COLD SPRING MGP SITE

PUTNAM COUNTY

VILLAGE OF COLD SPRING, NEW YORK

SITE MANAGEMENT PLAN

NYSDEC Site Number: 340026

Prepared for:

NEW YORK STATE

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

DIVISION OF ENVIRONMENTAL REMEDIATION

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Revisions to Final Approved Site Management Plan:

Revision No.	Date Submitted	Summary of Revision	NYSDEC Approval Date
1	02/28/19	Updated to Reflect 2015-2016 RA	

FEBRUARY 2019

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CERTIFICATION STATEMENT

I Kevin Conway certify that I am currently a Qualified Environmental Professional (QEP) as defined in 6 NYCRR Part 375 and that this Site Management Plan 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) and that all activities were performed in full accordance with DER approved Work Plans and any DER-approved modifications.

_____ QEP

2/28/19 DATE

P.G. # 000427

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List of Acronyms

BTEX	benzene, toluene, ethylbenzene and xylene
CAMP	Community Air Monitoring Plan
C&D	construction and demolition
CFR	Code of Federal Regulation
COC	Certificate of Completion
DER	Division of Environmental Remediation
DNAPL	dense non-aqueous phase Liquid
EC	Engineering Control
ECL	Environmental Conservation Law
ERP	Environmental Restoration Program
EWP	Excavation Work Plan
FSAP	Field Sampling and Analysis Plan
GES	Groundwater and Environmental Services
HASP	Health and Safety Plan
IC	Institutional Control
mg/kg	milligrams per kilogram (ppm)
MGP	manufactured gas plant
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSDOT	New York State Department of Transportation
NYCRR	New York Codes, Rules and Regulations
PAH	polycyclic aromatic hydrocarbons
ppb	parts per billion
ppm	parts per million
PRP	Potentially Responsible Party
PRR	Periodic Review Report
PSA	Preliminary Site Assessment
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RP	Remedial Party
RSO	Remedial System Optimization
SAC	State Assistance Contract
SCG	Standards, Criteria and Guidance
SCO	Soil Cleanup Objective
SMP	Site Management Plan
SVOC	semi-volatile organic compound
TAL	Target Analyte List
TCL	Target Compound List
µg/L	micrograms per liter (ppb)
URS	URS Corporation
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound

ES EXECUTIVE SUMMARY

The following provides a brief summary of the controls implemented for the Site, as well as the inspections and reporting activities required by this Site Management Plan (SMP):

Site Identification:	**Site No. 340026 Cold Spring MGP Site**
Institutional Controls:	1) The Controlled Property may be used for: Restricted Residential use as described in 6 NYCRR Part 375-1.8(g)(2)(ii), Commercial as described in 6 NYCRR Part 375-1.8(g)(2)(iii) and Industrial as described in 6 NYCRR Part 375-1.8(g)(2)(iv); 2) All Engineering Controls must be operated and maintained as specified in this SMP; 3) All Engineering Controls must be inspected at a frequency and in a manner defined in this SMP; 4) Groundwater and other environmental or public health monitoring must be performed as defined in this SMP; 5) Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner as defined in this SMP; 6) All future activities that will disturb remaining contaminated material must be conducted in accordance with this SMP; 7) Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in this SMP; 8) Operation, maintenance, monitoring, inspection and reporting of any mechanical or physical components of the remedy shall be performed as defined in the SMP; and 9) Access to the Site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the Environmental Easement.
Engineering Controls:	Site Monitoring and Cover

Inspections:	**Frequency**
Site Wide Inspection	Annually
Monitoring:	
Groundwater Monitoring Wells GW-01, GW-03, GW-04, GW-05, GW-06 and GW-07	Annually
Maintenance:	
Monitoring Wells	As needed
Reporting:	
1. Inspection Report	Annually
2. Periodic Review Report	Every 3 years as determined by the Department

Further descriptions of the above requirements are provided in detail in the latter sections of this SMP.

1.0 INTRODUCTION

1.1 General

This Site Management Plan (SMP) is a required element of the remedial program for the former Cold Spring Manufactured Gas Plant (MGP) located in the Village of Cold Spring, New York [herein referred to as the "Site" (See Figure 1)]. The Site is currently designated as Site No. 340026 in the New York State (NYS) Inactive Hazardous Waste Disposal Site Remedial Program, which is administered by New York State Department of Environmental Conservation (NYSDEC).

A figure showing the Site location and boundaries is provided in Figure 2. The boundaries of the Site are more fully described in the metes and bounds site description that is part of the Environmental Easement provided in Appendix A.

The Village of Cold Spring entered into a State Assistance Contract (SAC) on August 9, 2007 with the NYSDEC to remediate the Site (SAC No. C303647). After completion of the remedial work in August 2016, some contamination was left at this Site, which is hereafter referred to as "remaining contamination". Institutional Controls (ICs) and Engineering Controls (ECs) have been incorporated into the Site remedy to control exposure to remaining contamination to ensure protection of public health and the environment. The Environmental Easement, granted to the NYSDEC, and recorded with the Putnam County Clerk, requires compliance with this SMP and all IC/ECs placed on the Site.

This SMP was prepared to manage the remaining contamination until the Environmental Easement is extinguished in accordance with Environmental Conservation Law (ECL) Article 71, Title 36. This plan has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the Environmental Easement and the grantor's successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

It is important to note that:

- This SMP details the site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of the Environmental Easement.

- Failure to comply with this SMP is also a violation of ECL, 6 New York Codes, Rules and Regulations (NYCRR) Part 375 and the SAC, for the Site, and thereby subject to applicable penalties.

All reports associated with the Site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State. A list of contacts for persons involved with the Site is provided in Appendix B of this SMP.

This SMP was prepared by URS Corporation, on behalf of the NYSDEC, in accordance with the requirements of the NYSDEC's Division of Environmental Remediation (DER)-10 *Technical Guidance for Site Investigation and Remediation*, dated May 2010, and the guidelines provided by the NYSDEC. This SMP addresses the means for implementing the IC/ECs that are required by the Environmental Easement for the Site. This is an update to the original SMP, dated April 2009, prepared by the NYSDEC. The original SMP was developed before implementation of the Remedial Action.

1.2 Revisions

Revisions to this plan will be proposed in writing to the NYSDEC's project manager. Revisions will be necessary upon, but not limited to, the following occurring: a change in media monitoring requirements, post-remedial removal of contaminated soil, or other significant change to the site conditions. In accordance with the Environmental Easement, 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.

1.3 Notifications

Notifications will be submitted by the property owner to the NYSDEC, as needed, in accordance with NYSDEC's DER-10 for the following reasons:

- 60-day advance notice of any proposed changes in site use that are required under the terms of 6NYCRR Part 375 and/or ECL.
- 7-day advance notice of any field activity associated with the remedial program.
- 15-day advance notice of any proposed ground-intrusive activity pursuant to the Excavation Work Plan (EWP).
- Notice within 48-hours of any damage or defect to the foundation, structures or Engineering Control (EC) that reduces or has the potential to reduce the

effectiveness of an 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 ECs 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.
- Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action submitted to the NYSDEC within 45 days describing and documenting actions taken to restore the effectiveness of the ECs.

