and responding to emergency situations should they occur.

2.5.1 Emergency Telephone Numbers

The contact information for local and state emergency response groups and key project personnel is provided in Table 3 below.

Table 3: Emergency Contact Numbers

Contact	Telephone Number
Emergency Responders	
Local Emergency Response (Ambulance, Fire Department, and Police)	911 Ambulance – 315.221.9841 Fire Department – 315.785.7800 Police – 315.782.2233
Local Hospital (Samaritan Medical Center)	315.785.4000

Contact	Telephone Number
One Call Center	800.272.4480 (3-day notice required for utility mark-out)
Poison Control Center	800.222.1222
National Response Center (Spills to Water and Spills in Reportable Quantities)	800.424.8802
NYSDEC Spill Hotline	800.457.7362
National Grid: Power Outages and Electrical Emergencies Natural Gas Leaks and Gas-Related Emergencies	 800.867.5222 800.892.2345
Project Contacts	
NYSDEC Project Manager: Ms. Sarah Saucier	518.402.9662
NYSDOH Project Manager: Mr. Ian Ushe	518.402.7860
National Grid Project Manager: Mr. Steve Stucker	315.428.5652

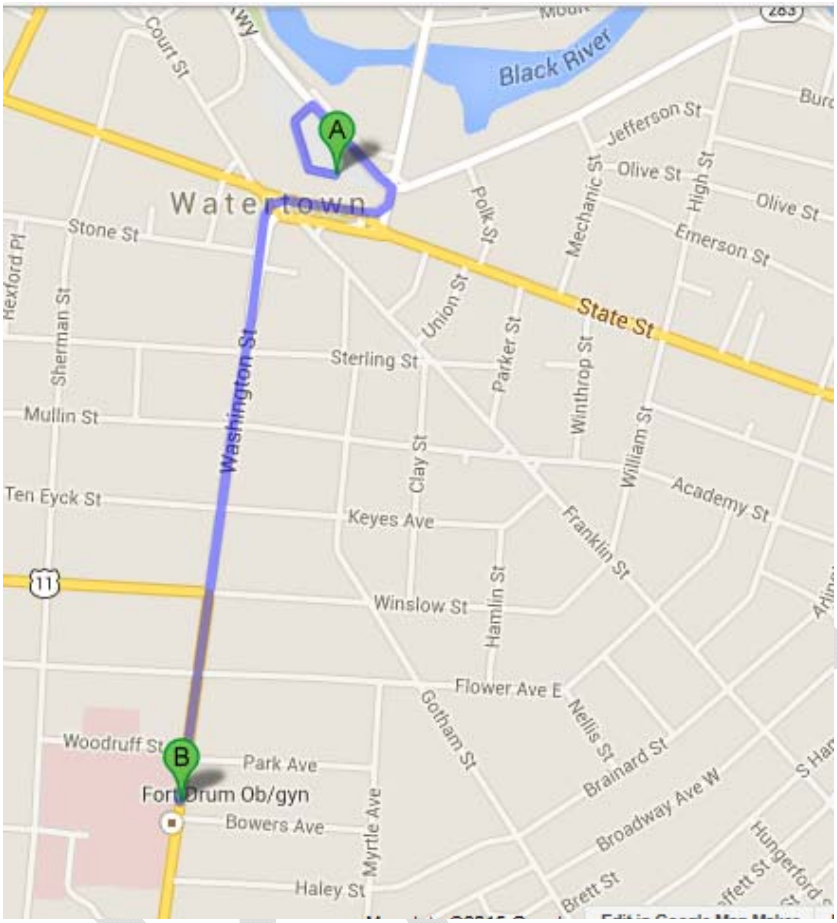
This emergency contact list will be kept up-to-date.

In the event of an emergency, on-site personnel will immediately contact the appropriate emergency response group(s) and the National Grid Project Manager. As appropriate, the National Grid Project Manager or a designated representative will notify the NYSDEC Project Manager and the NYSDOH Project Manager.

2.5.2 Map and Directions to Nearest Health Facility

Medical Facility:	Samaritan Medical Center
Address:	830 Washington Street Watertown, NY 13601
Telephone:	315.785.4000

Exhibit 1 Map of Route from Site to Nearest Medical Facility



Driving directions to 830 Washington St, Watertown, NY 13601

A **121 JB Wise Pl**
Watertown, NY 13601

1. Head **west** on **JB Wise Place**
433 ft

2. Slight right to stay on **JB Wise Place**
171 ft

3. Turn right onto **Black River Pkwy**
0.1 mi

4. Take the 1st right onto **Mill St**
210 ft

5. Take the 1st right onto **Public Square**
0.1 mi

6. Turn left onto **Washington St**
Destination will be on the right
0.7 mi

B **830 Washington St**
Watertown, NY 13601

Total Distance: 1 mile
Total Estimated Time: 5 minutes

2.5.3 Response Procedures

As appropriate, the fire department and other emergency response group will be notified immediately by telephone of the emergency. The emergency telephone number list is found at the beginning of this Contingency Plan (Table 3). The list will also be posted prominently at the Site (as appropriate) and made readily available to all personnel.

Spills or Material Releases

In the event of a spill, on-site personnel will immediately notify the National Grid Project Manager and implement the following response procedures:

- Source Isolation/Shut-Down: As conditions allow, personnel will attempt to stop or isolate the source of the spill by closing valves and/or shutting down affected vehicles or equipment.

- Containment: If the spilled material is floating on a water surface, spill-absorbent pads/booms will be placed across the path of the floating spill. If the spilled material sinks below the water surface, a dam, weir, or other containment method will be used to stop the flow of the spilled material. If the spill occurs on land, a containment unit will be constructed to stop the flow of the spilled material and sorbents will be applied as necessary.

- Clean-Up/Recovery: Spills in water will be recovered using pumps and sorbents as necessary until the spilled material is recovered and no sheen or other evidence of the spill is observed on the water surface. Spills on land will be recovered using pumps, sorbents, and heavy equipment as necessary until the spilled material is recovered. Construction vehicles and equipment used in the clean-up effort, or otherwise affected by the spill, will also be cleaned.

- Waste Collection, Storage, and Disposal: Impacted materials, sorbents, and other wastes will be collected and stored in New York State Department of Transportation-approved containers. The containers will be labeled with the waste type and date of accumulation, and will be transported off-site for disposal at a permitted facility in accordance with all applicable laws and regulations.

- Post-Spill Maintenance: Following the clean-up of the spill, personnel will verify that all impacted materials, vehicles, and equipment have either been transported off-site for disposal, or decontaminated, as appropriate. The vehicle or piece of equipment that may have caused the spill will also be repaired. If the vehicle or piece of equipment cannot be repaired, it will be removed from the Site and replaced.

The National Grid Project Manager or a designated representative will notify the NYSDEC Project Manager of all spills, regardless of volume or circumstances involved. Appropriate emergency response groups, including the local fire department, NYSDEC, and National Response Center, will be contacted immediately if the spill or material release has impacted soil, groundwater, or surface water, or is beyond the capabilities of on-site personnel to control using the methods described above.

Fire/Explosion

Fire extinguishers will be made available at the site for on-site personnel to use on minor, controllable fires without endangering the safety of others. The local fire department (911 or 315.785.7800) will be contacted immediately if the nature of the fire is beyond the capabilities of on-site personnel to control with a fire extinguisher, or if the potential exists for an explosion.

Severe Weather

If severe weather is forecasted or occurs, on-site personnel will secure all materials and equipment (if conditions so allow) and seek shelter by either proceeding indoors or evacuating the Site. Other types of weather or weather-induced conditions for which long range prediction is available (e.g., hurricane, flooding, etc.) may require pro-active response measures, such as securing, or completely removing from the Site, drums and other vessels containing chemicals or investigation-derived wastes.

Injuries:

As appropriate, first aid for minor injuries (e.g., small cuts, abrasions, etc.) will be administered on-site by trained personnel. If necessary, injured workers will be transported to the local hospital (Exhibit 1) for professional medical attention. Local emergency responders (911 or 315.785.4000) will be contacted immediately by on-site personnel for any life-threatening injuries.

The National Grid Project Manager will be notified by on-site personnel of all injuries requiring first aid treatment of any kind, regardless of the nature or severity of the injury.

3.0 SITE MONITORING PLAN

3.1 INTRODUCTION

3.1.1 General

The Monitoring Plan describes the measures to be implemented by National Grid for evaluating the Site cover and for monitoring groundwater. This Monitoring Plan may only be revised with the approval of NYSDEC.

3.1.2 Purpose and Schedule

This Monitoring Plan describes the methods to be used for:

- Sampling and analysis of groundwater;
- Evaluating Site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment; and
- Preparing the necessary reports for the monitoring activities.

To adequately address these issues, this Monitoring Plan provides information on:

- Sampling locations, protocol, and frequency;
- Information on the groundwater monitoring system (e.g., well logs);
- Analytical sampling program requirements;
- Reporting requirements;
- Quality Assurance/Quality Control (QA/QC) requirements;
- Inspection and maintenance requirements for monitoring wells;
- Monitoring well repair, replacement, and decommissioning procedures; and
- Annual inspection and periodic certification.

Annual groundwater monitoring will be conducted by National Grid for the first 5 years. The frequency thereafter will be determined in conjunction with NYSDEC. Monitoring and

inspection programs are summarized in Table 4 and outlined in detail in Sections 3.2 and 3.3, respectively.

Table 4: Monitoring/Inspection Schedule

Monitoring Program	Frequency	Matrix	Analysis
Groundwater	Annually for First Five Years	Groundwater	BTEX, PAHs, and total cyanide
Site-Wide Inspection	Annually	Not Applicable	Visual assessment of observable surface conditions/features comprising the Site cover (EC) on the Site.

Table Notes:

1. Monitoring events and inspections will be conducted by National Grid or its representative at the frequencies specified in this table until otherwise approved by NYSDEC and NYSDOH.
2. The PAH analyte list consists of acenaphthene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, and pyrene.
3. An additional Site-wide inspection will be performed within five days of a natural disaster (e.g., flood, tornado, etc.) or unforeseen failure of the EC.

The contents and requirements of this section may be revised contingent upon NYSDEC approval.

3.2 SITE COVER MONITORING

A Site cover currently exists and will be maintained by the Property Owners to allow for restricted-residential use of the Site. Any Site redevelopment will maintain a Site cover, which may consist either of the structures such as buildings, pavement, sidewalks comprising the Site development, or a soil cover in areas where the upper two feet of exposed soil exceeds the applicable SCOs for restricted-residential use of the Site. Where a soil cover is required, it will be a minimum of two feet of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for restricted-residential use. The soil cover will be placed over a demarcation layer, with the upper six inches of soil of sufficient quality to maintain a vegetation layer.

As identified in Table 4, a Site-wide inspection will be conducted annually by National Grid or its representative to visually observe that the Site cover is maintained. The inspection activities will be documented on the Site inspection form (included as Appendix I), and will be submitted to NYSDEC.

3.3 MEDIA MONITORING PROGRAM

As further described below, groundwater monitoring will be performed by National Grid on a periodic basis to assess changes in current conditions at the Site. The sampling and analytical procedures to be used during these monitoring activities are described in National Grid's Generic Field Sampling Plan for Site Investigations at Manufactured Gas Plants (GFSP; Foster Wheeler Environmental Corporation, 2002a) and Generic Quality Assurance Project Plan for Site Investigations at Non-Owned Former MGP Sites (GQAPP; Foster Wheeler Environmental Corporation, 2002b), which are provided as Appendices E and F, respectively, of this SMP.

3.3.1 Groundwater Monitoring

A network of monitoring wells was installed to monitor both upgradient and downgradient groundwater conditions at the Site. The network consists of eight monitoring wells: three overburden wells (MW-1 through MW-3); and five bedrock wells (MW-3R through MW-7R). Figure 8 shows the locations of this groundwater monitoring well network. Monitoring well boring and construction logs, and a table summarizing well construction details, are included in Appendix G.

Groundwater monitoring will be performed at the frequencies identified in Table 4 above. Each groundwater monitoring event will include the following:

- Integrity assessment of each well;
- Measurement of groundwater level;
- Assessment of absence/presence of NAPL; and
- Collection and laboratory analysis of groundwater samples.

At each well, an oil-water interface probe will be used. Depths to bottom of each monitoring well will be measured to the nearest one-hundredth (0.01) of a foot from the reference point at the top of the inner well casing. To the extent practicable, groundwater levels will be measured within one day of sampling to minimize potential relative changes in measurements due to seasonal conditions or precipitation events. Additionally, the absence/presence of NAPL will be assessed in each monitoring well, and the NAPL thickness (if present) measured using the oil-water interface probe. As identified previously, NAPL has not been observed in any of the monitoring wells during any of the groundwater sampling events.

As described in the GFSP and GQAPP, groundwater samples will be collected using low-flow purging and sampling techniques. As specified in Table 4, each groundwater sample will be analyzed for BTEX, PAHs, and total cyanide in accordance with the most-recent versions of the United States Environmental Protection Agency (USEPA) Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846), as referenced in the current NYSDEC Analytical Services Protocol (ASP). Quality assurance (QA)/quality control (QC) samples, including trip blanks, rinse blanks (if necessary), field duplicates, matrix spikes, and matrix spike duplicates, will also be collected and analyzed in accordance with the GQAPP.

Sampling activities and observations (e.g., condition of sample, integrity of well, etc.) will be recorded on the low-flow groundwater sampling log included in the GFSP. Field measurements and other information pertinent to the monitoring event will be recorded in a dedicated field log book in accordance with the GFSP.

The sampling frequency may be modified with the approval NYSDEC. The SMP will be modified to reflect changes in sampling plans approved by NYSDEC.

Deliverables for the groundwater monitoring program are specified in Section 3.6 below.

3.3.2 Sampling Protocol

Field observations, measurements, and other relevant information generated during monitoring events and inspections will be recorded on an appropriate form or in a field log book, as appropriate, in accordance with the GFSP and GQAPP. Completed forms and other field records will be maintained in a central project file and, as appropriate, will be included in the Periodic Review Report.

As identified in the previous section, groundwater samples will be collected from the on-site network of 8 monitoring wells using low-flow purging and sampling techniques, in accordance with the GFSP and GQAPP. The samples will be analyzed for BTEX, PAHs, and total cyanide; and QA/QC samples will also be collected and analyzed in accordance with the GQAPP. Groundwater samples and all field QA/QC samples will be sent to a qualified NYSDOH Environmental Laboratory Approval Program-certified laboratory for analysis.

3.3.3 Monitoring Well Repairs, Replacement and Decommissioning

Repairs and/or replacement of wells in the monitoring well network will be performed based on assessments of structural integrity and overall performance. Included under the general

term of "monitoring well repairs" is well redevelopment. Monitoring wells will be repaired, replaced or decommissioned as needed.

Monitoring wells may require redevelopment if biofouling or silt accumulation occurs. If redevelopment is deemed warranted, the well will be physically agitated/surged and redeveloped using the procedures described in the GFSP. The decommissioning and replacement of a monitoring well may be warranted if: 1) the well is broken, obstructed, or otherwise compromised; 2) cannot be adequately repaired; and 3) is required for the purpose of future monitoring. Well decommissioning will be performed in accordance with NYSDEC's Groundwater Monitoring Well Decommissioning Policy (CP-43; NYSDEC, 2009). The specific decommissioning method will be determined based on the construction and current condition of the well. The replacement monitoring well will be installed in the nearest available location and will be constructed in the same manner as the original well, unless otherwise approved by NYSDEC.