Any change in the ownership of the Site or the responsibility for implementing this SMP will include the following notifications:

- At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser/Remedial Party (RP) has been provided with a copy of the SAC, 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 to the NYSDEC.

Responsibilities of Owner and Remedial Party are provided in Appendix C. Table 1 includes contact information for the above notification. The information on this table will be updated as necessary to provide accurate contact information. A full listing of site-related contact information is provided in Appendix B.

Table 1: Notifications*

Name	Contact Information
David Chiusano NYSDEC Project Manager	(518) 402-9813 david.chiusano@dec.ny.gov
David Harrington, P.E. Section Chief, NYSDEC- DER	(518) 402-9813 david.harrington@dec.ny.gov
Michael Cruden Director, Remedial Bureau E	(518) 402-9813 michael.cruden@dec.ny.gov

* Note: Notifications are subject to change and will be updated as necessary.

2.0 SUMMARY OF PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

2.1 Site Location and Description

The Site is located in Village of Cold Spring, Putnam County, New York on the parcel identified as Section 48.12 Block 1 Lot 51 on the Putnam County Tax Map. The Site is a 0.977 acre portion of the 1.667 acre parcel on which, in 2010, the NYSDEC established an Environmental Easement. The Site is bounded by New Street to the north, a rock outcrop and private residences to the south, Market Street to the east, and the Hudson River to the west as shown on Figure 2. The boundaries of the Site are more fully described in Appendix A –Environmental Easement. The owner(s) of the Site parcel(s) at the time of issuance of this SMP revision is:

Village of Cold Spring

2.2 Physical Setting

2.2.1 Land Use

The Site occupies a portion of a real estate parcel owned by the Village of Cold Spring. The western portion of the parcel is currently leased to the Cold Spring Boat Club. The Cold Spring Boat Club stores their crane on the western side of the Site and disassembled docks when not in use. A gravel parking lot serving the Hudson House River Inn is also located on Site. There is a grassy area between the parking lots that is open to the public. The northeastern corner of the Site is considered a park with public access. There are currently no structures on Site. A Site Plan is presented in Figure 2.

The properties adjoining the Site and in the neighborhood surrounding the Site primarily include residential properties. The properties immediately north, east, and south of the Site include residential properties. The Hudson River is located west of the Site.

2.2.2 Geology

Prior to remediation, borings performed during the various investigations identified three geologic strata at the Site: the surficial fill layer; an underlying clay unit of variable thickness in the northern portion; and bedrock. Figures 3 and 4 show the top of clay and the top of bedrock, respectively. Lines of section for the post-Remedial Action condition are shown in Figure 2. Pre-Remedial Action lines of section are shown on Figure 3. Pre- and post-Remedial Action geologic cross sections of the Site are presented on Figures 5A and 5B, respectively. These three geologic units are discussed below.

Along the southern Site boundary, outcropping rock is exposed with no soil cover. Soil thicknesses increase steadily to the north and west. The soils on the northern side of the Site consist of historic fill material to a depth of 11 to 13 feet. The fill is underlain by a clay layer which appears to be at least 15 feet thick, which in turn overlies bedrock.

Fill Unit: The fill unit, which is the surface unit over most of the Site and surrounding areas, typically consists of fine to coarse sand with some clay, silt, and gravel and anthropogenic materials such as brick, ash and coal. The fill unit also contains the subsurface remnants of MGP structures. The color of the fill typically ranges from brown to gray and olive.

Clay Unit: The clay unit underlies the fill in the northern portion of the Site. The clay is absent in the middle and southern portions of the Site. The clay unit generally consists of a gray to olive organic, soft, silty clay. The unit contains peat, wood and shell fragments in some areas. The unit is sometimes reported as brown in color, especially in borings completed on the Site. In general, the clay increases in thickness in the direction of the Hudson River (west to southwest) following the contour of the bedrock.

Where present, the clay unit serves as an effective confining unit. However, it is not present in the southern portion of the Site where bedrock is shallowest. In those areas, the fill unit transitions directly to the bedrock.

Bedrock: Gray granitic gneiss bedrock underlies the Site. As indicated on the cross-sections and boring logs, the bedrock surface is relatively shallow on the southern

portion of the Site, approximately 3 feet below grade. Directly south of the Site, bedrock outcrops to approximately 15 feet above grade. This outcrop and associated hillside trends in a roughly east-west direction along the southern property line. The bedrock appears to dip steeply in the direction of the Hudson River (west to southwest) and dips to the northwest under the remainder of the Site.

The presence of the above geologic units was confirmed during the Remedial Action. Boring logs from both the Remedial Investigation and the Remedial Action are provided in Appendix D. Borings logs from wells GW-01, GW-03, GW-04, and GW-05 were obtained from the Remedial Investigation. Post remediation boring logs from wells GW-06 and GW-07 were obtained from the Remedial Action Contractor.

2.2.3 Hydrogeology

Groundwater level measurements from July 10, 2018 showed that groundwater is encountered at about 2 to 3 feet below ground surface (bgs). The water levels are impacted by tidal fluctuations in the Hudson River. Shallow groundwater flow is generally to the southwest toward the Hudson River. A groundwater contour map is shown in Figure 6. Groundwater elevation data is provided in Table 2.

The permeability of the fill unit measured during the pre-design investigation ranged from 5.46×10^{-4} centimeters per second (cm/sec) to 6.03×10^{-3} cm/sec.

2.3 Investigation and Remedial History

The following narrative provides a remedial history timeline and a brief summary of the available project records to document key investigative and remedial milestones for the Site.

The Cold Spring Former MGP is located at 5 New Street in the Village of Cold Spring, Putnam County, New York. The parcel on which the Site is located is owned by the Village of Cold Spring. The Site is a 0.977 acre portion of the 1.667 acre parcel on which, in 2010, the NYSDEC established an Environmental Easement. The former MGP itself (approximately 0.2 acres) occupied the eastern portion of the Site.

TABLE 2
GROUNDWATER ELEVATIONS
COLD SPRING MGP SITE

Well No.	GW-01	GW-04	GW-05	GW-06	GW-07
Date	7/10/2018	7/10/2018	7/10/2018	7/10/2018	7/10/2018
Depth to Water (ft)	2.74	2.13	2.68*	3.02	3.03
Water Elevation (ft msl)	4.08	2.18	2.28*	2.32	2.28

GW-03 Missing

msl-mean sea level

*GW-05 curb box replaced in 2016. Elevation based on August 2016 survey measurment .

GW-06 and GW-07 installed in 2016.

Historical information on the MGP operation at the Site is sparse due to the age of the facility. The MGP operated in the mid-to-late 1800's and apparently ceased operations before 1887. The earliest available fire insurance map for the Site, dated 1887, states that the retort building was vacant, which suggests that the plant was no longer operating at that time. The records of the New York State Public Service Commission, which are typically used to research the history of MGP Sites, begin in 1907 and contain no references to gas manufacturing operations in Cold Spring.

Several investigations were conducted at the Site for the purposes of Site classification and to develop the basis of the remedial design. The results of those investigations are contained in the following reports:

- Site Characterization Report, NYSDEC, July 2005.
- Site Investigation/Remedial Alternatives Report, Dvirka and Bartilucci, October 2009
- Subsurface Investigation Report, Groundwater and Environmental Services, Inc. (GES), April 2013
- Pre-Design Investigation Soil Boring Program Report, URS, February, 2014
- Pre-Design Investigation Report, URS, September, 2014
- Pre-Design Geotechnical Summary Report, URS, September 2014.

  (URS performed an initial pre-design Site investigation in April 2013, followed by a subsequent investigation in April 2014 to collect additional data specifically related to the design of an excavation support system.)

In February 2005, a shallow archaeological excavation at One Main Street (a former lumber yard across the street from the Site) encountered black-stained soil. This was reported to the NYSDEC as a petroleum spill (Spill #04-12054). An environmental contractor was hired by the Site owner to investigate the suspected spill. Soil samples were collected from the four archeological test pits and also from four new soil boring locations on the One Main Street Site, and submitted for laboratory analysis.

The analyses of these samples identified significant subsurface contamination at one test pit location. The contaminant was tentatively identified as coal tar, not the originally suspected petroleum. Research by NYSDEC staff identified maps that showed

the location of a historical MGP across the street from the reported spill location. Consequently, Spill #04-12054 was closed and the Site was referred to NYSDEC's staff who specialize in investigating coal tar contaminated sites.

The small area of contamination on the lumber yard property was remediated under NYSDEC oversight in June of 2006. The MGP-related contamination was excavated and transported off-site for treatment/disposal. Confirmation samples did not detect any remaining MGP-related chemicals in the sidewalls or bottom of the excavation. The property was subsequently redeveloped for residential use.

Between May 11 and 13, 2005, a Site Characterization (SC) investigation was conducted by the NYSDEC. Eleven soil borings were completed, and three of these borings were completed as monitoring wells. Five soil samples and three groundwater samples were collected for laboratory analysis. The Preliminary Site Assessment (PSA) Report, issued in June 2005, confirmed the presence of the former MGP and recommended a full Remedial Investigation (RI) to fully characterize the nature and extent of contamination at the Site.

In April 2007, the Village of Cold Spring applied for admittance into the NYSDEC Environmental Restoration Program (ERP), and on August 9, 2007, the application was approved. The RI and remedial alternatives analysis were carried out by the Village under this program.

Geophysical surveys were performed in 2008 and 2014 to locate and identify subsurface structures related to the MGP. These surveys located a 35-foot diameter concrete subsurface structure identified as the foundation of a former gas holder tank. The survey also identified a rectangular structure (approximately 20 feet by 30 feet), believed to be the foundation of the former MGP generator house. These structures are shown on Figure 3.

The primary contaminant typically produced by MGP operations was coal tar. Coal tar can occur as a dense non-aqueous phase liquid (DNAPL), slightly heavier than water, and with a low aqueous solubility. When released into a pervious material, the

DNAPL will sink downward through groundwater until it reaches an impermeable stratum. It can, under certain conditions, move laterally.

Coal tar generally contains high levels of volatile and semi-volatile organic compounds (VOCs and SVOCs). The principal VOCs in coal tar are benzene, toluene, ethylbenzene, and xylenes (BTEX), which are slightly soluble in water. The principal SVOCs in coal tar are polycyclic aromatic hydrocarbons (PAHs), which are generally less soluble than BTEX.

Coal tar, as visible droplets or pools of DNAPL, was found in the vicinity of the subsurface remains of the former MGP structures located east of the boat club building. From the structures, the DNAPL apparently migrated downward to the underlying clay.

MGP-related contamination was not identified in surface soil. Concentrations of compounds in the surface soil were generally consistent with typical background levels. The results of the 2009 Dvirka and Bartilucci Site Investigation showed elevated levels of PAHs, up to 364 ppm at one surface soil location, SS-5; however, this is not believed to be related to the MGP.

Groundwater samples were collected from monitoring wells located both on and off the Site during the investigations. MGP-related chemicals were found at levels above applicable Standards, Criteria and Guidance (SCGs) in the groundwater in each of the three source areas where coal tar was found in the subsurface soil.

The results of the 2009 Dvirka and Bartilucci Site Investigation showed that total BTEX concentrations in groundwater ranged from non-detect (in 4 of 7 samples) up to 26 parts per billion (ppb) in GW-04, which is located west of the former boat club building. GW-04 was the only monitoring well where VOCs were detected at concentrations exceeding SCGs. Total PAH concentrations in on-site groundwater ranged from non-detect (in 3 of 7 samples) up to 78 ppb in GW-04. Wells with elevated levels of PAHs were located west of the former boat club building. Cyanide, a common MGP contaminant, was not detected at levels above SCGs.

Three shallow sediment samples were collected from the Hudson River adjacent to the Site during the 2009 Dvirka and Bartilucci Site Investigation. No site-related

contamination was detected. Total PAH concentrations ranged from 0.9 ppm to 2.4 ppm. BTEX chemicals and cyanide were not detected in the samples.

In 2009, Dvirka and Bartilucci completed a vapor intrusion investigation at the boat club building No significant soil vapor impacts were observed.

Based on the results of the 2009 Dvirka and Bartilucci Site Investigation/Remedial Alternatives Report, only soil and groundwater were targeted for remediation.

Site Investigations confirmed that the subsurface soil is contaminated with PAHs and BTEX compounds. The results of the 2009 Dvirka and Bartilucci Site Investigation showed that total BTEX concentrations in the subsurface soil ranged from non-detect to 1,286 ppm. The highest PAH and BTEX levels were in the area of the subsurface coal tar impacts. The results of the 2014 URS Site Investigation showed total PAH concentrations ranging from non-detect to 3,822 parts per million (ppm).

A Subsurface Investigation Report (GES, April 2013) documented the October 2012 field activities. GES installed six soil borings to estimated depths of 12 feet bgs. Two of the borings were converted to monitoring wells. One soil sample from each boring was submitted for chemical analysis. Every soil sample had at least one Restricted Residential exceedance for PAHs. Total PAH concentrations in soil ranged from 14.9 ppm to 556 ppm. There were no BTEX exceedances in the soil samples. Groundwater samples were collected from four existing monitoring wells (GW-01, GW-02, GW-04 and GW-05). The results showed an exceedance of groundwater quality for organic compounds only at GW-04. In GW-04, only acenaphthylene was detected, at 26 ppb, compared to the regulatory standard of 20 ppb. Total BTEX was 8.7 ppb and total PAHs was 47 ppb in GW-04.

The Record of Decision (ROD) for the Site was signed in February 2010 (NYSDEC 2010). The ROD specified the removal of soil in the source area located east of the boat club building, removal of subsurface MGP structures, and disposal of all excavated materials off site at a permitted facility.