The NYSDEC will be notified prior to any repair or decommissioning of monitoring wells for the purpose of replacement, and the repair or decommissioning and replacement process will be documented in the subsequent periodic report. Well decommissioning without replacement will be done only with the prior approval of NYSDEC.

3.4 SITE-WIDE INSPECTION

Site-wide inspections will be performed by National Grid on a regular schedule at a minimum of once a year. As described in Section 2.4 and noted in Table 4, Site-wide inspections will also be performed by National Grid after all severe weather conditions that may affect the EC (Site cover) or groundwater monitoring wells. During these inspections, an inspection form will be completed (Appendix I). The form will compile sufficient information to assess the following:

- Compliance with all ICs, including, including administrative requirements, and Site activity and use restrictions;
- Condition and continued effectiveness of EC; and
- General Site conditions at the time of the inspection.

As noted above, the results of each inspection will be recorded on the Site-wide inspection form (Appendix I); and will be documented by National Grid in the Periodic Review Report in accordance with Section 5.3 of this SMP.

3.5 MONITORING QUALITY ASSURANCE/QUALITY CONTROL

Sample collection, shipping, and analysis will be performed by National Grid in accordance with the GFSP and GQAPP (Appendices E and F, respectively). The main components of the GQAPP include the following;

- QA/QC objectives for data measurement;
- Sampling procedures;
- Sample tracking and custody;
- Calibration procedures (field and laboratory equipment);
- Analytical procedures;
- Data reduction, validation, and reporting;
- Internal QC checks;
- QA performance and system audits;
- Preventative maintenance procedures;
- Assessment procedures for data acceptability;
- Corrective actions; and
- QA reports.

3.6 MONITORING REPORTING REQUIREMENTS

Forms and any other information generated during regular monitoring events and inspections will be kept on file by National Grid. Forms used during the annual Site-wide inspections will be (1) subject to approval by NYSDEC and (2) submitted at the time of the Periodic Review Report, as specified in the Reporting Plan of this SMP.

All monitoring results will be reported to NYSDEC on a periodic basis in the Periodic Review Report, which will include, at a minimum:

- Date of groundwater monitoring event;
- Description of the activities performed;
- Copies of field forms completed (e.g., chain-of-custody documentation), as specified in Section 5;
- Sampling results in comparison to appropriate standards/criteria;
- A figure illustrating groundwater sampling locations;
- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled (to be submitted electronically in the NYSDEC-identified format);
- Any observations, conclusions, or recommendations; and
- A determination as to whether groundwater conditions have changed since the last reporting event.

Data will be reported in hard copy or digital format as determined by NYSDEC, in conjunction with National Grid. A summary of the monitoring program deliverables are summarized in Table 5 below.

Table [5]: Schedule of Monitoring/Inspection Reports

Task	Reporting Frequency*
Site-wide Inspection Form	Annually (minimum)
Periodic Review Report	Annually

* The frequency of events will be conducted as specified until otherwise approved by NYSDEC

4.0 OPERATION AND MAINTENANCE PLAN

The Site remedy does not rely on any mechanical systems to protect public health and the environment. Therefore, the operation and maintenance of such components is not included in this SMP.

5.0 INSPECTIONS, REPORTING AND CERTIFICATIONS

5.1 SITE INSPECTIONS

5.1.1 Inspection Frequency

All inspections will be conducted at the frequency specified in the schedules provided in the Monitoring Plan (Section 3) of this SMP. At a minimum, a Site-wide inspection will be conducted annually by National Grid. Site-wide inspections will also be conducted by National Grid whenever a severe condition has taken place, such as an erosion or flooding event that may affect the EC (Site cover) or groundwater monitoring wells.

5.1.2 Inspection Forms, Sampling Data, and Maintenance Reports

All groundwater monitoring events will be recorded on the appropriate forms, which are contained in Appendices E and F). Additionally, a general Site-wide inspection form will be completed during any Site-wide inspection (see Appendix I). These forms are subject to NYSDEC revision.

The Site-wide inspection form completed during the annual Site-wide inspection will be provided in electronic format in the PRR. All other applicable inspection forms and other records, including (but not limited to) groundwater sampling logs generated for the Site during the reporting period will be kept in the project file.

5.1.3 Evaluation of Records and Reporting

The results of the inspection and Site groundwater monitoring data will be evaluated as part of the EC/IC certification to confirm that the:

- EC/ICs are in place, are performing properly, and remain effective;
- The SMP is being implemented; and
- The Site remedy continues to be protective of public health and the environment.

5.2 CERTIFICATION OF ENGINEERING AND INSTITUTIONAL CONTROLS

Per NYSDEC requirements identified in DER-10 (Table 1.5), the person certifying will depend on the status of the Site at the time of the certification (i.e., whether the engineering control and/or groundwater monitoring requirements are in-place). Accordingly, the remedial party (National Grid) and/or National Grid's qualified environmental professional or professional engineer licensed to practice in New York State will prepare the following certification after the Side-wide inspection is completed:

For each institutional or engineering control identified for the Site, I certify that all of the following statements are true:

- The inspection of the Site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction;
- The institutional control and/or engineering control employed at this Site is unchanged from the date the control was put in place, or last approved by the NYSDEC;
- Nothing has occurred that would impair the ability of the control to protect the public health and environment;
- Nothing has occurred that would constitute a violation or failure to comply with the SMP for this control;
- Use of the Site is compliant with the Deed Restriction;
- Access to the Site will continue to be provided to NYSDEC to evaluate the continued maintenance of any and all controls;
- To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program and generally accepted engineering practices; and
- The information presented in this report is accurate and complete.

I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [name], of [business address], am certifying as [Owner or Owner's

Designated Site Representative] (and if the Site consists of multiple properties): [I have been authorized and designated by all Site owners to sign this certification] for the Site.

The signed certification will be included in the Periodic Review Report described below.

5.3 PERIODIC REVIEW REPORT

A Periodic Review Report will be submitted by National Grid to the NYSDEC every year, beginning eighteen months after the Certificate of Completion or equivalent document is issued. Although the Site is subdivided into separate parcels with different ownership, a single Periodic Review Report will be prepared that addresses the Site described in Appendix A (Deed Restrictions). The report will be prepared in accordance with NYSDEC DER-10 and submitted within 30 days of the end of each certification period. Media sampling results will also incorporated into the Periodic Review Report.

The report will be prepared by or on behalf of National Grid in accordance with Section 6.3 of DER-10 and will include at a minimum, the following:

- Identification, assessment and certification of all EC/ICs required by the remedy for the Site;
- Results of the required annual Site inspections and severe condition inspections, if applicable;
- An electronic copy of the annual Site-wide Inspection Form generated for the Site during the reporting period;
- Data summary tables and graphical representations of MGP-related impacts by media (i.e., groundwater), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data as part of an evaluation to assess any change in current conditions at the Site;
- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted electronically in a NYSDEC-approved format;
- A site evaluation, which includes the following:

- The compliance of the remedy with the requirements set forth in the Decision Document;
- Any new conclusions or observations regarding MGP-related impacts based on inspections or data generated by the Monitoring Plan for groundwater;
- Recommendations regarding any necessary changes to the remedy and/or Monitoring Plan; and
- The overall performance and effectiveness of the remedy.

The Periodic Review Report will be submitted by National Grid within 45 days of the end of each certification period to both NYSDEC and NYSDOH. Electronic data deliverable(s) for all samples collected during the reporting period will also be submitted by National Grid electronically to NYSDEC's Environmental Information Management System administrator.

5.4 CORRECTIVE MEASURES PLAN

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an IC or EC, a corrective measures plan will be submitted by National Grid to the NYSDEC for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the corrective measures plan until it is approved by the NYSDEC.

6.0 REFERENCES

Arcadis 2012. Remedial Investigation Report, Watertown (Anthony Street) Non-Owned Former MGP Site #V00473-6, City of Watertown, Jefferson County. March 11, 2011; Revised December 2012.

Arcadis 2015. Alternatives Analysis Report, Watertown (Anthony Street) Non-Owned Former MGP Site #V00473-6, City of Watertown, Jefferson County. January 2015.

Arcadis BBL. 2007. Site Characterization Report, Watertown (Anthony Street) Non-Owned Former MGP Site #V00473-6, City of Watertown, Jefferson County. April 2007.

City of Watertown. 2013. Zoning codes provided in the City of Watertown's tax information database (http://www.watertown-ny.gov/imo/search.aspx) and zoning code definitions provided in the Code of the City of Watertown, Chapter 310, Zoning. November 7, 2013.

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FIGURES

(NOT INCLUDED WITH THIS MARCH 2017 DRAFT)

APPENDIX A – DEED RESTRICTIONS

(TO BE PROVIDED SEPARATELY)

APPENDIX B – EXCAVATION WORK PLAN

DRAFT

ARCADIS Design & Consultancy for natural and built assets

nationalgrid

EXCAVATION WORK PLAN

Watertown (Anthony Street) Non-Owned
Former Manufactured Gas Plant Site
Watertown, Jefferson County, New York
Site No. V00473

March 2017 DRAFT

EXCAVATION WORK PLAN

Watertown (Anthony Street) Non-Owned Former MGP Site
Watertown, Jefferson County, New York
Site No. V00473

Prepared for:

National Grid

300 Erie Boulevard West

Syracuse, New York 13202

Prepared by:

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B0036638

Date:

March 2017

CONTENTS

ACRONYMS AND ABBREVIATIONS

CFR	Code of Federal Regulations
cy	cubic yards
EWP	Excavation Work Plan
CAMP	Community Air Monitoring Plan
GHASP	Generic Health and Safety Plan
HASP	Health and Safety Plan
MGP	Manufactured Gas Plant
NYCRR	New York Codes, Rules, and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PAH	polycyclic aromatic hydrocarbon
PM_{10}	particulate matter less than 10 micrometers in diameter
ppm	part per million
SCO	soil cleanup objective
SMP	Site Management Plan
TCL	target compound list
VCP	Voluntary Cleanup Program
VOC	volatile organic compound

1 INTRODUCTION

This Excavation Work Plan (EWP) has been prepared as part of the Site Management Plan (SMP) for National Grid's Watertown (Anthony Street) Former Manufactured Gas Plant (MGP) site (hereinafter referred to as the "Site"). The SMP is a required element of the remedial program for the Site under the New York State (NYS) Voluntary Cleanup Program (VCP), administered by New York State Department of Environmental Conservation (NYSDEC). Any future intrusive (e.g., excavation) work that will breach the Site cover and encounter or disturb the remaining MGP-related impacts will be performed in compliance with the requirements provided in this EWP (and the larger SMP) until remedial activities are considered complete.

1.1 Site Description

The Site is located in the City of Watertown, County of Jefferson, New York. The Site is located on approximately 1.6 acres of land, approximately 150 feet southwest of City Center Drive, 200 feet northeast of Court Street and 300 feet southwest of the Black River. Readily apparent evidence of the former MGP does not exist at the ground surface of the Site. Based on review of available Sanborn Fire Insurance Maps, it appears that most of the below grade structures associated with the former MGP are overlain by two existing on-site commercial buildings. Additional details regarding the Site are provided in the SMP.

1.2 Overview of NYSDEC Selected Remedy

As presented in the NYSDEC September 2014 Decision Document for the Site, the NYSDEC selected remedy for the Site is Site Management with Institutional Controls. One element of the selected remedy is maintenance of the existing Site cover (i.e., engineering control) to allow for restricted-residential use of the Site.

As identified in the Decision Document, any Site development will maintain a Site cover, which may consist either of the structures such as buildings, pavement, sidewalks comprising the Site development or soil cover in areas where the upper two feet of exposed soil will exceed the applicable NYSDEC soil cleanup objectives (SCOs) set forth in 6 NYCRR Part 375 for restricted-residential use of the Site.

The NYSDEC selected remedy also requires provision for further investigation and remediation by National Grid if either of the two existing commercial buildings is demolished, or if the subsurface is otherwise made accessible. The nature and extent of MGP-related impacts in areas of the Site where access was previously limited or unavailable will be investigated by National Grid in a timely manner. Based on the investigation results, a plan will be developed by National Grid for the removal and/or treatment of source areas (as defined in NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, dated May 2010) to the extent feasible. Any necessary remediation will be completed by National Grid prior to, or in association with, redevelopment. This includes the existing commercial building located in the southern portion of the Site (Empsall Plaza), a portion of J.B. Wise Place and the adjacent parking lot.

1.3 Remaining MGP-Related Impacts

Some MGP-related impacts remain in the subsurface beneath the Site and the following constituents were identified: coal tar (a reddish-brown to black non-aqueous phase liquid [NAPL]); benzene, toluene, ethylbenzene, and xylenes (collectively, “BTEX”); polycyclic aromatic hydrocarbons (PAHs); and cyanide (soluble cyanide salts). These constituents exceed applicable standards, criteria or guidance for subsurface soil and/or groundwater.

Most of the remaining MGP-related impacts (both subsurface soil and groundwater) are generally within or proximate to the three former gas holder foundations just above and immediately below the bedrock surface. As previously noted, most of the below grade structures associated with the former MGP appear to be overlain by the two existing on-site commercial buildings; however, the location of the northernmost (and largest) former gas holder foundation appears to be mostly or entirely covered by parking/driveway areas. Additional details on remaining MGP-related impacts at the Site and management these impacts are provided in the SMP.

2 NOTIFICATION REQUIREMENTS

2.1 Property Owner Notification

All property owners must notify National Grid at least 30 days prior to starting any non-emergency activity with the potential to breach the Site cover and/or encounter or disturb potential remaining MGP-related impacts. This work may include, but is not limited to, drilling, excavations, sewer or water line repairs, building foundation work, etc.

Prior to demolishing either of the two existing commercial buildings, the property owner(s) must notify National Grid at least 180 days prior to demolition to allow for proper planning and coordination with the NYSDEC for further investigation of MGP-related impacts by National Grid as required by the NYSDEC Decision Document. Based on the investigation results, a plan will be developed by National Grid in conjunction with the NYSDEC and New York State Department of Health (NYSDOH) for the removal and/or treatment of source areas (as defined in NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, dated May 2010), to the extent feasible. Any necessary remediation will be completed prior to, or in association with, redevelopment.

The notification from the property owner to National Grid will include (but not necessarily be limited to):

- A detailed description of the work to be performed, including the location and areal extent, plans for re-grading, intrusive elements or utilities to be installed below the Site cover, estimated volumes of MGP-related impacted soil to be excavated and any work that may impact the Site cover;
- A schedule for the work, detailing the start and completion of all intrusive work and demolition (if any) of existing structures;
- A summary of the applicable components of this EWP (including restoration of the Site cover);
- A statement that the work will be performed in compliance with this EWP and 29 CFR 1910.120;
- A copy of the contractor's health and safety plan (HASP), in electronic format. The contractor may use the generated task-specific Arcadis HASP provided in Appendix C of the SMP as a reference/template; however, the contractor must have a qualified safety professional prepare their task-specific HASP and verify current Occupational Safety and Health Act requirements and protocols;
- Identification of disposal facilities for potential waste streams; and
- Identification of sources of any anticipated backfill, along with all required chemical testing results.

Currently, this notification to National Grid by the property owner will be made to:

National Grid Project Manager: Mr. Steven Stucker

Address:

National Grid

Environmental Department

ATTN: Steven Stucker

300 Erie Blvd. West

Syracuse, NY 13202

Telephone: (315) 428-5652

steven.stucker@nationalgrid.com

2.2 NYSDEC Notification

At least 15 days prior to the start of any non-emergency activity with the potential to breach the Site cover and/or encounter or disturb potential remaining MGP-related impacts, National Grid or a designated representative will notify the NYSDEC. National Grid will notify NYSDEC within 30 days of receiving notification of a property owner's plan to demolish either of the two existing commercial buildings.

Currently, this notification to NYSDEC by National Grid will be made to:

NYSDEC Project Manager: Ms. Sarah Saucier

Address:

New York State Department of Environmental Conservation

Division of Environmental Remediation

ATTN: Sarah Saucier

625 Broadway

Albany, New York 12233-7014

518-402-9662

sarah.saucier@dec.ny.gov

The notification to NYSDEC will include the following:

- A detailed description of the work to be performed, including the location and areal extent, plans for re-grading, estimated volumes of MGP-related impacted soil to be excavated and any work that may impact the engineering control (EC) – the Site cover;
- A summary of environmental conditions anticipated in the work areas, including the nature and concentration levels of remaining MGP-related impacts, potential presence of remaining MGP-related impacts, and plans for any pre-construction sampling;

- A proposed scope of work for further investigation by National Grid if either of the two existing commercial buildings is demolished or if the subsurface is otherwise made accessible. The nature and extent of MGP-related impacts in areas of the Site where access was previously limited or unavailable will be investigated by National Grid in a timely manner;
- A schedule for the work, detailing the start and completion of all intrusive work and demolition (if any) of existing structures;
- A summary of the applicable components of this EWP (including restoration of the Site cover);
- A statement that the work will be performed in compliance with this EWP and Title 29, Section 1910.120 of the Code of Federal Regulations (29 CFR 1910.120);
- A copy of the contractor's task-specific HASP, in electronic format. The contractor may use the generated task-specific Arcadis HASP provided in Appendix C of the SMP as a reference/template; however, the contractor must have a qualified safety professional prepare their task-specific HASP and verify current Occupational Safety and Health Act requirements and protocols;
- Identification of disposal facilities for potential waste streams; and
- Identification of sources of any anticipated backfill, along with all required chemical testing results.

3 SOIL SCREENING METHODS

Visual, olfactory, and instrument-based soil screening will be performed by a qualified environmental professional during all excavations into known or potentially remaining MGP-related impacts. Soil screening will be performed regardless of when the intrusive work is done and will include screening all excavation and intrusive work, such as excavations for foundations and utility work.

Soils excavated from potential remaining MGP-related impacts will be segregated (based on previous environmental data and screening results) into material that requires off-site disposal, material that can potentially be returned to the subsurface, and material that can be used as cover soil. Soil/fill potentially suitable for reuse that is stockpiled will be sampled and analyzed as described in Section 8 of this EWP to evaluate whether it can be replaced or requires disposal off-site.

4 STOCKPILE PROCEDURE

Material removed from the subsurface will be screened and then segregated as described in the previous section. Stockpiles of excavated material will, at minimum, be placed on top of polyethylene sheeting. If required by NYSDEC, stockpiles of excavated material will be placed within an engineered staging area. Stockpiles will be covered with appropriately anchored impervious covers (e.g., tarps or polyethylene sheeting) to reduce potential infiltration of precipitation, migration of wind-blown dust, and direct contact exposures. Stockpiles will be routinely inspected, and damaged covers will be promptly replaced.

During all subsurface soil disturbance activities, erosion and sediment controls will be employed in accordance with this EWP and in conformance with applicable laws and regulations (good work practices that require erosion and sediment controls are not limited to potentially impacted areas). Proven soil conservation practices will be incorporated in any such plans to mitigate soil erosion, off-site sediment migration, and water pollution from erosion. Appropriate temporary erosion control measures (e.g., silt fencing, hay bales, etc.) will be implemented and maintained around all impacted and potentially impacted soil/fill stockpiles and un-vegetated soil surfaces during such activities. Such stockpiles will be graded and compacted as necessary for positive surface water run-off and dust control.

Stockpiles will be inspected at a minimum once each week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site (or in the project file, as appropriate), and provided to NYSDEC for inspection upon request. Results of the inspections will be summarized in the subsequent Periodic Review Report (PRR) prepared for the Site in accordance with the SMP.

5 MATERIALS EXCAVATION AND LOAD-OUT

A qualified environmental professional or person under their supervision will oversee all ground-intrusive work and the excavation and load-out of all excavated material. The owner of the property and its contractors will be solely responsible for safe execution of all ground-intrusive work and other work performed under this EWP.

The presence of utilities and easements on the Site will be investigated by the qualified environmental professional. They will determine whether a risk or impediment to the planned work under this SMP is posed by utilities or easements on the Site.

To extent practicable, queuing of trucks will be performed on-site in order to minimize off-site disturbance. Loaded vehicles leaving the Site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate federal, state, local, and New York State Department of Transportation requirements (and all other applicable transportation requirements).

When necessary, a truck wash will be operated at the Site. The qualified environmental professional will be responsible for ensuring that all outbound trucks are washed (as necessary) at the truck wash before leaving the Site until the activities performed under this SMP are complete. Truck wash waters will be collected and disposed of off-site in an appropriate manner.

Locations where vehicles enter or exit the Site will be inspected daily for evidence of off-site soil tracking. The qualified environmental professional will be responsible for ensuring that all egress points for truck and equipment transport from the Site are clean of dirt and other materials derived from the Site during remediation and development activities, including all intrusive excavation activities. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site-derived materials.

6 MATERIALS TRANSPORT OFF-SITE

All transportation of materials will be performed by licensed haulers in accordance with appropriate local, state, and federal regulations, including Title 6, Part 364 of the New York Codes, Rules, and Regulations (6 NYCRR 364). Haulers will be appropriately licensed and trucks properly placarded.

Material transported by trucks exiting the Site will be secured with tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will also be used. As necessary, all trucks will be washed prior to leaving the Site. As described in Section 5 of this EWP, truck wash waters will be collected and disposed off-site in an appropriate manner. Egress points for truck and equipment transport from the Site will be kept clean of dirt and other materials during site remediation and development.

All trucks loaded with Site-related materials will exit the vicinity of the Site using only truck routes approved by the qualified environmental professional or the NYSDEC. Proposed route(s) will take into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) limiting total distance to major highways; (d) promoting safety in access to highways; (e) overall safety in transport; and (f) community input (where necessary).

7 MATERIALS DISPOSAL OFF-SITE

All material excavated and removed from the Site will be treated as impacted and regulated material, and will be transported and disposed in accordance with all local, state (including 6 NYCRR 360), and federal regulations. If disposal of excavated material from the Site is proposed for unregulated off-site disposal (i.e., clean soil removed for development purposes), a formal request with an associated plan will be made to NYSDEC. Unregulated off-site management of materials excavated from the potential remaining MGP-related impacts at the Site will not occur without formal NYSDEC approval.

Off-site treatment/disposal locations for excavated materials will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate (e.g. waste disposal facility, treatment facility, construction and demolition debris recycling facility, etc.). Actual disposal quantities and associated documentation will be reported to NYSDEC in the subsequent PRR prepared for the Site in accordance with the SMP. This documentation will include waste profiles, laboratory analytical test results, facility acceptance letters, manifests, bills of lading, and facility receipts.

Non-hazardous historic fill and impacted soils taken off-site will be handled, at a minimum, as municipal solid waste in accordance with 6 NYCRR 360-1.2. Materials that do not meet the unrestricted soil cleanup objectives (SCOs) are prohibited from being taken to a New York State recycling facility (6 NYCRR 360-16 Registration Facility).

8 MATERIALS REUSE ON-SITE

Material excavated from outside the Site boundaries may be reused as backfill at the Site. Material excavated from within the Site boundaries that is free of visible coal tar will be considered "potentially reusable". Potentially reusable material will be placed on polyethylene sheeting in stockpiles not exceeding 250 cubic yards (cy). Stockpiles will be covered with polyethylene sheeting whenever material is not being actively placed into or removed from the stockpile, during overnight/weekend hours, during periods of precipitation, or whenever dust action levels are exceeded.

Each stockpile of potentially reusable material will be sampled and analyzed to evaluate its suitability for reuse as backfill at the Site. One composite and one discrete sample will be collected for each 250 cy stockpile. Each composite sample will comprise between three and five grab samples collected from spatially distributed locations within the stockpile. The composite sample will be formed by placing equal portions of soil from each grab sample into a pre-cleaned, stainless steel bowl or dedicated container. The grab samples will be thoroughly homogenized using a stainless steel scoop or trowel before being transferred into the sample containers provided by the laboratory. The filled sample containers will be labeled and transported to the laboratory using a chain-of-custody form.

Each composite sample will be analyzed for total polycyclic aromatic hydrocarbons (PAHs) and total cyanide, and the discrete sample will be analyzed for benzene, ethylbenzene, toluene, and xylene (mixed) (BTEX compounds). The laboratory analysis will be conducted in accordance with the most-recent version of the United States Environmental Protection Agency's Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, as referenced in NYSDEC's current Analytical Services Protocol. In order to be reused as backfill at the Site, potentially reusable material must: 1) be free of visible coal tar; 2) have a total PAH concentration less than 500 parts per million (ppm); 3) have a total cyanide concentration less than 27 ppm (the SCO for restricted-residential use); and 4) have benzene, ethylbenzene, toluene and xylene concentrations less than their respective SCO for restricted-residential use. If determined to be suitable for reuse, potentially reusable material will only be used as backfill below the Site cover. Potentially reusable material will not be used as fill within a soil cover layer (if any), within landscaping berms, or as backfill around subsurface utility lines. Potentially reusable material that is not acceptable for use at the Site will be removed from the Site and disposed of in accordance with Section 7 of this EWP.

Any demolition material proposed for reuse as fill at the Site will be sampled and analyzed for asbestos, and the results will be reported to the NYSDEC for acceptance. Concrete crushing or processing will not be performed at the Site without prior NYSDEC approval. Organic matter (e.g., wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the Site will not be reused as backfill or landscaping material.

The qualified environmental professional will ensure that procedures defined for material reuse in this section of the EWP are followed, and that unacceptable material does not remain at the Site.

9 FLUIDS MANAGEMENT

Efforts shall be made to minimize the amount of water that could enter an excavation (e.g., installing a berm around the excavation or covering the excavation to prevent runoff from entering during precipitation). Water accumulated in excavations shall be pumped out during or after precipitation events (as appropriate), containerized, characterized, and appropriately dealt with.

All liquids to be removed from the Site, including excavation dewatering and groundwater monitoring well purge and development waters, will be handled, transported, and disposed in accordance with applicable local, state, and federal regulations. At a minimum, water encountered in excavations will be sampled and analyzed for the MGP-related constituents – namely, benzene, ethylbenzene, toluene, xylenes, PAHs, and total cyanide – as well as analytes required by potential off-site treatment/disposal facilities. Water shall be discharged to the local sewer authority (if authorized), transported off-site for proper disposal, or treated on-site via a treatment system that has been approved by NYSDEC, as appropriate.

Discharge of water generated during large-scale construction activities to surface waters (i.e., a local pond, creek, stream, or river), if feasible, will be performed under a State Pollution Discharge Elimination System permit. Run-off from surface discharges (if any) shall be controlled. No discharges shall enter a surface water body without proper permits. Dewatering, purge, and development fluids will not be recharged back to the land surface or subsurface of the Site, but will be managed off-site.

10 SITE COVER RESTORATION

After the completion of soil removal and any other invasive activities, the Site cover will be restored. The demarcation layer, consisting of a woven geotextile fabric or equivalent material, will be replaced to provide a visual reference to the top of the area of remaining MGP-related impacts, the area that requires adherence to special conditions in accordance with the SMP and this EWP. If the type of cover changes from that which exists prior to the excavation (i.e., pavement is replaced with building), this will constitute a modification of the Site cover element of the remedy and the upper surface of the potentially remaining MGP-related impacts. A figure showing the modified surface will be included in the subsequent PRR and in any updates to the SMP.

11 BACKFILL FROM OFF-SITE SOURCES

All off-site fill materials proposed for use at the Site will be approved by the qualified environmental professional and will comply with 6 NYCRR 375-6.7(d) and the SCOs for restricted-residential use set forth in Appendix 5 of NYSDEC's Technical Guidance for Site Investigation and Remediation (DER-10). To determine their suitability for use at the Site, off-site fill materials will be sampled and analyzed in accordance with Table 5.4(e)10 of DER-10.

Material from industrial sites, spill sites, other environmental remediation sites, or potentially-impacted sites will not be used as backfill at the Site. Soils that meet 'exempt' fill requirements under 6 NYCRR 360, but do not comply with the SCOs for the Site, will not be used as fill at the Site without prior approval by NYSDEC. Solid waste will not be used as fill at Site.

Trucks entering the Site with off-site fill material will be securely covered with tight-fitting covers. Off-site fill material will be stockpiled separately from excavated material, and will be covered to prevent dust releases.

12 STORM WATER POLLUTION PREVENTION

General storm water pollution prevention activities to be conducted in support of Site excavation activities include the following:

- Check dams (e.g., synthetic, stone, hay bales, etc.) will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by NYSDEC. All necessary repairs will be made immediately.
- Accumulated sediments will be removed as required to keep the barrier and hay bale check functional.
- All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials.
- Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.
- Erosion and sediment control measures identified in the SMP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters.
- Silt fencing or hay bales will be installed around the entire perimeter of the construction area.

13 CONTINGENCY PLAN

If underground tanks or other previously unidentified impacted materials are found during post-remediation subsurface excavations or development-related construction, excavation activities will be suspended until sufficient equipment is mobilized to address the condition.

Sampling will be performed on product, sediment, and surrounding soils as necessary to determine the nature of the material and proper disposal method. Chemical testing will be performed for full a full list of analytes (target analyte list metals, target compound list [TCL] volatile organic compounds [VOCs], TCL semi-volatile organic compounds, TCL pesticides, and polychlorinated biphenyls), unless the Site history and previous sampling results provide a sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to NYSDEC for approval prior to sampling.

Identification of unknown or unexpected impacted media identified by screening during intrusive work will be promptly communicated by phone to the NYSDEC project manager (identified in Section 1 of this EWP). Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be also included in the subsequent PRR prepared in accordance with the SMP.

14 COMMUNITY AIR MONITORING PLAN

Community air monitoring for VOCs and respirable dust (particulate matter less than 10 micrometers in diameter [PM10]) will be performed in accordance with the site-specific Community Air Monitoring Plan (CAMP) that has been prepared consistent with the New York State Department of Health (NYSDOH) Generic Community Air Monitoring Plan (CAMP; Appendix D of the SMP) for soil disturbance activities conducted within the potential remaining MGP-related impacts. The quantity and locations of community air monitoring stations will be determined in conjunction with NYSDOH, based on the size and location of the proposed excavation; however, at a minimum there will be one upwind and one downwind monitoring location. CAMP monitoring results will be included in the subsequent PRR. Exceedances of action levels listed in the CAMP will be reported to the NYSDEC and NYSDOH project managers.

15 ODOR CONTROL PLAN

This odor control plan is capable of controlling emissions of nuisance odors at the Site. Specific odor control methods to be used on a routine basis are described below and in the CAMP. If nuisance odors are identified at the Site boundary, or if odor complaints are received, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the property owner's Remediation Engineer, and any measures that are implemented will be described in the subsequent Periodic Review Report.

All necessary means will be employed to prevent on- and off-site nuisances. At a minimum, these measures will include: 1) limiting the area of open excavations and size of soil stockpiles; 2) shrouding open excavations with tarps and other covers; and 3) using foams to cover exposed odorous soils. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: a) direct load-out of soils to trucks for off-site disposal; and b) use of chemical odorants in spray or misting systems. Staff will be used as appropriate to monitor odors at the Site boundary and in surrounding areas.