In October 2013, the NYSDEC agreed to the request by the Village of Cold Spring that the selected remedy presented in the ROD be expanded to include demolition of the boat club building to maximize the safe removal of coal tar in the subsurface (Alternative 3). The expansions to the selected remedy are summarized in Table 3:

Table 3
2010 Record of Decision Remedy Expansion

Remedial Component Added	Remedial Component No Longer Applicable
Demolition of the boat club building.	Vertical low permeability barrier between the excavation wall and the boat club building.
Excavation of soil below and east of the boat club building.	Horizontal barrier above unexcavated contaminated soil near the boat club building.

The major components of the completed remediation consisted of the following:

- Remediation was performed from October 2015 through August 2016;
- Demolition and offsite disposal of the boat club building;
- Relocation of Existing Utilities;
- Installation of sheet piling, which was left in place;
- Installation of temporary containment structure (TCS) and vapor management system (VMS);
- Excavation and offsite disposal of 8,990 tons of contaminated soil and debris;
- The average depth of excavation was 12 feet below ground surface;
- Disposal of contaminated soil and debris at the City of Albany Waste Solid Waste Management Facility (4,805 tons) and EMSI of New York, Inc. (4,185 tons);
- Collection of post-excavation documentation samples
- Placement of a demarcation barrier consisting of non-woven geotextile fabric;
- Backfill the excavation with 6,858 tons of clean soil, and No. 2 and No. 4 stone;
- Placement of 540 cubic yards of flowable fill; and

- Restoration of the Site with 6,120 square feet of seeded area and 10,910 square feet of gravel parking area.

2.4 Remedial Action Objectives

The Remedial Action Objectives (RAOs) for the Site as listed in the ROD, dated February 4, 2010 are as follows:

2.4.1 Groundwater

RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards; and
- Prevent contact with contaminated groundwater.

RAOs for Environmental Protection

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable; and
- Remove the source of groundwater contamination.

2.4.2 Soil

RAOs for Public Health Protection

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

RAOs for Environmental Protection

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

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

- ambient groundwater quality standards; and
- recommended soil cleanup objectives in the Department's Cleanup Objectives (Determination of Soil Cleanup Objectives and Cleanup Levels" and 6 NYCRR Subpart375-6 - Remedial Program Soil Cleanup Objectives).

2.5 Remaining Contamination

2.5.1 Soil

BTEX and PAHs were the major contaminants detected in on site soil. Thirteen samples (DOC-1 through DOC-13) were collected following remediation to document contaminant levels remaining on Site. Samples DOC-1 through DOC-11 were collected from the bottom of the excavation and DOC-12 and DOC-13 were collected from the sidewalls of the excavation. The results showed that samples DOC-2 and DOC-7 through DOC-12 contained contaminants at concentrations above the 6 NYCRR Subpart 375-6 Restricted Residential Use soil cleanup objectives (SCOs). The sample locations are presented on Figure 7. As part of the remediation, a demarcation layer consisting of non-woven geotextile fabric was placed at the bottom of the entire excavation except the flowable fill wall along the southern and southeastern portions of the Site.

Table 4 summarizes the results of all documentation soil samples collected after remediation as compared to the Unrestricted Use SCOs and Table 5 shows the results of documentation samples compared to the Restricted Residential Use SCOs. Sample locations and depths are presented in Figure 7.

Only one documentation sample location, DOC-9, had BTEX concentrations above the 6 NYCRR Subpart 375-6 Restricted Residential Use SCOs. The total PAH concentrations at documentation sample locations DOC-9 (969 ppm) and DOC-10 (1,616 ppm) were above the 500 ppm RAO. Total PAHs in all other documentation samples were below the 500 ppm RAO. Documentation samples DOC-2 and DOC-7 through DOC-12 contained individual PAH contaminants at concentrations above the 6 NYCRR Subpart 375-6 Restricted Residential Use SCOs. DOC-6 had no BTEX or PAH detections. BTEX and/or PAH concentrations in DOC-1, DOC-3, DOC-4, DOC-5 and DOC-13 were all below the SCOs.

TABLE 4

DOCUMENTATION SAMPLES COMPARED TO UNRESTRICTED USE SCOs

	Sample ID	DOC-1	DOC-2	DOC-3	DOC-4	DOC-5	DOC-6	DOC-7	DOC-8
	Collection Date	3/8/2016	3/29/2016	4/4/2016	4/5/2016	4/8/2016	5/23/2016	5/23/2016	5/23/2016
Analyte	6 NYCRR Subpart 375-6 Unrestricted Use SCO (mg/kg)	Conc (mg/kg)	Conc (mg/kg)	Conc (mg/kg)	Conc (mg/kg)	Conc (mg/kg)	Conc (mg/kg)	Conc (mg/kg)	Conc (mg/kg)
VOLATILE ORGANIC COMPOUNDS									
Benzene	0.06	ND	ND	ND	0.16	0.16	ND	0.12	ND
Ethylbenzene	1	ND	0.0016	0.0062	1.1	1.3	ND	1.3	ND
Toluene	0.7	0.00099	0.00098	0.0045	ND	ND	ND	ND	ND
Xylenes(Total)	0.26	ND	0.0039	0.015	1.7	1.8	ND	1.5	ND
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHs)									
Acenaphthene	20	ND	2.2	ND	0.44	0.56	ND	2.3	0.82
Acenaphthylene	100	ND	0.34	ND	ND	0.090	ND	0.41	0.23
Anthracene	100	ND	1.4	0.067	0.24	0.26	ND	2.2	0.86
Benzo[a]anthracene	1	ND	1.9	0.065	0.23	0.55	ND	2.6	1.2
Benzo[a]pyrene	1	ND	1.3	0.042	0.16	0.43	ND	2.1	1.1
Benzo[b]fluoranthene	1	ND	1.2	ND	0.16	0.41	ND	1.8	0.92
Benzo[g,h,i]perylene	100	ND	0.84	ND	ND	0.24	ND	1.2	0.81
Benzo[k]fluoranthene	0.8	ND	0.34	ND	ND	0.14	ND	0.58	0.24
Chrysene	1	ND	1.7	0.056	0.21	0.52	ND	2.5	1.2
Dibenzo[a,h]anthracene	0.33	ND	0.25	ND	ND	0.077	ND	0.34	0.21
Fluoranthene	100	ND	2.4	0.098	0.32	0.83	ND	3.5	1.5
Fluorene	30	ND	1.4	0.045	0.24	0.20	ND	1.6	0.63
Indeno[1,2,3-cd]pyrene	0.5	ND	0.56	ND	ND	0.17	ND	0.79	0.47
Naphthalene	12	0.021	1.9	0.039	4.5	2.3	ND	0.86	0.13
Phenanthrene	100	ND	4.2	0.25	0.85	0.79	ND	5.7	2.1
Pyrene	100	ND	4.0	0.15	0.51	1.2	ND	6.0	3.1
Total PAHs	--	0.021	25.9	0.812	7.86	8.767	ND	34.5	15.52