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

16 DUST CONTROL PLAN

Dust (PM_{10}) monitoring will be performed in accordance with the CAMP. A dust suppression plan that addresses dust management during intrusive work within potential remaining MGP-related impacts will include, at a minimum, the following:

- Dust suppression will be achieved through the use of a dedicated on-site water truck for road wetting. The truck will be equipped with a water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles.
- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, un-vegetated soils vulnerable to dust production.
- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-site roads will be limited in total area to minimize the area required for water truck sprinkling.
- Water in the truck will be only from a verified clean source (e.g., municipal water supply).

17 OTHER NUISANCES

A noise control plan will be developed and utilized by the contractor, as necessary, for future excavation work on site to ensure compliance with local noise control ordinances.

APPENDIX C – ARCADIS HASP

(NOT INCLUDED WITH THIS MARCH 2017 DRAFT)

APPENDIX D – COMMUNITY AIR MONITORING PLAN (CAMP)

ARCADIS Design & Consultancy for natural and built assets

nationalgrid

COMMUNITY AIR MONITORING PLAN

Watertown (Anthony Street) Non-Owned
Former Manufactured Gas Plant Site
Watertown, Jefferson County, New York
Site No. V00473

March 2017 DRAFT

COMMUNITY AIR MONITORING PLAN

Watertown (Anthony Street) Non-Owned Former MGP Site
Watertown, Jefferson County, New York
Site No. V00473

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B0036638.0001 #11

Date:

March 2017 DRAFT

CONTENTS

APPENDICES

Appendix A. NYSDOH Generic Community Air Monitoring Plan (Appendix 1A of DER-10)

Appendix B. Fugitive Dust Suppression and Particulate Monitoring (Appendix 1B of DER-10)

ACRONYMS AND ABBREVIATIONS

Arcadis	Arcadis of New York, Inc.
CAMP	Community Air Monitoring Plan
COC	constituent of concern
MGP	manufactured gas plant
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PAH	polycyclic aromatic hydrocarbon
PM_{10}	particulate matter less than 10 micrometers in diameter
ppm	parts per million
SMP	Site Management Plan
TWA	time-weighted average
VCP	Voluntary Cleanup Program
VOC	volatile organic compound
$\mu g/m^3$	micrograms per cubic meter

1 INTRODUCTION

1.1 General

This Community Air Monitoring Plan (CAMP) has been prepared as part of the Site Management Plan (SMP) for National Grid's Watertown (Anthony Street) Former Manufactured Gas Plant (MGP) site (hereinafter referred to as the "Site"). The SMP is a required element of the remedial program for the Site under the New York State (NYS) Voluntary Cleanup Program (VCP), administered by New York State Department of Environmental Conservation (NYSDEC). Any future intrusive (e.g., excavation) work that will breach the Site cover and encounter or disturb the remaining MGP-related impacts will be performed in compliance with the requirements provided in this CAMP (and the larger SMP) until remedial activities are considered complete.

This CAMP fulfills the general requirements set forth in Appendices 1A and 1B of NYSDEC's *Technical Guidance for Site Investigation and Remediation* (DER-10; NYSDEC 2010). Appendix 1A of DER-10, which is provided in Appendix A of this CAMP, includes general guidance and protocols for the preparation and implementation of a CAMP. Appendix 1B of DER-10, which is provided in Appendix B of this CAMP, supplements the contents of Appendix 1A and includes additional requirements for fugitive dust/particulate monitoring.

1.2 Site Description

The Site is located in the City of Watertown, County of Jefferson, New York. The Site is located on approximately 1.6 acres of land, approximately 150 feet southwest of City Center Drive, 200 feet northeast of Court Street and 300 feet southwest of the Black River. Readily apparent evidence of the former MGP does not exist at the ground surface of the Site. Based on review of available Sanborn Fire Insurance Maps, it appears that most of the below grade structures associated with the former MGP are overlain by two existing on-site commercial buildings. Additional details regarding the Site are provided in the SMP.

1.3 Overview of NYSDEC Selected Remedy

As presented in the NYSDEC September 2014 Decision Document for the Site, the NYSDEC selected remedy for the Site is Site Management with Institutional Controls. One element of the selected remedy is maintenance of the existing Site cover (i.e., engineering control) to allow for restricted-residential use of the Site.

As identified in the Decision Document, any Site development will maintain a Site cover, which may consist either of the structures such as buildings, pavement, sidewalks comprising the Site development or soil cover in areas where the upper two feet of exposed soil will exceed the applicable NYSDEC soil cleanup objectives (SCOs) set forth in 6 NYCRR Part 375 for restricted-residential use of the Site.

The NYSDEC selected remedy also requires provision for further investigation and remediation by National Grid if either of the two existing commercial buildings is demolished, or if the subsurface is otherwise made accessible. The nature and extent of MGP-related impacts in areas of the Site where access was previously limited or unavailable will be investigated by National Grid in a timely manner. Based on the investigation results, a plan will be developed by National Grid for the removal and/or

treatment of source areas (as defined in NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, dated May 2010) to the extent feasible. Any necessary remediation will be completed by National Grid prior to, or in association with, redevelopment. This includes the existing commercial building located in the southern portion of the Site (Empsall Plaza), a portion of J.B. Wise Place and the adjacent parking lot.

1.4 Remaining MGP-Related Impacts

Some MGP-related impacts remain in the subsurface beneath the Site and the following constituents were identified: coal tar (a reddish-brown to black non-aqueous phase liquid [NAPL]); benzene, toluene, ethylbenzene, and xylenes (collectively, "BTEX"); polycyclic aromatic hydrocarbons (PAHs); and cyanide (soluble cyanide salts). These constituents exceed applicable standards, criteria or guidance for subsurface soil and/or groundwater.

Most of the remaining MGP-related impacts (both subsurface soil and groundwater) are generally within or proximate to the three former gas holder foundations just above and immediately below the bedrock surface. As previously noted, most of the below grade structures associated with the former MGP appear to be overlain by the two existing on-site commercial buildings; however, the location of the northernmost (and largest) former gas holder foundation appears to be mostly or entirely covered by parking/driveway areas. Additional details on remaining MGP-related impacts at the Site and management these impacts are provided in the SMP.

1.5 Objective

Community air monitoring will be performed during any future intrusive (e.g., excavation) work that will breach the Site cover and encounter or disturb the remaining MGP-related impacts to provide a measure of protection for the downwind community from 1) potential airborne releases of MGP-related constituents of concern (COCs) – specifically, volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons (PAHs) and 2) nuisance MGP-related odors. VOCs are more volatile (easily evaporated) than PAHs and, therefore, are generally of greater concern when monitoring air quality during the remediation of former MGP sites. The airborne concentration of respirable dust (particulate matter less than 10 micrometers in diameter [PM_{10}]) will also be monitored due to its ability to co-transport MGP-related COCs.

1.6 CAMP Organization

The remainder of this CAMP is organized into five sections as follows:

- Section 2 (Odor, Vapor, and Dust Controls), summarizes the odor, vapor, and dust controls that will be employed as necessary during future intrusive work that will breach the Site cover and encounter or disturb the remaining MGP-related impacts.
- Section 3 (Real-Time Air Monitoring for Total VOCs and PM_{10}), summarizes the air monitoring equipment and action levels for real-time total VOC and PM_{10} monitoring.
- Section 4 (Periodic Monitoring for MGP-Related Odors), summarizes the monitoring requirements and response procedures for MGP-related odors.

- Section 5 (Reporting), summarizes the reporting requirements for the community air monitoring program.
- Section 6 (References), presents a list of reference documents used in the preparation of this CAMP.

2 ODOR, VAPOR, AND DUST CONTROLS

Ground-intrusive and certain non-intrusive (e.g., material handling) activities have the potential to generate localized impacts to air quality. Such activities include, but are not necessarily limited to, the following:

- Excavating and trenching;
- Drilling soil borings;
- Handling (including loading and unloading) excavated material;
- Backfilling, grading, and restoring excavation areas and other disturbed areas; and
- Cleaning/decontaminating personnel, equipment, and vehicles.

Odor, vapor, and dust emissions resulting from these activities will be controlled as necessary using a combination of: 1) water-based, biodegradable vapor mitigation agents (i.e., BioSolve Pinkwater and Rusmar AC-645 Long-Duration Foam) 2) construction techniques; and 3) site management practices.

BioSolve Pinkwater and Rusmar AC-645 Long-Duration Foam will be mobilized to the Site as necessary before any ground-intrusive or dust-generating activities are initiated and will be maintained on-site in sufficient supply throughout the project. The following construction techniques and site management practices will also be used as necessary during the project to control odor, vapor, and dust emissions:

- Excavating and backfilling, and loading, handling, and unloading excavated material and clean fill material, in a manner that minimizes the generation of airborne dust;
- Hauling excavated material and clean fill material in properly covered vehicles;
- Restricting vehicle speeds;
- Wetting equipment and excavation faces;
- Covering shallow excavations and stockpiles of clean fill material with polyethylene liners (anchored appropriately to resist wind forces) before extended work breaks and at the end of each work day;
- Holding to a minimum the areas of bare soil exposed at one time and complying with any other applicable erosion and sediment control requirements; and
- Maintaining the work area and areas adjacent to or affected by the work in a clean manner.

Odor, vapor, and dust controls will be proactively employed during the work to: 1) prevent exceedances of the total VOC and PM_{10} action levels specified in Section 3.3 of this CAMP; and 2) mitigate MGP-related odor emissions to the extent practicable and to the satisfaction of National Grid, Arcadis, NYSDEC, and the New York State Department of Health (NYSDOH).

3 REAL-TIME AIR MONITORING FOR TOTAL VOCS AND PM_{10}

3.1 General

Real-time air monitoring for total VOCs and PM_{10} will be performed at one upwind and a minimum of one downwind location at the perimeter of the work area during future intrusive (e.g., excavation) work that will breach the Site cover and encounter or disturb the remaining MGP-related impacts. For the purpose of this CAMP, the "perimeter of the work area" is defined as the limits of the area where ground-intrusive or dust-generating work is being performed, or half the distance to the nearest potential receptor or occupied residential/commercial structure, whichever is less, but in no case less than 20 feet. The number of monitoring locations and the frequency of community air monitoring will be relative to the level of Site work activities being conducted, and may be adjusted as the work proceeds and in consideration of the monitoring results.

3.2 Perimeter Air Monitoring System

Real-time air monitoring for total VOCs and PM_{10} will be performed using a perimeter air monitoring system, as described below.

3.2.1 Air Monitoring Stations

Each air monitoring station will contain 1) a portable, data-logging photoionization detector (MiniRAE 3000 by RAE Systems, Inc. or equal) for monitoring the airborne concentration of total VOCs and 2) a portable, data-logging aerosol photometer (DustTrak II Aerosol Monitor Model 8530 by TSI, Inc. or equal) for monitoring the airborne concentration of PM_{10}. The monitoring equipment will be housed in portable, weather-tight enclosures, which will be mounted on surveying tripods at a height of approximately 4.5 to 5.5 feet (breathing zone height).

Air monitoring stations will be deployed at the start of each work day before any ground-intrusive or dust-generating activities are initiated. Upwind and downwind monitoring locations will be selected based on the prevailing wind direction and the nature and location of the activities anticipated to be performed that day. Wind direction will be monitored throughout the day, and stations will be re-located or re-assigned, as appropriate. Any such changes in monitoring locations will be documented in a field log book.

Monitoring equipment will be calibrated on a daily basis or other frequency recommended by the manufacturers. Hourly or more frequent field checks of the monitoring equipment will also be performed during the work day to verify proper function. Damaged or malfunctioning equipment will be promptly removed from service and replaced. The date, time, and outcome of each equipment calibration and field check will be documented in a field log book.

Total VOC and PM_{10} data will be downloaded from the air monitoring stations at the end of each work day. Data files will be stored on-site in a computer database, indexed by date, station number, and station location (upwind or downwind), and will be backed-up periodically to disc or a portable hard drive.

3.2.2 Weather Station

As appropriate, a portable weather station (Wireless Vantage Pro2 by Davis Instruments Corporation, Inc. or equal) will be used to monitor local meteorological conditions during the project. The weather station (if needed) will be installed in a prominent location at the Site to provide representative meteorological data, including wind speed, wind direction, dry-bulb temperature, and relative humidity. Security and accessibility will also be considered in selecting a location for the weather station.

3.3 Action Levels

The total VOC and PM_{10} action levels for the community air monitoring program are time-weighted average (TWA) concentrations, as calculated over a 15-minute period, and represent the difference between the ambient air TWA concentrations measured at the upwind and downwind monitoring stations. As described below, these action levels, if exceeded, trigger requirements for increased monitoring, corrective actions to abate emissions, and/or temporary work stoppages. Monitoring equipment will be programmed to immediately notify Site personnel (via audible/visible alarms and wireless telemetry) if the total VOC or PM_{10} action level is exceeded during the project.

3.3.1 Action Levels for Total VOCs

If the ambient air concentration of total VOCs at the downwind perimeter of the work area or exclusion zone exceeds five (5) parts per million (ppm) above the upwind concentration for the 15-minute average, work will be stopped while monitoring continues. Vapor controls will also be employed to reduce or abate the emissions, the source of the elevated total VOC concentration will be identified, and construction techniques will be evaluated and modified, if necessary and appropriate. Work will not resume until the ambient air concentration of total VOCs at the downwind perimeter of the work area or exclusion zone is less than five ppm above the upwind concentration for the 15-minute average.

If the ambient air concentration of total VOCs at the downwind perimeter of the work area or exclusion zone exceeds 25 ppm above the upwind concentration for the 15-minute average, work will stop and vapor controls will be employed. Work will not resume until authorized by National Grid and NYSDEC/NYSDOH.

3.3.2 Action Levels for PM_{10}

If the ambient air concentration of PM_{10} at the downwind perimeter of the work area or exclusion zone exceeds 100 micrograms per cubic meter ($\mu g/m^3$) above the upwind concentration for the 15-minute average, or if airborne dust is observed leaving the work area, dust controls will be employed. Work may continue while dust controls are employed provided that the downwind PM_{10} concentration does not exceed 150 $\mu g/m^3$ above the upwind concentration for the 15-minute average.

If, after employing dust controls, the downwind PM_{10} concentration is greater than 150 $\mu g/m^3$ above upwind concentration for the 15-minute average, work will be stopped while activities are re-evaluated. Work will resume provided that the dust controls are successful in: 1) reducing the downwind PM_{10} concentration to less than 150 $\mu g/m^3$ above the upwind concentration for the 15-minute average; and 2) preventing visible dust from leaving the work area.

3.4 Notification and Exceedance Report

National Grid or a designated representative will notify the NYSDEC project manager (by telephone or e-mail) within two hours if the total VOC or PM_{10} action level is exceeded during the project. Within 24 hours after the exceedance, an exceedance report will be submitted to the NYSDEC and NYSDOH project managers. Each exceedance report will include, at a minimum, the following:

- Date, day of the week, and time of exceedance;
- General location and brief description of work being performed at time of exceedance;
- Weather conditions at time of exceedance;
- For each air monitoring station, 15-minute TWA concentration of total VOCs and PM_{10} at time of exceedance;
- Source or cause of exceedance;
- Corrective actions taken or to be taken in response to exceedance; and
- Date and time verbal or written notification was provided to NYSDEC.