shaded cell Concentration exceeds SCO

mg/kg - milligrams per kilogram

ND - not detected

TABLE 4

DOCUMENTATION SAMPLES COMPARED TO UNRESTRICTED USE SCOs

	Sample ID	DOC-9	DOC-10	DOC-11	DOC-12	DOC-13
	Collection Date	6/3/2016	6/6/2016	6/9/2016	6/9/2016	6/6/2016
Analyte	6 NYCRR Subpart 375-6 Unrestricted Use SCO (mg/kg)	Conc (mg/kg)	Conc (mg/kg)	Conc (mg/kg)	Conc (mg/kg)	Conc (mg/kg)
VOLATILE ORGANIC COMPOUNDS						
Benzene	0.06	66	0.73	ND	ND	ND
Ethylbenzene	1	150	26	0.016	0.0021	ND
Toluene	0.7	110	2.4	0.0024	0.0017	ND
Xylenes(Total)	0.26	200	40	0.021	0.0033	ND
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHs)						
Acenaphthene	20	55	64	0.47	0.34	0.072
Acenaphthylene	100	19	36	0.24	0.16	ND
Anthracene	100	46	100	0.78	0.54	0.13
Benzo[a]anthracene	1	43	84	1.4	1.1	0.46
Benzo[a]pyrene	1	37	57	1.2	0.98	0.56
Benzo[b]fluoranthene	1	32	66	1.4	1.2	0.51
Benzo[g,h,i]perylene	100	20	24	0.66	0.68	0.59
Benzo[k]fluoranthene	0.8	10	26	0.43	0.31	0.13
Chrysene	1	44	67	1.4	1.0	0.46
Dibenzo[a,h]anthracene	0.33	6.3	9.3	0.30	0.24	0.15
Fluoranthene	100	57	180	1.8	1.3	0.40
Fluorene	30	47	110	0.58	0.38	0.062
lndeno[1,2,3-cd]pyrene	0.5	13	23	0.56	0.53	0.33
Naphthalene	12	270	320	0.33	0.41	0.085
Phenanthrene	100	170	300	1.7	1.4	0.46
Pyrene	100	100	150	2.5	1.6	0.80
Total PAHs	--	969.3	1616.3	15.75	12.17	5.20

shaded cell Concentration exceeds SCO

mg/kg - milligrams per kilogram

ND - not detected

TABLE 5

DOCUMENTATION SAMPLES COMPARED TO RESTRICTED RESIDENTIAL USE SCOs

	Sample ID	DOC-1	DOC-2	DOC-3	DOC-4	DOC-5	DOC-6	DOC-7	DOC-8
	Collection Date	3/8/2016	3/29/2016	4/4/2016	4/5/2016	4/8/2016	5/17/2016	5/18/2016	5/19/2016
Analyte	6 NYCRR Subpart 375-6 Restricted Residential Use SCOs (mg/kg)	Conc (mg/kg)	Conc (mg/kg)	Conc (mg/kg)	Conc (mg/kg)	Conc (mg/kg)	Conc (mg/kg)	Conc (mg/kg)	Conc (mg/kg)
VOLATILE ORGANIC COMPOUNDS									
Benzene	4.8	ND	ND	ND	0.16	0.16	ND	0.12	ND
Ethylbenzene	41	ND	0.0016	0.0062	1.1	1.3	ND	1.3	ND
Toluene	100	0.00099	0.00098	0.0045	ND	ND	ND	ND	ND
Xylenes(Total)	100	ND	0.0039	0.015	1.7	1.8	ND	1.5	ND
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHs)									
Acenaphthene	100	ND	2.2	ND	0.44	0.56	ND	2.3	0.82
Acenaphthylene	100	ND	0.34	ND	ND	0.090	ND	0.41	0.23
Anthracene	100	ND	1.4	0.067	0.24	0.26	ND	2.2	0.86
Benzo[a]anthracene	1	ND	1.9	0.065	0.23	0.55	ND	2.6	1.2
Benzo[a]pyrene	1	ND	1.3	0.042	0.16	0.43	ND	2.1	1.1
Benzo[b]fluoranthene	1	ND	1.2	ND	0.16	0.41	ND	1.8	0.92
Benzo[g,h,i]perylene	100	ND	0.84	ND	ND	0.24	ND	1.2	0.81
Benzo[k]fluoranthene	3.9	ND	0.34	ND	ND	0.14	ND	0.58	0.24
Chrysene	3.9	ND	1.7	0.056	0.21	0.52	ND	2.5	1.2
Dibenzo[a,h]anthracene	0.33	ND	0.25	ND	ND	0.077	ND	0.34	0.21
Fluoranthene	100	ND	2.4	0.098	0.32	0.83	ND	3.5	1.5
Fluorene	100	ND	1.4	0.045	0.24	0.20	ND	1.6	0.63
Indeno[1,2,3-cd]pyrene	0.5	ND	0.56	ND	ND	0.17	ND	0.79	0.47
Naphthalene	100	0.021	1.9	0.039	4.5	2.3	ND	0.86	0.13
Phenanthrene	100	ND	4.2	0.25	0.85	0.79	ND	5.7	2.1
Pyrene	100	ND	4.0	0.15	0.51	1.2	ND	6.0	3.1
Total PAHs	500	0.021	25.93	0.812	7.86	8.767	ND	34.48	15.52

Shaded cell Concentration exceeds SCO

mg/kg - milligrams per kilogram

TABLE 5

DOCUMENTATION SAMPLES COMPARED TO RESTRICTED RESIDENTIAL USE SCOs

	Sample ID	DOC-9	DOC-10	DOC-11	DOC-12	DOC-13
	Collection Date	6/2/2016	6/6/2016	6/8/2016	6/9/2016	6/9/2016
Analyte	6 NYCRR Subpart 375-6 Restricted Residential Use SCOs (mg/kg)	Conc (mg/kg)	Conc (mg/kg)	Conc (mg/kg)	Conc (mg/kg)	Conc (mg/kg)
VOLATILE ORGANIC COMPOUNDS						
Benzene	4.8	66	0.73	ND	ND	ND
Ethylbenzene	41	150	26	0.016	0.0021	ND
Toluene	100	110	2.4	0.0024	0.0017	ND
Xylenes(Total)	100	200	40	0.021	0.0033	ND
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHs)						
Acenaphthene	100	55	64	0.47	0.34	0.072
Acenaphthylene	100	19	36	0.24	0.16	ND
Anthracene	100	46	100	0.78	0.54	0.13
Benzo[a]anthracene	1	43	84	1.4	1.1	0.46
Benzo[a]pyrene	1	37	57	1.2	0.98	0.56
Benzo[b]fluoranthene	1	32	66	1.4	1.2	0.51
Benzo[g,h,i]perylene	100	20	24	0.66	0.68	0.59
Benzo[k]fluoranthene	3.9	10	26	0.43	0.31	0.13
Chrysene	3.9	44	67	1.4	1.0	0.46
Dibenzo[a,h]anthracene	0.33	6.3	9.3	0.30	0.24	0.15
Fluoranthene	100	57	180	1.8	1.3	0.40
Fluorene	100	47	110	0.58	0.38	0.062
Indeno[1,2,3-cd]pyrene	0.5	13	23	0.56	0.53	0.33
Naphthalene	100	270	320	0.33	0.41	0.085
Phenanthrene	100	170	300	1.7	1.4	0.46
Pyrene	100	100	150	2.5	1.6	0.80
Total PAHs	500	969.3	1616.3	15.75	12.17	5.199

Shaded cell Concentration exceeds SCO

mg/kg - milligrams per kilogram

2.5.2 Groundwater

Groundwater samples were collected by NYSDEC representatives from five monitoring wells (GW-01, GW-04, GW-05, GW-06 and GW-07) in July 2018 for the analysis of BTEX and PAHs. Monitoring well GW-03 was not located and therefore was not sampled. BTEX was only detected in one location, GW-07. PAHs were detected in GW-04, GW-05, GW-06 and GW-07. TOGS 1.1.1 Class GA exceedances included benzene, toluene, and the PAH acenaphthene in only one monitoring well, GW-07. GW-07 is located at the western excavation limit. Table 6 and Figure 8 present the results of groundwater samples collected after the Remedial Action.

Additionally, the monitoring wells were sampled for emerging contaminants. Samples were collected for the analysis of 1,4-dioxane by SW846 Method 8270D selected ion monitoring (SIM) and per-and polyfluorylalkyl subsatances (PFAS) by USEPA Method 537-modified. The emerging contaminant results are provided in Table 7 and Figure 9. Results for 1,4-dioxane in all samples were below the Drinking Water Quality Council (DWQC) screening level (January 2019) of 1 microgram per liter (ug/L). Results for perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) were greater than the DWQC screening level of 10 nanograms per liter (ng/L) in GW-01, GW-04 and GW-06, but below the USEPA Drinking Water Health Advisory (May 2016) of 70 ng/L.

TABLE 6
GROUNDWATER SAMPLING RESULTS
COLD SPRING MGP SITE

Location ID			GW-01	GW-04	GW-04	GW-05	GW-06
Sample ID			GW-01	FIELD DUPLICATE	GW-04	GW-05	GW-06
Matrix			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)			-	-	-	-	-
Date Sampled			07/10/18	07/10/18	07/10/18	07/10/18	07/10/18
Parameter	**Units**	**Criteria***		Field Duplicate (1-1)			
Volatile Organic Compounds							
Benzene	UG/L	1	1.0 U	1.0 U	2.0 U	2.0 U	2.0 U
Ethylbenzene	UG/L	5	1.0 U	1.0 U	2.0 U	2.0 U	2.0 U
Toluene	UG/L	5	1.0 U	1.0 U	2.0 U	2.0 U	2.0 U
Xylene (total)	UG/L	5	2.0 U	2.0 U	4.0 U	4.0 U	4.0 U
Total BTEX	UG/L	-	ND	ND	ND	ND	ND
Semivolatile Organic Compounds							
Acenaphthene	UG/L	20	5.0 U	5.0 UJ	6.6 J	12	3.0 J
Acenaphthylene	UG/L	-	5.0 U	5.0 U	5.0 U	0.48 J	5.0 U
Anthracene	UG/L	50	5.0 U	5.0 U	5.0 U	5.0 U	0.46 J
Benzo(a)anthracene	UG/L	0.002	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Benzo(a)pyrene	UG/L	ND	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Benzo(b)fluoranthene	UG/L	0.002	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Benzo(g,h,i)perylene	UG/L	-	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Benzo(k)fluoranthene	UG/L	0.002	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Chrysene	UG/L	0.002	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Dibenz(a,h)anthracene	UG/L	-	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Fluoranthene	UG/L	50	5.0 U	5.0 U	5.0 U	0.47 J	1.1 J
Fluorene	UG/L	50	5.0 U	5.0 U	0.88 J	5.0 U	5.0 U
Indeno(1,2,3-cd)pyrene	UG/L	0.002	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Naphthalene	UG/L	10	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Phenanthrene	UG/L	50	5.0 U	5.0 U	0.82 J	5.0 U	5.0 U
Pyrene	UG/L	50	5.0 U	5.0 U	5.0 U	1.1 J	1.8 J
Total Polynuclear Aromatic Hydrocarbons	UG/L	-	ND	ND	8.3	14.05	6.36

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. June 1998 (includes 4/2000 and 6/2004 Addenda) Class GA.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

- - No criteria. UG/L - Micrograms per liter.

J - The reported concentration is an estimated value. U - Not detected above the reported quantitation limit. UJ - Not detected. The reported quantitation limit is an estimated value.

Detection Limits shown are PQL

TABLE 6
GROUNDWATER SAMPLING RESULTS
COLD SPRING MGP SITE

Location ID			GW-07
Sample ID			GW-07
Matrix			Groundwater
Depth Interval (ft)			-
Date Sampled			07/10/18
Parameter	**Units**	**Criteria***	
Volatile Organic Compounds			
Benzene	UG/L	1	2.5
Ethylbenzene	UG/L	5	4.0
Toluene	UG/L	5	0.62 J
Xylene (total)	UG/L	5	8.7
Total BTEX	UG/L	-	15.82
Semivolatile Organic Compounds			
Acenaphthene	UG/L	20	32
Acenaphthylene	UG/L	-	4.0 J
Anthracene	UG/L	50	5.0 U
Benzo(a)anthracene	UG/L	0.002	5.0 U
Benzo(a)pyrene	UG/L	ND	5.0 U
Benzo(b)fluoranthene	UG/L	0.002	5.0 U
Benzo(g,h,i)perylene	UG/L	-	5.0 U
Benzo(k)fluoranthene	UG/L	0.002	5.0 U
Chrysene	UG/L	0.002	5.0 U
Dibenz(a,h)anthracene	UG/L	-	5.0 U
Fluoranthene	UG/L	50	3.5 J
Fluorene	UG/L	50	4.5 J
Indeno(1,2,3-cd)pyrene	UG/L	0.002	5.0 U
Naphthalene	UG/L	10	5.0 U
Phenanthrene	UG/L	50	5.0 U
Pyrene	UG/L	50	2.1 J
Total Polynuclear Aromatic Hydrocarbons	UG/L	-	46.1

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. June 1998 (includes 4/2000 and 6/2004 Addenda) Class GA.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria

- - No criteria. UG/L - Micrograms per liter.

J - The reported concentration is an estimated value. U - Not detected above the reported quantitation limit. UJ - Not detected. The reported quantitation limit is an estimated value.