A copy of the exceedance report will also be included in the weekly air monitoring report, which is more fully described in Section 5 of this CAMP.

4 PERIODIC MONITORING FOR MGP-RELATED ODORS

4.1 General

During working hours, hourly or more frequent walks around the perimeter of the work area will be performed to monitor for the presence of MGP-related odors. Odor monitoring will be performed, as necessary, by a National Grid representative or contractor that will not be involved in the day-to-day construction activities within the work area where such personnel may become acclimated to MGP-related odors. Perimeter checks will be performed more frequently, as necessary, depending on 1) the nature and location of work being performed and 2) local meteorological conditions.

Meteorological conditions, including temperature, humidity, precipitation, atmospheric pressure, wind direction, and wind speed, can work synergistically with a positive or negative impact on the generation and dissemination of MGP-related odors. For example, MGP-related odors generally tend to be less prevalent with lower temperatures, precipitation, or high humidity. MGP-related odor dissemination is greatly influenced by wind direction and wind speed.

4.2 MGP-Related Odor Response

If MGP-related odors are noticed at the perimeter of the work area, work will continue and odor, vapor, and dust controls will be employed to abate emissions. Additionally, construction techniques will be evaluated and modified, if necessary and appropriate, and more frequent checks of the perimeter of the work area will be performed. If MGP-related odors persist at the perimeter of the work area, work will be stopped while activities are re-evaluated. The source or cause of the MGP-related odors will be identified and additional odor, vapor, and dust controls will be employed. Work will resume provided that the controls are successful in abating odors at the perimeter of the work area.

Any odor complaints received from the public will be directed to NYSDEC. The legitimacy of the complaint will be verified based on the work activities being performed, the prevailing wind direction, and other meteorological factors. In response to a verified odor complaint, perimeter monitoring will continue and additional odor, vapor, and dust controls will be employed to abate odor emissions. Techniques being used in the work area (e.g., excavation and material handling) will also be evaluated and modified, if necessary and appropriate.

4.3 Daily Odor Monitoring Log

The time and outcome of each perimeter check will be documented in a daily odor monitoring log, specifically noting the presence or absence of MGP-related odors and identifying the general location(s) along the perimeter of the work area where MGP-related odors (if any) are noticed. The time and outcome of any odor complaints from the public will also be documented in the daily odor monitoring log.

Copies of the daily odor monitoring logs will be included in the weekly air monitoring report, which is more fully described in Section 5 of this CAMP.

5 REPORTING

Community air monitoring reports will be prepared to summarize the total VOC, PM_{10}, and MGP-related odor monitoring results. These reports will be prepared at the conclusion of the project or on a weekly basis if the project duration is greater than one week. Each report will include, at a minimum, the following information for each day that air monitoring is performed:

- Date and day of the week;
- General location and brief description of work performed at the Site;
- Daily average concentration of total VOCs and PM_{10} for each air monitoring station;
- Daily maximum 15-minute TWA concentration of total VOCs and PM_{10} for each air monitoring station;
- Exceedances (if any) of total VOC and PM_{10} action levels, including copy of exceedance report(s);
- Site plan showing approximate locations of upwind and downwind air monitoring stations at the Site and prevailing wind direction for the day; and
- Copy of daily odor monitoring log.

Air monitoring reports will be submitted on a weekly basis to National Grid, Arcadis, NYSDEC, and NYSDOH throughout the project.

6 REFERENCES

New York State Department of Environmental Conservation. 2010. DER-10, Technical Guidance for Site Investigation and Remediation. Division of Environmental Remediation. May 2010.

New York State Department of Environmental Conservation. 2014. Decision Document, NM-Anthony St.-Watertown MGP, Voluntary Cleanup Program, Watertown, Jefferson County, Site No. V00473. September 2014.

APPENDICES

APPENDIX A

NYSDOH Generic Community Air Monitoring Plan

(Appendix 1A of DER-10)

Appendix 1A
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. “Periodic” monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

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APPENDIX B

Fugitive Dust Suppression and Particulate Monitoring

(Appendix 1B of DER-10)

Appendix 1B
Fugitive Dust and Particulate Monitoring

A program for suppressing fugitive dust and particulate matter monitoring at hazardous waste sites is a responsibility on the remedial party performing the work. These procedures must be incorporated into appropriate intrusive work plans. The following fugitive dust suppression and particulate monitoring program should be employed at sites during construction and other intrusive activities which warrant its use:

1. Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.

2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities may also include the excavation, grading, or placement of clean fill. These control measures should not be considered necessary for these activities.

3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM10) with the following minimum performance standards:

(a) Objects to be measured: Dust, mists or aerosols;
(b) Measurement Ranges: 0.001 to 400 mg/m3 (1 to 400,000 :ug/m3);
(c) Precision (2-sigma) at constant temperature: +/- 10 :g/m3 for one second averaging; and +/- 1.5 g/m3 for sixty second averaging;
(d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);
(e) Resolution: 0.1% of reading or 1g/m3, whichever is larger;
(f) Particle Size Range of Maximum Response: 0.1-10;
(g) Total Number of Data Points in Memory: 10,000;
(h) Logged Data: Each data point with average concentration, time/date and data point number
(i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;
(j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;
(k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;
(l) Operating Temperature: -10 to 50^{o} C (14 to 122^{o} F);
(m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.

4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the remedial party to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.

5. The action level will be established at 150 ug/m3 (15 minutes average). While conservative,

this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m3, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m3 above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see paragraph 7). Should the action level of 150 ug/m3 continue to be exceeded work must stop and DER must be notified as provided in the site design or remedial work plan. The notification shall include a description of the control measures implemented to prevent further exceedances.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM10 at or above the action level. Since this situation has the potential to allow for the migration of contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential--such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

(a) Applying water on haul roads;
(b) Wetting equipment and excavation faces;
(c) Spraying water on buckets during excavation and dumping;
(d) Hauling materials in properly tarped or watertight containers;
(e) Restricting vehicle speeds to 10 mph;
(f) Covering excavated areas and material after excavation activity ceases; and
(g) Reducing the excavation size and/or number of excavations.

Experience has shown that the chance of exceeding the 150ug/m3 action level is remote when the above-mentioned techniques are used. When techniques involving water application are used, care must be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. The evaluation of weather conditions is necessary for proper fugitive dust control. When extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended. There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require additional monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.

APPENDIX E – GENERIC FIELD SAMPLING PLAN (GFSP)

(NOT INCLUDED WITH THIS MARCH 2017 DRAFT)

APPENDIX F – GENERIC QUALITY ASSURANCE PROJECT PLAN (GQAPP)

(NOT INCLUDED WITH THIS MARCH 2017 DRAFT)

APPENDIX G – MONITORING WELL CONSTRUCTION LOGS AND CONSTRUCTION SUMMARY TABLE

(NOT INCLUDED WITH THIS MARCH 2017 DRAFT)

APPENDIX H – SUBSURFACE SOIL AND GROUNDWATER ANALYTICAL DATA

(NOT INCLUDED WITH THIS MARCH 2017 DRAFT)

APPENDIX I – SITE-WIDE INSPECTION FORM

NATIONAL GRID
WATERTOWN (ANTHONY STREET) FORMER MANUFACTURED GAS PLANT SITE
WATERTOWN, JEFFERSON COUNTY, NEW YORK
SITE NO. V00473

SITE-WIDE INSPECTION FORM

Date and Time of Inspection: _____

Inspector (Name, Title, and Affiliation): _____

Weather Conditions: _____

Describe repairs, maintenance, or corrective actions implemented since previous inspection: _____

_____

_____

_____

_____

ATTACH PHOTOGRAPHS OF AREAS OR ITEMS INSTALLED, REPAIRED, OR REPLACED

General Site Conditions:

	Acceptable	Unacceptable
Pavement and Sidewalks	_____	_____
Building and/or Foundation Cover	_____	_____
Vegetative Cover (if applicable)	_____	_____

Monitoring Wells:

	Acceptable	Unacceptable
Outer Casing/Cover	_____	_____
Cement/Concrete Surface Seal	_____	_____
Well Lock	_____	_____
Well Plug	_____	_____

Site Cover System:

Any signs/evidence of ground-intrusive activities (e.g., excavating, trenching, etc.), soil disturbance regardless of quantity/extent, erosion, settlement, or if applicable, bare or sparsely-vegetated areas?

☐ No ☐ Yes; describe: _____

ATTACH PHOTOGRAPHS OF AREAS OF DISTURBANCE

Any signs/evidence of use of the Site in a manner inconsistent with the deed restriction?

☐ No ☐ Yes; describe: _____

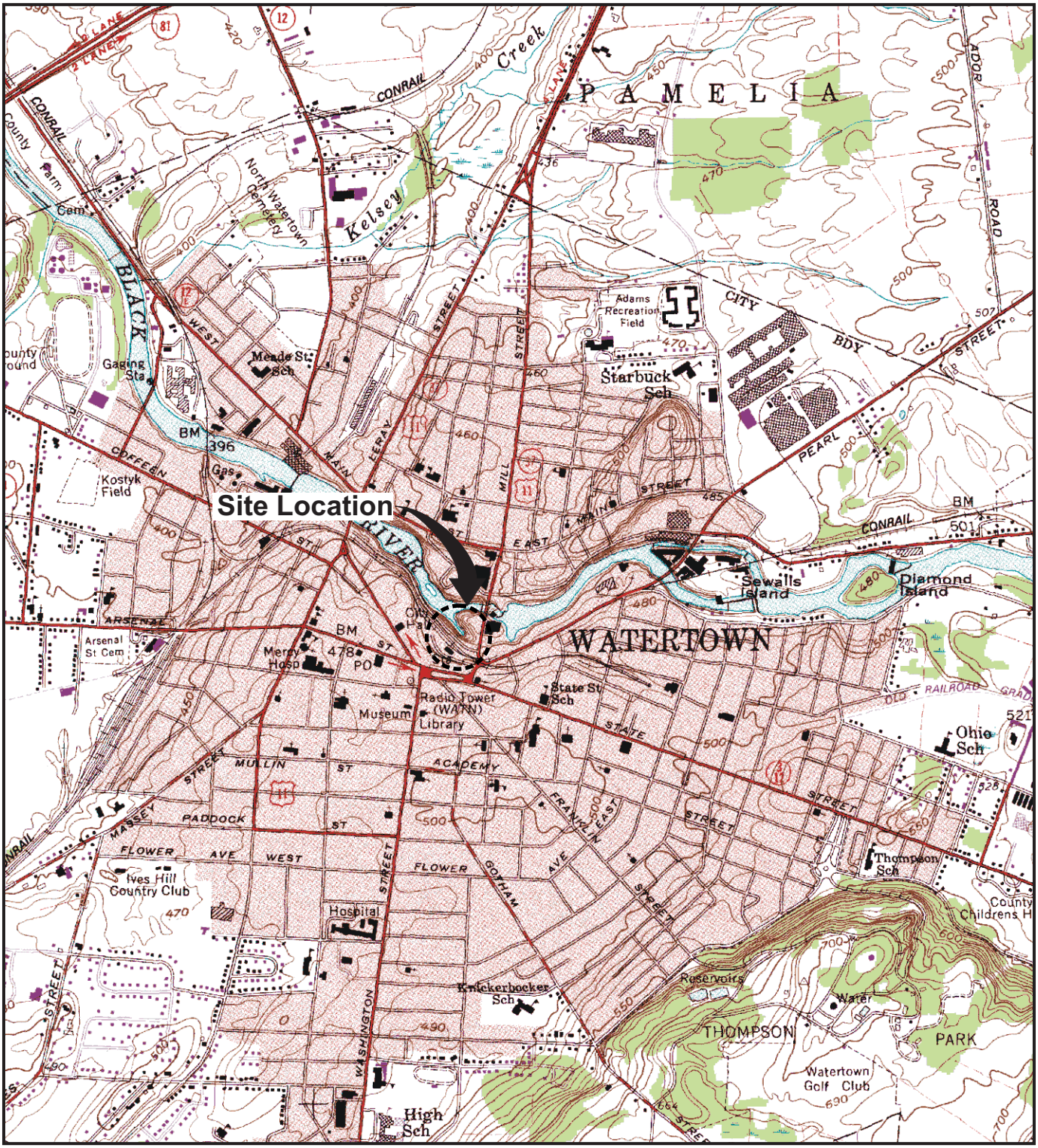
ATTACH PHOTOGRAPHS OF AREAS OF NON-COMPLIANCE

Describe any repairs, maintenance, or corrective actions required to correct observed deficiencies: _____

ATTACH PHOTOGRAPHS OF DEFICIENT AREAS OR ITEMS OBSERVED DURING THE INSPECTION

Inspector's Signature:

Signature: _____ Date: _____



REFERENCE: BASE MAP USGS 7.5 MIN. QUAD., WATERTOWN, N.Y. 1959, PHOTOREVISED 1982.

2000' 0 2000'

Approximate Scale: 1" = 2000'

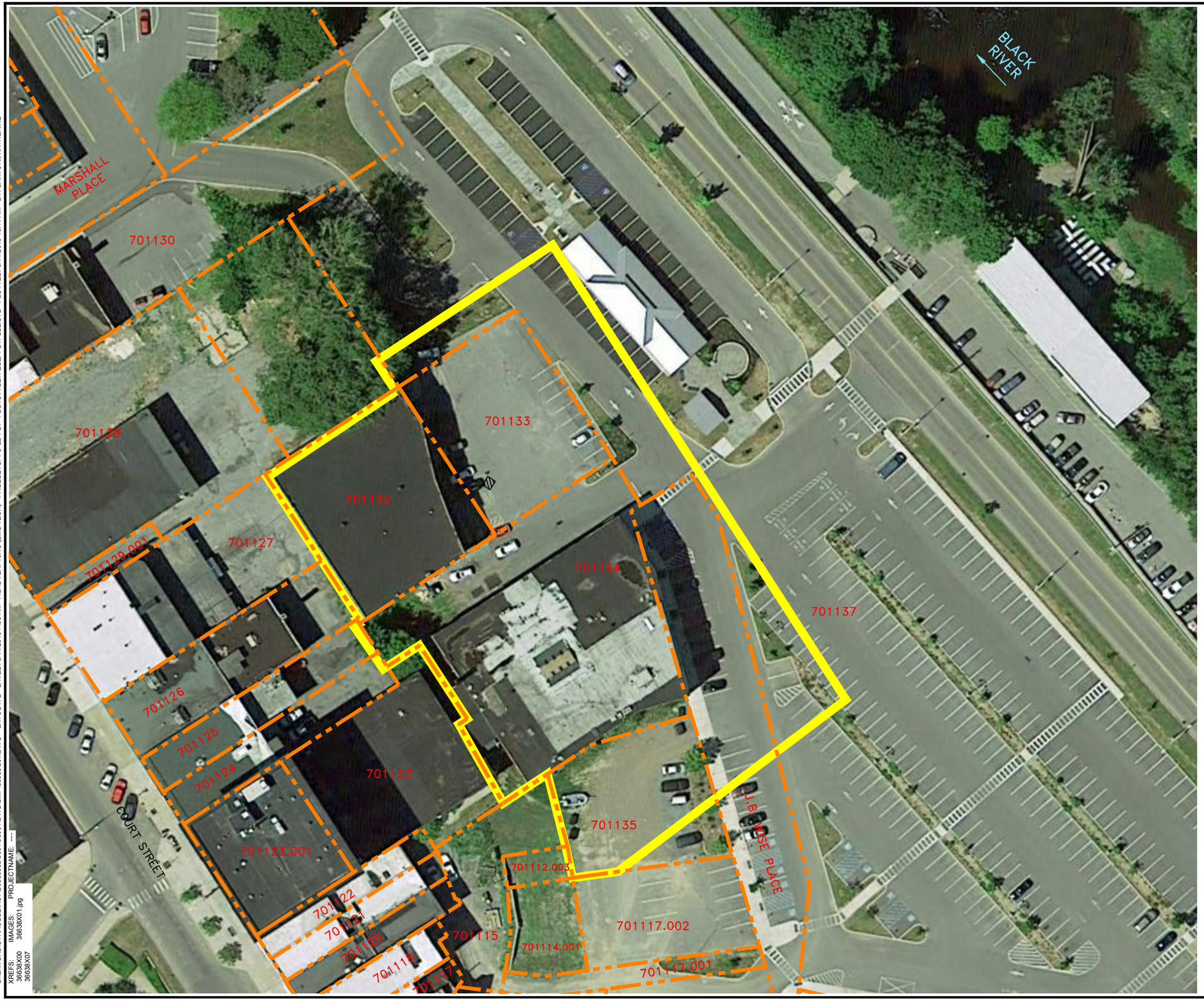
NATIONAL GRID
WATERTOWN (ANTHONY STREET) FORMER MGP SITE
SITE MANAGEMENT PLAN

SITE LOCATION MAP

ARCADIS Design & Consultancy for natural and built assets

FIGURE
1

03/11/2016 SYRACUSE, NY-ENV/CAD-141, DJHOWES
B0036638/0001/00004/CDR/36638N02.CDR



LEGEND:

- APPROXIMATE TAX PARCEL BOUNDARY
- 701134 TAX PARCEL ID
- SITE BOUNDARY

NOTES:

1. AERIAL IMAGE OBTAINED FROM GOOGLE EARTH PRO ON NOVEMBER 11, 2013. AERIAL IMAGE DATE IS MAY 26, 2013.
2. TAX PARCEL INFORMATION DOWNLOADED FROM THE CITY OF WATERTOWN TAX MAP DATABASE "SDG IMAGE MATE" ON NOVEMBER 7, 2013.

0 60' 120'

GRAPHIC SCALE

DRAFT

NATIONAL GRID
WATERTOWN (ANTHONY STREET) FORMER MGP SITE
SITE MANAGEMENT PLAN

AERIAL SITE IMAGE

ARCADIS Design & Consultancy for natural and built assets

FIGURE 2

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: R. ALLEN G. STOWELL L. FORAKER LD: PIC: T. YOUNG PM: S. POWLIN TM: S. POWLIN LYR: ON=*; OFF=*REF*
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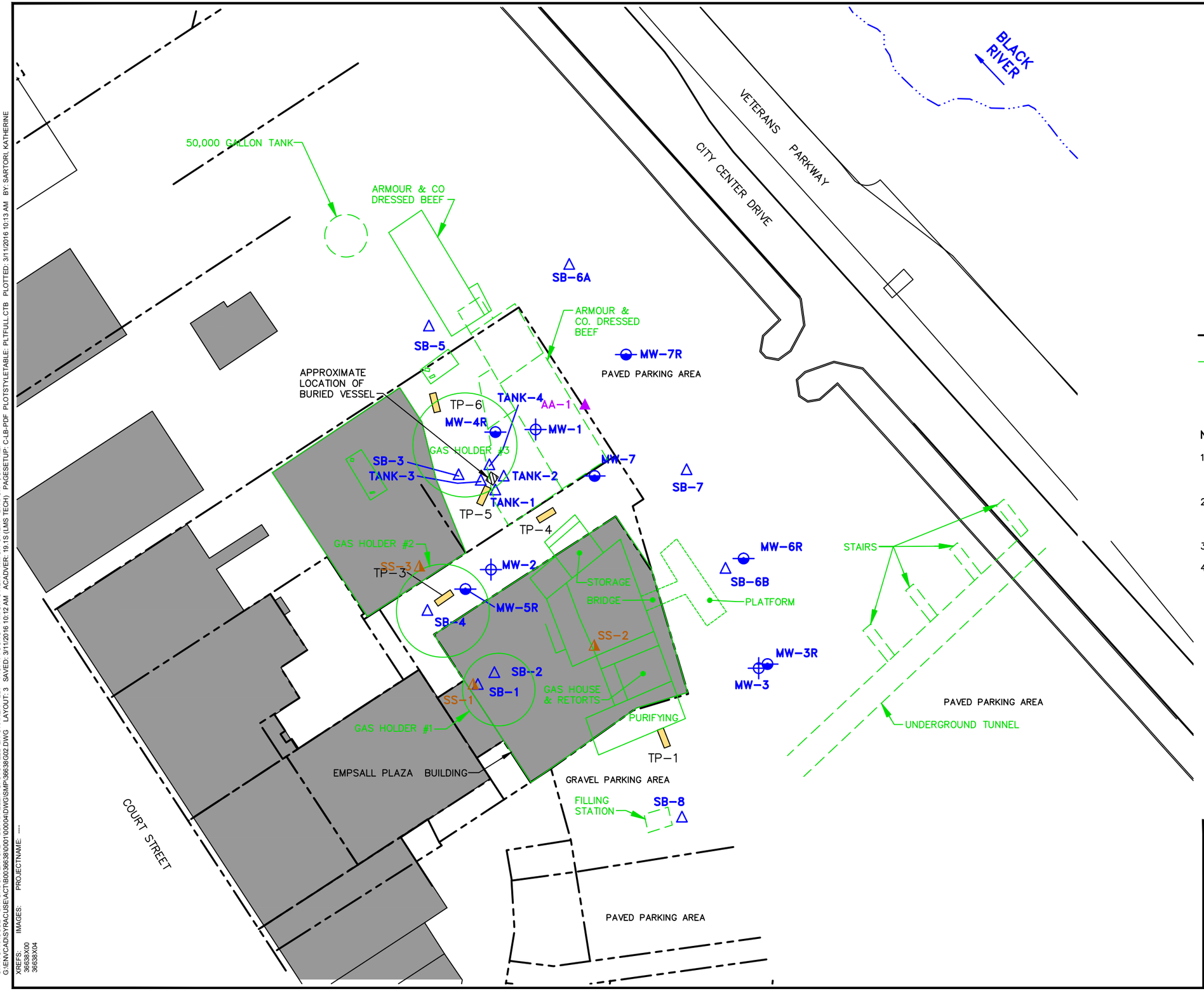

LEGEND:

- SOIL BORING
- OVERBURDEN MONITORING WELL
- BEDROCK MONITORING WELL
- TEST PIT LOCATION
- AMBIENT AIR SAMPLING LOCATION
- SUB-SLAB VAPOR SAMPLING LOCATION
- APPROXIMATE PROPERTY LINE
- STRUCTURES FROM 1902 AND 1949 SANBORN MAPS ALL LOCATIONS ARE APPROXIMATE

NOTES:

1. ALL HISTORICAL FEATURES ARE FROM SANBORN MAPS PROVIDED BY THE SANBORN LIBRARY, LLC PRODUCED BY ENVIRONMENTAL DATA RESOURCES, INC. (EDR).
2. BASE MAP IS FROM A SURVEY DONE BY WCT SURVEYORS, P.C., CANTON, NEW YORK ON APRIL 5, 2004, FILE # 103-218. UPDATED WITH SURVEY DONE BY C.T.MALE ON 11/12/08.
3. LOCATIONS OF ALL HISTORICAL FEATURES ARE APPROXIMATE.
4. WELL MW-7* WAS DESTROYED DURING THE 2011 CITY RECONSTRUCTION PROJECT.

0 60' 120'

GRAPHIC SCALE

DRAFT

NATIONAL GRID
WATERTOWN (ANTHONY STREET) FORMER MGP SITE
SITE MANAGEMENT PLAN

UPLAND INVESTIGATION LOCATIONS

ARCADIS Design & Consultancy for natural and built assets

FIGURE 3

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: R. ALLEN G. STOWELL L. FORAKER LD: PIC: T. YOUNG PM: S. POWLIN TM: S. POWLIN LYR: ON=*; OFF=*REF*
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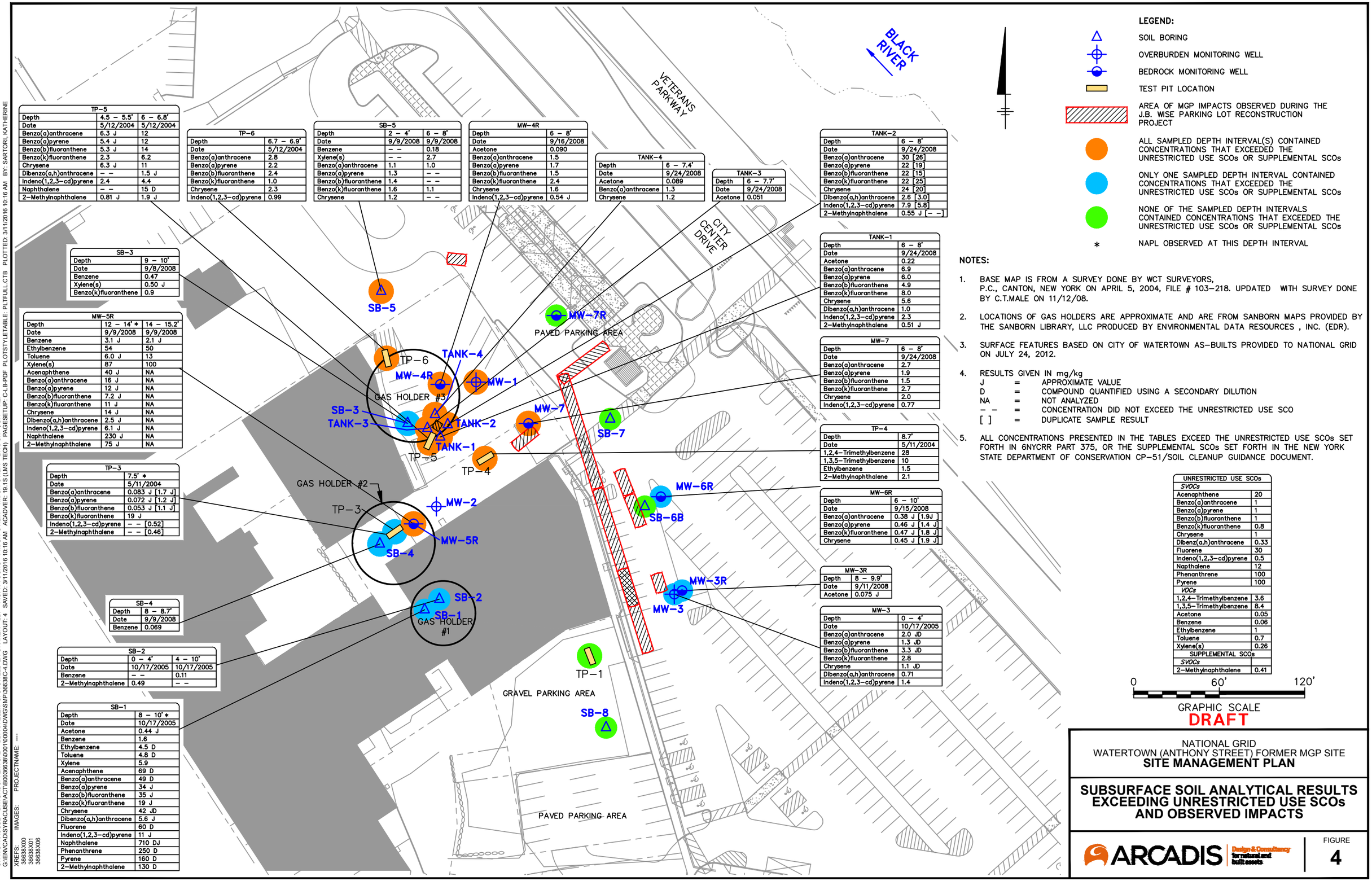

TP-5		
Depth	4.5 – 5.5'	6 – 6.8'
Date	5/12/2004	5/12/2004
Benzo(a)anthracene	6.3 J	12
Benzo(a)pyrene	5.4 J	12
Benzo(b)fluoranthene	5.3 J	14
Benzo(k)fluoranthene	2.3	6.2
Chrysene	6.3 J	11
Dibenzo(a,h)anthracene	– –	1.5 J
Indeno(1,2,3–cd)pyrene	2.4	4.4
Naphthalene	– –	15 D
2–Methylnaphthalene	0.81 J	1.9 J

TP-6	
Depth	6.7 – 6.9'
Date	5/12/2004
Benzo(a)anthracene	2.8
Benzo(a)pyrene	2.2
Benzo(b)fluoranthene	2.4
Benzo(k)fluoranthene	1.0
Chrysene	2.3
Indeno(1,2,3–cd)pyrene	0.99

SB-5		
Depth	2 – 4'	6 – 8'
Date	9/9/2008	9/9/2008
Benzene	– –	0.18
Xylene(s)	– –	2.7
Benzo(a)anthracene	1.1	1.0
Benzo(a)pyrene	1.3	– –
Benzo(b)fluoranthene	1.4	– –
Benzo(k)fluoranthene	1.6	1.1
Chrysene	1.2	– –

MW-4R	
Depth	6 – 8'
Date	9/16/2008
Acetone	0.090
Benzo(a)anthracene	1.5
Benzo(a)pyrene	1.7
Benzo(b)fluoranthene	1.5
Benzo(k)fluoranthene	2.4
Chrysene	1.6
Indeno(1,2,3–cd)pyrene	0.54 J

TANK-4	
Depth	6 – 7.4'
Date	9/24/2008
Acetone	0.089
Benzo(a)anthracene	1.3
Chrysene	1.2

TANK-3	
Depth	6 – 7.7'
Date	9/24/2008
Acetone	0.051

TANK-2	
Depth	6 – 8'
Date	9/24/2008
Benzo(a)anthracene	30 [26]
Benzo(a)pyrene	22 [19]
Benzo(b)fluoranthene	22 [15]
Benzo(k)fluoranthene	22 [25]
Chrysene	24 [20]
Dibenzo(a,h)anthracene	2.6 [3.0]
Indeno(1,2,3–cd)pyrene	7.9 [5.8]
2–Methylnaphthalene	0.55 J [– –]

SB-3	
Depth	9 – 10'
Date	9/8/2008
Benzene	0.47
Xylene(s)	0.50 J
Benzo(k)fluoranthene	0.9

TANK-1	
Depth	6 – 8'
Date	9/24/2008
Acetone	0.22
Benzo(a)anthracene	6.9
Benzo(a)pyrene	6.0
Benzo(b)fluoranthene	4.9
Benzo(k)fluoranthene	8.0
Chrysene	5.6
Dibenzo(a,h)anthracene	1.0
Indeno(1,2,3–cd)pyrene	2.3
2–Methylnaphthalene	0.51 J

MW-5R		
Depth	12 – 14' *	14 – 15.2'
Date	9/9/2008	9/9/2008
Benzene	3.1 J	2.1 J
Ethylbenzene	54	50
Toluene	6.0 J	13
Xylene(s)	87	100
Acenaphthene	40 J	NA
Benzo(a)anthracene	16 J	NA
Benzo(a)pyrene	12 J	NA
Benzo(b)fluoranthene	7.2 J	NA
Benzo(k)fluoranthene	11 J	NA
Chrysene	14 J	NA
Dibenzo(a,h)anthracene	2.5 J	NA
Indeno(1,2,3–cd)pyrene	6.1 J	NA
Naphthalene	230 J	NA
2–Methylnaphthalene	75 J	NA