Detection Limits shown are PQL

TABLE 7
EMERGING CONTAMINANT ANALYTICAL RESULTS
COLD SPRING FORMER MGP SITE

			Location ID	GW-01	GW-04		GW-05	GW-06	GW-07
			Field Sample ID	GW-01	GW-04	FIELD DUPLICATE	GW-05	GW-06	GW-07
			Matrix	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
			Date Sampled	07/10/18	07/10/18	07/10/18	07/10/18	07/10/18	07/10/18
Parameter	**Units**	**Recommended Screening Level**	**Health Advisory**			Field Duplicate			
Semivolatile Organic Compounds									
1,4-Dioxane	UG/L	1	-	0.14 J	0.16 J	0.24	0.10 U	0.17 J	0.10 U
Per- and Polyfluoroalkyl Substances									
Perfluorobutanesulfonic acid (PFBS)	NG/L	100	-	7.0	6.9	5.1	7.9	7.5	1.2 J
Perfluorobutanoic acid (PFBA)	NG/L	100	-	6.7	13 J	5.4 J	17	23	5.7
Perfluorodecanoic acid (PFDA)	NG/L	100	-	0.31 U	0.61 J	0.32 U	0.32 U	0.31 U	0.33 U
Perfluoroheptanoic acid (PFHpA)	NG/L	100	-	6.6	2.9 J	5.1 J	3.6	4.8	1.1 J
Perfluorohexanesulfonic acid (PFHxS)	NG/L	100	-	8.7	2.3 J	6.5 J	4.3	4.3	1.1 J
Perfluorohexanoic acid (PFHxA)	NG/L	100	-	11	4.5	7.3	4.5	5.8	2.2
Perfluorononanoic acid (PFNA)	NG/L	100	-	0.37 J	2.4	0.57 J	1.1 J	1.6	0.33 J
Perfluorooctanesulfonic acid (PFOS)	NG/L	10	70	**11**	**13**	9.5	8.4	**11**	1.8
Perfluorooctanoic acid (PFOA)	NG/L	10	70	**20**	9.1 J	**16 J**	8.1	**16**	2.7
Perfluoropentanoic acid (PFPA)	NG/L	100	-	13	8.1	11	5.9	11	6.3
6:2 Fluorotelomer sulfonate (62FTS)	NG/L	100	-	0.80 U	0.90 U	0.85 U	0.85 U	0.81 U	12 J
8:2 Fluorotelomer sulfonate (82FTS)	NG/L	100	-	0.45 U	0.55 J	0.48 U	0.48 U	0.45 U	0.48 U
Total PFOA and PFOS	NG/L		70	31	22.1	25.5	16.5	27	4.5
Total Per- and Polyfluoroalkyl Substances (PFAS)	NG/L	500	-	84.37	63.36	66.47	60.8	85	34.43

Recommended Screening Level - Drinking Water Quality Council (DWQC) screening level (January 2019)

Health Advisory - USEPA Drinking Water Health Advisory (USEPA, May 2016)

- = No health advisory value.

UG/L = micrograms per liter. NG/L = nanograms per liter.

Flags assigned during chemistry validation are shown.

J - The reported concentration is an estimated value. U - Not detected above the reported quantitation limit.

Detection limits shown are method detection limits (MDL).

Concentration Exceeds Screening Level

Concentration Exceeds Health Advisory

3.0 INSTITUTIONAL AND ENGINEERING CONTROL PLAN

3.1 General

Since contamination remains at the Site, IC/ECs are required to protect human health and the environment. This IC/EC Plan describes the procedures for the implementation and management of all IC/ECs at the Site. The IC/EC Plan is one component of the SMP and is subject to revision by the NYSDEC.

This plan provides:

- A description of all IC/ECs on the Site;
- The basic implementation and intended role of each IC/EC;
- A description of the key components of the ICs set forth in the Environmental Easement;
- A description of the controls to be evaluated during each required inspection and periodic review;
- A description of plans and procedures to be followed for implementation of IC/ECs, such as the implementation of the EWP (see Appendix E) for the proper handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the Site; and
- Any other provisions necessary to identify or establish methods for implementing the IC/ECs required by the Site remedy, as determined by the NYSDEC.

3.2 Institutional Controls

A series of ICs is required by the ROD to: (1) develop a SMP; (2) prevent future exposure to remaining contamination; and, (3) limit the use and development of the Site to restricted residential, commercial, and industrial uses only. Adherence to these ICs on the Site is required by the Environmental Easement and will be implemented under this SMP. ICs identified in the Environmental Easement may not be discontinued without an amendment to or extinguishment of the Environmental Easement. The IC (i.e., Site) boundaries are shown on the Site Plan (Figure 2). The IC boundaries do not include the portion of the parcel that extends into the Hudson River. The parcel number for the property on which the Site is located is 48.12-1-51. These ICs are:

- The Controlled Property may be used for: Restricted Residential Use as described in 6 NYCRR Part 375-1.8(g)(2)(ii), Commercial Use as described in

6 NYCRR Part 375-1.8(g)(2)(iii), or Industrial Use as described in 6 NYCRR Part 375-1.8(g)(2)(iv);

- All Engineering Controls must be operated and maintained as specified in this SMP;
- All Engineering Controls must be inspected at a frequency and in a manner defined in this SMP;
- Groundwater and other environmental or public health monitoring must be performed as defined in this SMP;
- Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner as defined in this SMP;
- All future activities that will disturb remaining contaminated material must be conducted in accordance with this SMP;
- Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in this SMP;
- Operation, maintenance, monitoring, inspection and reporting of any mechanical or physical components of the remedy shall be performed as defined in the SMP; and
- Access to the Site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the Environmental Easement.

3.3 Engineering Controls

There are two engineering controls for this Site: a cover and Site monitoring. Site monitoring will be performed in accordance with the requirements outlined in Section 4.0.

3.3.1 Cover

Exposure to remaining contamination at the Site is prevented by approximately 12 foot of clean, imported backfill material that acts as a cover system since it prevents contact with the remaining contamination. The average depth of soil removed from the excavation was 12 feet below ground surface. The backfill material included No. 2 and No. 4 stone, except for the grass area between the two gravel parking lots. The grass area contains 2 feet of soil cover on top of the stone backfill. Figures 2 and 2A show the excavation boundaries and backfilled areas. The EWP provided in Appendix E outlines the procedures required to be implemented in the event the acting cover system is

breached, penetrated or temporarily removed, and any underlying remaining contamination is disturbed. Procedures for inspection are provided in the Monitoring and Sampling Plan included in Section 4.0 of this SMP. Any work conducted pursuant to the EWP must also be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP) and associated Community Air Monitoring Plan (CAMP) prepared for the Site and included as part of the HASP in Appendix F.

3.3.2 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when monitoring indicates that the remedy has achieved the remedial action objectives identified by the decision document. The framework for determining when remedial processes are complete is provided in Section 6.4 of NYSDEC DER-10.

4.0 MONITORING AND SAMPLING PLAN

4.1 General

This Monitoring and Sampling Plan describes the measures for evaluating the overall performance and effectiveness of the remedy. This Monitoring and Sampling Plan may only be revised with the approval of the NYSDEC. Details regarding the sampling procedures, data quality usability objectives, analytical methods, etc. for all samples collected as part of site management for the Site are included in the Quality Assurance Project Plan (QAPP) provided in Appendix G.