MW-7	
Depth	6 – 8'
Date	9/24/2008
Benzo(a)anthracene	2.7
Benzo(a)pyrene	1.9
Benzo(b)fluoranthene	1.5
Benzo(k)fluoranthene	2.7
Chrysene	2.0
Indeno(1,2,3–cd)pyrene	0.77

TP-4	
Depth	8.7'
Date	5/11/2004
1,2,4–Trimethylbenzene	28
1,3,5–Trimethylbenzene	10
Ethylbenzene	1.5
2–Methylnaphthalene	2.1

TP-3	
Depth	7.5' *
Date	5/11/2004
Benzo(a)anthracene	0.083 J [1.7 J]
Benzo(a)pyrene	0.072 J [1.2 J]
Benzo(b)fluoranthene	0.053 J [1.1 J]
Benzo(k)fluoranthene	19 J
Indeno(1,2,3–cd)pyrene	– – [0.52]
2–Methylnaphthalene	– – [0.46]

MW-6R	
Depth	6 – 10'
Date	9/15/2008
Benzo(a)anthracene	0.38 J [1.9J]
Benzo(a)pyrene	0.46 J [1.4 J]
Benzo(k)fluoranthene	0.47 J [1.8 J]
Chrysene	0.45 J [1.9 J]

MW-3R	
Depth	8 – 9.9'
Date	9/11/2008
Acetone	0.075 J

MW-3	
Depth	0 – 4'
Date	10/17/2005
Benzo(a)anthracene	2.0 JD
Benzo(a)pyrene	1.3 JD
Benzo(b)fluoranthene	3.3 JD
Benzo(k)fluoranthene	2.8
Chrysene	1.1 JD
Dibenzo(a,h)anthracene	0.71
Indeno(1,2,3–cd)pyrene	1.4

SB-4	
Depth	8 – 8.7'
Date	9/9/2008
Benzene	0.069

SB-2		
Depth	0 – 4'	4 – 10'
Date	10/17/2005	10/17/2005
Benzene	– –	0.11
2–Methylnaphthalene	0.49	– –

SB-1	
Depth	8 – 10' *
Date	10/17/2005
Acetone	0.44 J
Benzene	1.6
Ethylbenzene	4.5 D
Toluene	4.8 D
Xylene	5.9
Acenaphthene	69 D
Benzo(a)anthracene	49 D
Benzo(a)pyrene	34 J
Benzo(b)fluoranthene	35 J
Benzo(k)fluoranthene	19 J
Chrysene	42 JD
Dibenzo(a,h)anthracene	5.6 J
Fluorene	60 D
Indeno(1,2,3–cd)pyrene	11 J
Naphthalene	710 DJ
Phenanthrene	250 D
Pyrene	160 D
2–Methylnaphthalene	130 D

LEGEND:

- SOIL BORING
- OVERBURDEN MONITORING WELL
- BEDROCK MONITORING WELL
- TEST PIT LOCATION
- AREA OF MGP IMPACTS OBSERVED DURING THE J.B. WISE PARKING LOT RECONSTRUCTION PROJECT
- ALL SAMPLED DEPTH INTERVAL(S) CONTAINED CONCENTRATIONS THAT EXCEEDED THE UNRESTRICTED USE SCOs OR SUPPLEMENTAL SCOs
- ONLY ONE SAMPLED DEPTH INTERVAL CONTAINED CONCENTRATIONS THAT EXCEEDED THE UNRESTRICTED USE SCOs OR SUPPLEMENTAL SCOs
- NONE OF THE SAMPLED DEPTH INTERVALS CONTAINED CONCENTRATIONS THAT EXCEEDED THE UNRESTRICTED USE SCOs OR SUPPLEMENTAL SCOs
- * NAPL OBSERVED AT THIS DEPTH INTERVAL

NOTES:

1. BASE MAP IS FROM A SURVEY DONE BY WCT SURVEYORS, P.C., CANTON, NEW YORK ON APRIL 5, 2004, FILE # 103–218. UPDATED WITH SURVEY DONE BY C.T.MALE ON 11/12/08.
2. LOCATIONS OF GAS HOLDERS ARE APPROXIMATE AND ARE FROM SANBORN MAPS PROVIDED BY THE SANBORN LIBRARY, LLC PRODUCED BY ENVIRONMENTAL DATA RESOURCES , INC. (EDR).
3. SURFACE FEATURES BASED ON CITY OF WATERTOWN AS–BUILTS PROVIDED TO NATIONAL GRID ON JULY 24, 2012.
4. RESULTS GIVEN IN mg/kg
   J = APPROXIMATE VALUE
   D = COMPOUND QUANTIFIED USING A SECONDARY DILUTION
   NA = NOT ANALYZED
   – – = CONCENTRATION DID NOT EXCEED THE UNRESTRICTED USE SCO
   [ ] = DUPLICATE SAMPLE RESULT
5. ALL CONCENTRATIONS PRESENTED IN THE TABLES EXCEED THE UNRESTRICTED USE SCOs SET FORTH IN 6NYCRR PART 375, OR THE SUPPLEMENTAL SCOs SET FORTH IN THE NEW YORK STATE DEPARTMENT OF CONSERVATION CP–51/SOIL CLEANUP GUIDANCE DOCUMENT.

UNRESTRICTED USE SCOs	
SVOCs	
Acenaphthene	20
Benzo(a)anthracene	1
Benzo(a)pyrene	1
Benzo(b)fluoranthene	1
Benzo(k)fluoranthene	0.8
Chrysene	1
Dibenz(a,h)anthracene	0.33
Fluorene	30
Indeno(1,2,3–cd)pyrene	0.5
Napthalene	12
Phenanthrene	100
Pyrene	100
VOCs	
1,2,4–Trimethylbenzene	3.6
1,3,5–Trimethylbenzene	8.4
Acetone	0.05
Benzene	0.06
Ethylbenzene	1
Toluene	0.7
Xylene(s)	0.26
SUPPLEMENTAL SCOs	
SVOCs	
2–Methylnaphthalene	0.41

0 60' 120'

GRAPHIC SCALE

DRAFT

NATIONAL GRID
WATERTOWN (ANTHONY STREET) FORMER MGP SITE
SITE MANAGEMENT PLAN

SUBSURFACE SOIL ANALYTICAL RESULTS EXCEEDING UNRESTRICTED USE SCOs AND OBSERVED IMPACTS

ARCADIS Design & Consultancy for natural and built assets

FIGURE 4

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: R. ALLEN G. STOWELL L. FORAKER LD: PIC: T. YOUNG PM: S. POWLIN TM: S. POWLIN LYR: ON=*; OFF=*REF*
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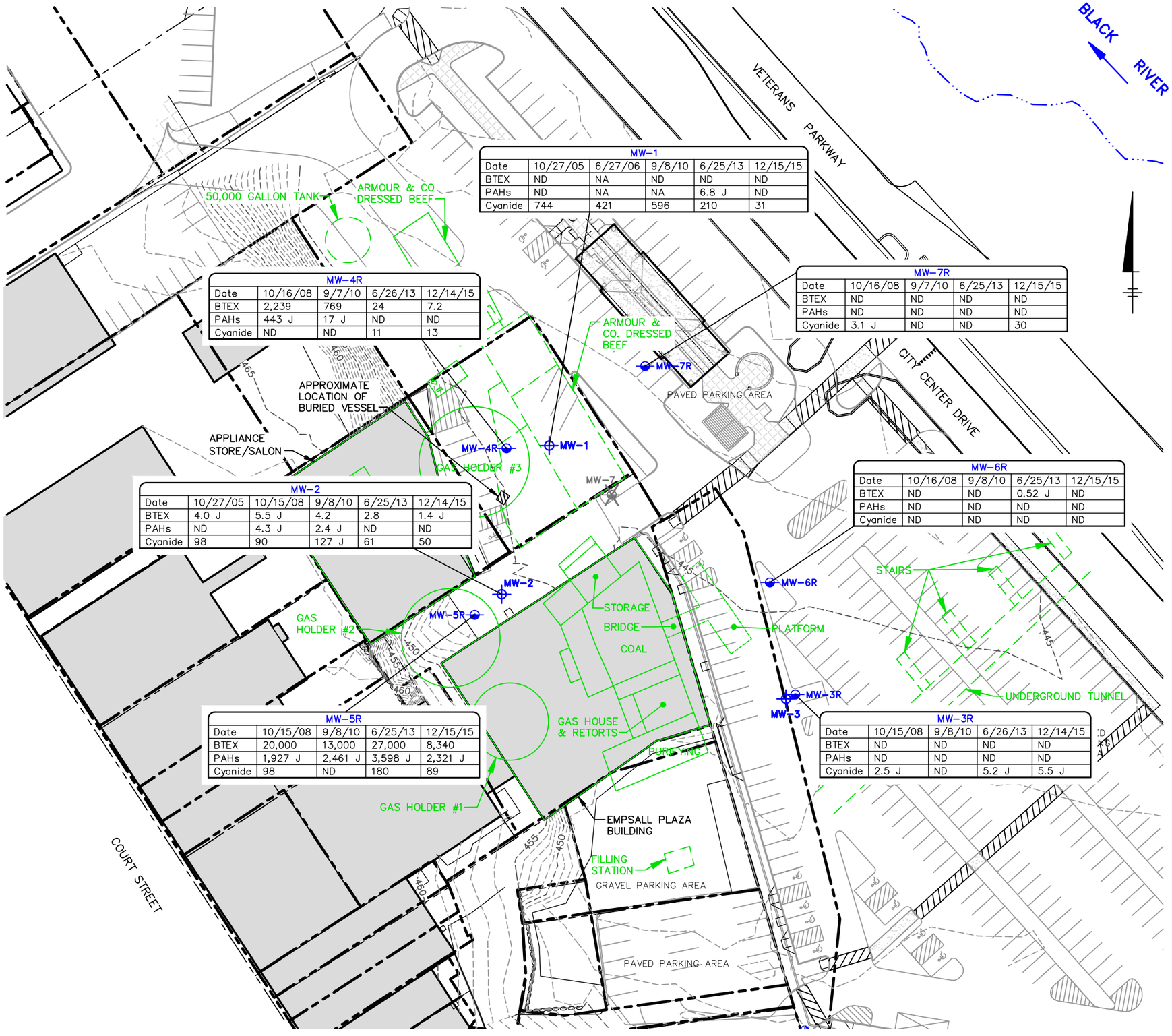


MW-1					
Date	10/27/05	6/27/06	9/8/10	6/25/13	12/15/15
BTEX	ND	NA	ND	ND	ND
PAHs	ND	NA	NA	6.8 J	ND
Cyanide	744	421	596	210	31

MW-2					
Date	10/27/05	10/15/08	9/8/10	6/25/13	12/14/15
BTEX	4.0 J	5.5 J	4.2	2.8	1.4 J
PAHs	ND	4.3 J	2.4 J	ND	ND
Cyanide	98	90	127 J	61	50

MW-3R				
Date	10/15/08	9/8/10	6/26/13	12/14/15
BTEX	ND	ND	ND	ND
PAHs	ND	ND	ND	ND
Cyanide	2.5 J	ND	5.2 J	5.5 J

MW-4R				
Date	10/16/08	9/7/10	6/26/13	12/14/15
BTEX	2,239	769	24	7.2
PAHs	443 J	17 J	ND	ND
Cyanide	ND	ND	11	13

MW-5R				
Date	10/15/08	9/8/10	6/25/13	12/15/15
BTEX	20,000	13,000	27,000	8,340
PAHs	1,927 J	2,461 J	3,598 J	2,321 J
Cyanide	98	ND	180	89

MW-6R				
Date	10/16/08	9/8/10	6/25/13	12/15/15
BTEX	ND	ND	0.52 J	ND
PAHs	ND	ND	ND	ND
Cyanide	ND	ND	ND	ND

MW-7R				
Date	10/16/08	9/7/10	6/25/13	12/15/15
BTEX	ND	ND	ND	ND
PAHs	ND	ND	ND	ND
Cyanide	3.1 J	ND	ND	30

LEGEND:

- OVERBURDEN MONITORING WELL
- BEDROCK MONITORING WELL
- DESTROYED MONITORING WELL
- CATCH BASIN
- MANHOLE (MAY BE SANITARY OR STORM)
- MANHOLE (STORM)
- MANHOLE (SANITARY)
- WATER VALVE
- LIGHT POLE
- FOUND IRON PIPE
- FIRE HYDRANT
- PROPERTY LINE
- STRUCTURES FROM 1902 AND 1949 SANBORN MAPS ALL LOCATIONS ARE APPROXIMATE
- E — ELECTRIC LINE
- G — GAS LINE
- W — WATER LINE
- ST — STORM SEWER LINE
- SA — SANITARY SEWER LINE

NOTES:

1. ALL HISTORICAL FEATURES ARE FROM SANBORN MAPS PROVIDED BY THE SANBORN LIBRARY, LLC PRODUCED BY ENVIRONMENTAL DATA RESOURCES, INC. (EDR).
2. BASE MAP IS FROM A SURVEY DONE BY WCT SURVEYORS, P.C., CANTON, NEW YORK ON APRIL 5, 2004, FILE # 103–218. UPDATED WITH SURVEY DONE BY C.T.MALE ON 11/12/08.
3. LOCATIONS OF ALL HISTORICAL FEATURES ARE APPROXIMATE.

KEY:

BTEX = TOTAL BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENES

PAHs = TOTAL POLYCYCLIC AROMATIC HYDROCARBONS

CYANIDE = TOTAL CYANIDE

J = ESTIMATED CONCENTRATIONS

ND = NOT DETECTED ABOVE INSTRUMENT DETECTION LIMIT

NA = NOT AVAILABLE

UNITS GIVEN IN MICROGRAMS PER LITER (µg/L), EQUIVALENT TO PARTS PER BILLION (PPB)

0 60' 120'

GRAPHIC SCALE

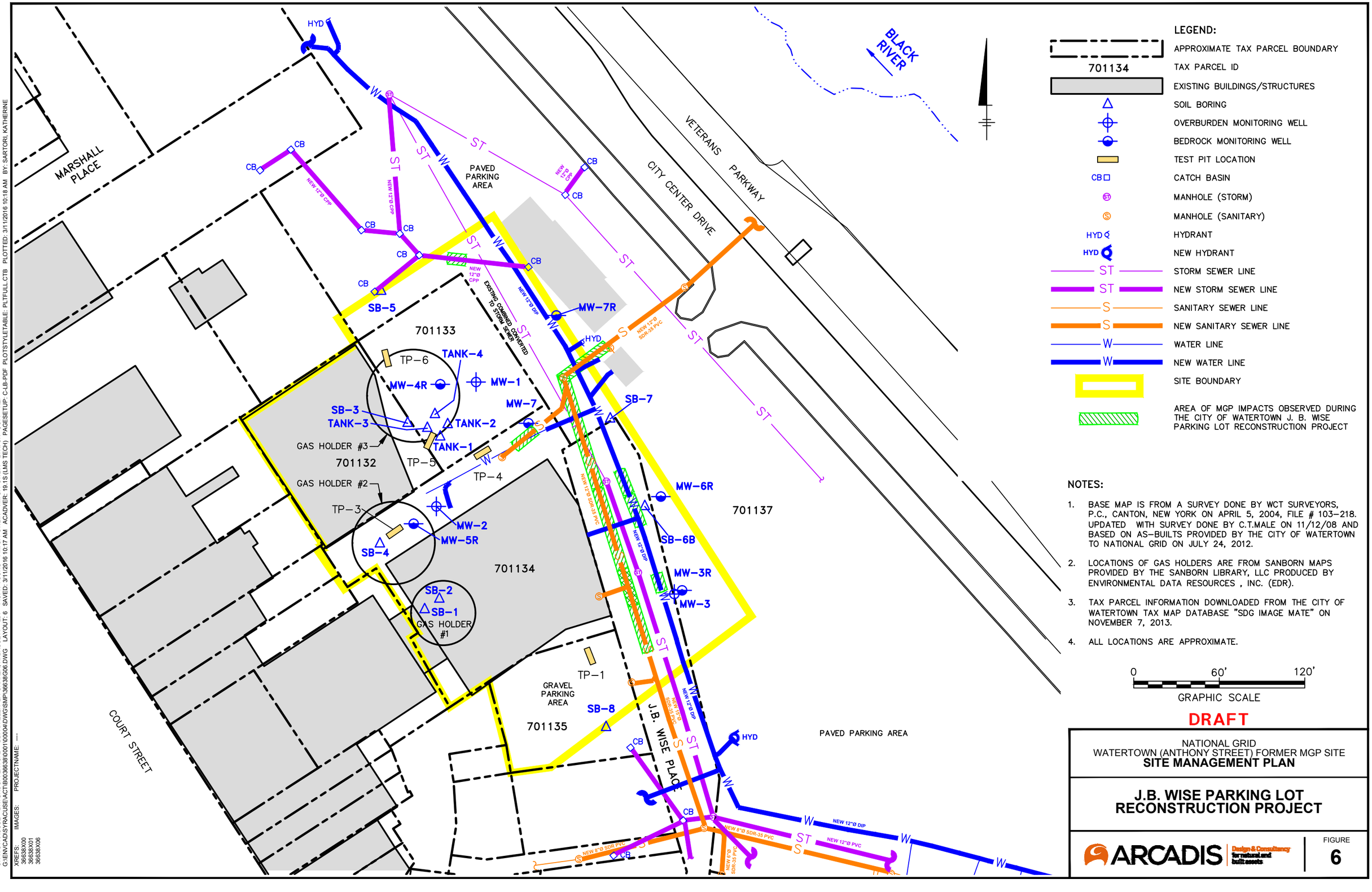
DRAFT

NATIONAL GRID
WATERTOWN (ANTHONY STREET) FORMER MGP SITE
SITE MANAGEMENT PLAN

TOTAL BTEX, PAHs, AND CYANIDE IN GROUNDWATER

ARCADIS Design & Consultancy for natural and built assets

FIGURE
5



NOTES:

1. BASE MAP IS FROM A SURVEY DONE BY WCT SURVEYORS, P.C., CANTON, NEW YORK ON APRIL 5, 2004, FILE # 103–218. UPDATED WITH SURVEY DONE BY C.T.MALE ON 11/12/08 AND BASED ON AS–BUILTS PROVIDED BY THE CITY OF WATERTOWN TO NATIONAL GRID ON JULY 24, 2012.
2. LOCATIONS OF GAS HOLDERS ARE FROM SANBORN MAPS PROVIDED BY THE SANBORN LIBRARY, LLC PRODUCED BY ENVIRONMENTAL DATA RESOURCES , INC. (EDR).
3. TAX PARCEL INFORMATION DOWNLOADED FROM THE CITY OF WATERTOWN TAX MAP DATABASE "SDG IMAGE MATE" ON NOVEMBER 7, 2013.
4. ALL LOCATIONS ARE APPROXIMATE.

0 60' 120'

GRAPHIC SCALE

DRAFT

NATIONAL GRID
WATERTOWN (ANTHONY STREET) FORMER MGP SITE
SITE MANAGEMENT PLAN

J.B. WISE PARKING LOT RECONSTRUCTION PROJECT

ARCADIS Design & Consultancy for natural and built assets

FIGURE 6

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: R. ALLEN L. FORAKER, R. BASSETT LD: PIC: T. YOUNG PM: S. POWLIN TM: S. POWLIN LYR: ON="*";OFF=*REF*
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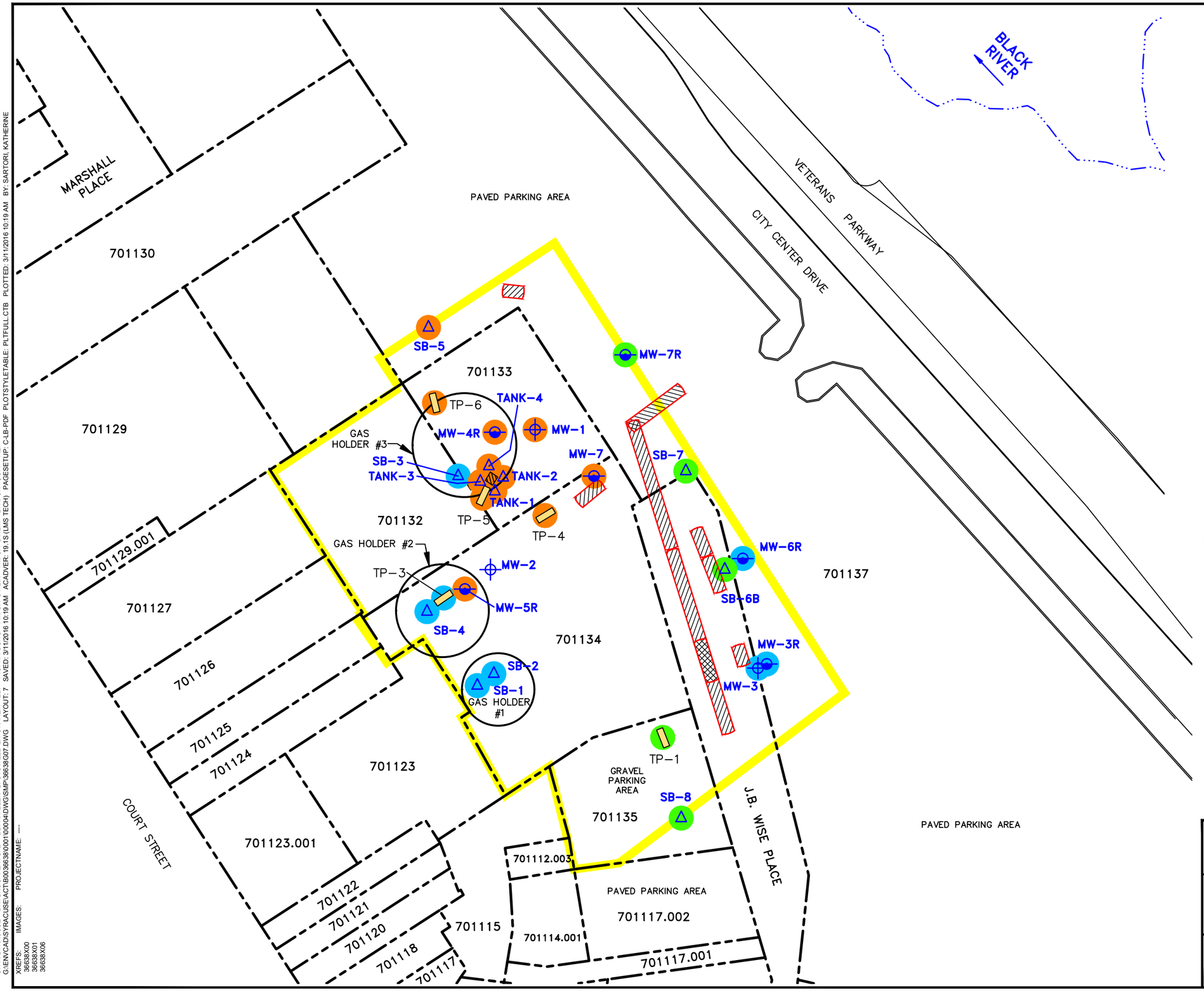

LEGEND:

- APPROXIMATE TAX PARCEL BOUNDARY
- 701134 — TAX PARCEL ID
- SOIL BORING
- OVERBURDEN MONITORING WELL
- BEDROCK MONITORING WELL
- TEST PIT LOCATION
- AREA OF MGP IMPACTS OBSERVED DURING THE CITY OF WATERTOWN J. B. WISE PARKING LOT RECONSTRUCTION PROJECT
- ALL SAMPLED DEPTH INTERVAL(S) CONTAINED CONCENTRATIONS THAT EXCEEDED THE UNRESTRICTED USE SCOs OR SUPPLEMENTAL SCOs (SEE NOTE 4)
- ONLY ONE SAMPLED DEPTH INTERVAL CONTAINED CONCENTRATIONS THAT EXCEEDED THE UNRESTRICTED USE SCOs OR SUPPLEMENTAL SCOs (SEE NOTE 4)
- NONE OF THE SAMPLED DEPTH INTERVALS CONTAINED CONCENTRATIONS THAT EXCEEDED THE UNRESTRICTIVE USE SCOs OR SUPPLEMENTAL SCOs (SEE NOTE 4)
- SITE BOUNDARY

NOTES:

1. BASE MAP IS FROM A SURVEY DONE BY WCT SURVEYORS, P.C., CANTON, NEW YORK ON APRIL 5, 2004, FILE # 103-218. UPDATED WITH SURVEY DONE BY C.T.MALE ON 11/12/08.
2. LOCATIONS OF GAS HOLDERS ARE APPROXIMATE AND ARE FROM SANBORN MAPS PROVIDED BY THE SANBORN LIBRARY, LLC PRODUCED BY ENVIRONMENTAL DATA RESOURCES , INC. (EDR).
3. TAX PARCEL INFORMATION DOWNLOADED FROM THE CITY OF WATERTOWN TAX MAP DATABASE "SDG IMAGE MATE" ON NOVEMBER 7, 2013.
4. SUBSURFACE SOIL ANALYTICAL RESULTS PRESENTED ON FIGURE 4

0 60' 120'

GRAPHIC SCALE

DRAFT

NATIONAL GRID
WATERTOWN (ANTHONY STREET) FORMER MGP SITE
SITE MANAGEMENT PLAN

REMAINING MGP-RELATED IMPACTS IN SOIL

ARCADIS Design & Consultancy for natural and built assets

FIGURE 7

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: R. ALLEN G. STOWELL L. FORAKER LD: PIC: T. YOUNG PM: S. POWLIN TM: S. POWLIN LYR: ON=*; OFF=*REF*
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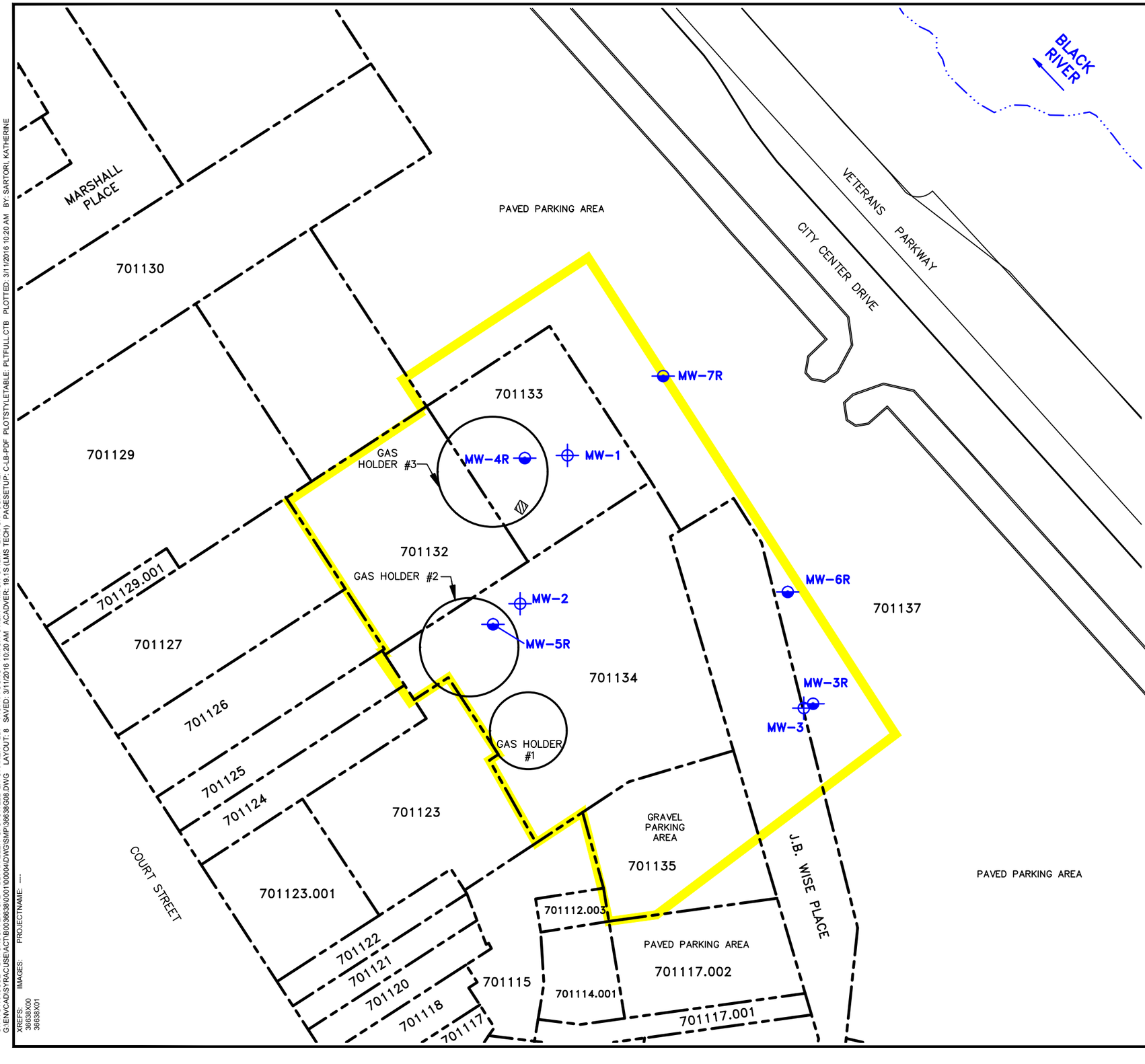

LEGEND:

- APPROXIMATE TAX PARCEL BOUNDARY
- 701134 — TAX PARCEL ID
- OVERBURDEN MONITORING WELL
- BEDROCK MONITORING WELL
- SITE BOUNDARY

NOTES:

1. BASE MAP IS FROM A SURVEY DONE BY WCT SURVEYORS, P.C., CANTON, NEW YORK ON APRIL 5, 2004, FILE # 103–218. UPDATED WITH SURVEY DONE BY C.T.MALE ON 11/12/08.
2. LOCATIONS OF GAS HOLDERS ARE APPROXIMATE AND ARE FROM SANBORN MAPS PROVIDED BY THE SANBORN LIBRARY, LLC PRODUCED BY ENVIRONMENTAL DATA RESOURCES , INC. (EDR).
3. TAX PARCEL INFORMATION DOWNLOADED FROM THE CITY OF WATERTOWN TAX MAP DATABASE "SDG IMAGE MATE" ON NOVEMBER 7, 2013.

0 60' 120'

GRAPHIC SCALE

DRAFT

NATIONAL GRID
WATERTOWN (ANTHONY STREET) FORMER MGP SITE
SITE MANAGEMENT PLAN

MONITORING WELL NETWORK

ARCADIS Design & Consultancy for natural and built assets

FIGURE 8