This Monitoring and Sampling Plan describes the methods to be used for:

- Sampling and analysis of all appropriate media (e.g., groundwater);
- Assessing compliance with applicable NYSDEC SCGs, particularly groundwater standards and Part 375 SCOs for soil; and
- Evaluating Site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment;

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

- Sampling locations, protocol and frequency;
- Designed monitoring systems;
- Analytical sampling program requirements;
- Inspection and maintenance requirements for monitoring wells;
- Monitoring well decommissioning procedures; and
- Annual inspection and periodic certification requirements.

Reporting requirements are provided in Section 7.0 of this SMP.

4.2 Site-Wide Inspection

Site-wide inspections will be performed annually. Modification to the frequency or duration of the inspections will require approval from the NYSDEC. Site-wide inspections will also be performed after all severe weather conditions that may affect monitoring wells. During these inspections, an inspection form will be completed as

provided in Appendix H – Site Management Forms. The form will compile sufficient information to assess the following:

- Compliance with all IC/ECs, including Site usage;
- General Site conditions at the time of the inspection;
- The site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection; and
- Confirm that Site records are up to date.

Inspections of all remedial components installed at the Site will be conducted. A comprehensive site-wide inspection will be conducted and documented according to the SMP schedule, regardless of the frequency of the Periodic Review Report (PRR). The inspections will determine and document the following:

- Compliance with requirements of this SMP and the Environmental Easement;
- Achievement of remedial performance criteria; and
- If Site records are complete and up to date.

Reporting requirements are outlined in Section 7.0 of this plan.

Inspections will also be performed in the event of an emergency. If an emergency such as a natural disaster occurs, verbal notice to the NYSDEC must be given by noon of the following day. In addition, an inspection of the Site will be conducted within 5 days of the event to verify the effectiveness of the IC/ECs implemented at the Site by a qualified environmental professional, as determined by the NYSDEC. Written confirmation must be provided to the NYSDEC within 7 days of the event that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.

4.3 Post-Remediation Media Monitoring and Sampling

Samples shall be collected from the groundwater on a routine basis. Sampling locations, required analytical parameters and schedule are provided in Table 8 – Remedial System Groundwater Sampling Requirements and Schedule. Modification to the frequency or sampling requirements will require approval from the NYSDEC.

Table 8 – Post Remediation Groundwater Sampling Requirements and Schedule

Sampling Location	Schedule			
	BTEX (USEPA Method 8260)	PAHs (USEPA Method 8270)	PFAS (USEPA Method 537 - modified)	Frequency
GW-01	X	X	X	Annually
GW-03*	X	X	X	Annually
GW-04	X	X	X	Annually
GW-05	X	X	X	Annually
GW-06	X	X	X	Annually
GW-07	X	X	X	Annually

*GW-03 could not be located in the October 2012 and July 2018 sampling events.

Detailed sample collection and analytical procedures and protocols are provided in Appendix I – Field Sampling and Analysis Plan and Appendix G – Quality Assurance Project Plan.

Groundwater monitoring will be performed annually to assess the performance of the remedy. Modification to the frequency or sampling requirements will require approval from the NYSDEC.

The network of monitoring wells has been installed to monitor upgradient and downgradient groundwater conditions in the fill unit at the Site. Table 9 summarizes the monitoring well identification number, as well as the location, depths, diameter and screened intervals of the wells. Monitoring well construction logs are provided in Appendix J. As part of the groundwater monitoring, one upgradient well and five downgradient wells are sampled to evaluate the effectiveness of the remedial system. Monitoring well locations are shown on Figure 2. It is recommended that downgradient monitoring well GW-03 be replaced if it cannot be located.

Table 9 – Monitoring Well Construction Details							
Well ID	**Well Location**	**Latitude/ Longitude)**	**Well Diameter (inches)**	**Elevation (above mean sea level)**			
				Casing	**Surface**	**Screen Top**	**Screen Bottom**
GW-01	Upgradient	41° 24' 56.961" N, 73° 57' 35.232" W	2	6.82	7.01	4.7	-5.3
GW-03	Downgradient	41° 24' 54.987" N, 73° 57' 37.811" W	2	5.04	5.36	3.0	-7.0
GW-04	Downgradient	41° 24' 55.457" N, 73° 57' 38.295" W	2	4.31	4.65	2.5	-7.6
GW-05	Downgradient	41° 24' 55.872" N, 73° 57' 37.472" W	2	4.96	5.36	3.4	-6.6
GW-06	Downgradient	41° 24' 55.923" N, 73° 57' 37.254" W	2	5.34	5.68	2.7	-6.3
GW-07	Downgradient	41° 24' 55.255" N, 73° 57' 36.725" W	2	5.31	5.82	2.8	-6.2

If biofouling or silt accumulation occurs in the monitoring wells, the wells will be physically agitated/surged and redeveloped. Additionally, monitoring wells will be properly decommissioned and replaced, if an event renders the wells unusable. Repairs and/or replacement of wells in the monitoring well network will be performed based on assessments of structural integrity and overall performance. As mentioned above, monitoring well GW-03 could not be located during the past two sampling events. Attempts will be made to locate the well and repair it, if needed. If the well is found and cannot be repaired, it will be properly decommissioned and should be replaced.

The NYSDEC will be notified prior to any repair or decommissioning of any monitoring well for the purpose of replacement, and the repair or decommissioning and replacement process will be documented in the subsequent PRR. Monitoring well decommissioning without replacement will be done only with the prior approval of the NYSDEC. Well abandonment will be performed in accordance with NYSDEC's guidance entitled "CP-43: Groundwater Monitoring Well Decommissioning Procedures." Monitoring wells that are decommissioned because they have been rendered unusable will be replaced in kind in the nearest available location, unless otherwise approved by the NYSDEC.

The sampling frequency may only be modified with the approval of the NYSDEC. This SMP will be modified to reflect changes in sampling plans approved by the NYSDEC. Deliverables for the groundwater monitoring program are specified in Section 7.0 – Reporting Requirements.

All sampling activities will be recorded in a field book and associated sampling log as provided in Appendix I – Field Sampling and Analysis Plan. Other observations (e.g., groundwater monitoring well integrity, etc.) will be noted on the sampling log. The sampling log will serve as the inspection form for the monitoring network. Additional details regarding monitoring and sampling protocols are provided in the site-specific Field Sampling and Analysis Plan.

5.0 OPERATION AND MAINTENANCE PLAN

5.1 General

The Site remedy does not rely on any mechanical systems, such as groundwater treatment systems, sub-slab depressurization systems or air sparge/soil vapor extraction systems to protect public health and the environment. Therefore, the operation and maintenance of such components is not included in this SMP.

6.0 PERIODIC ASSESSMENTS/EVALUATIONS

6.1 Climate Change Vulnerability Assessment

Increases in both the severity and frequency of storms/weather events, an increase in sea level elevations along with accompanying flooding impacts, shifting precipitation patterns and wide temperature fluctuation, resulting from global climactic change and instability, have the potential to significantly impact the performance, effectiveness and protectiveness of a given site and associated remedial systems. Vulnerability assessments provide information so that the Site and associated remedial systems are prepared for the impacts of the increasing frequency and intensity of severe storms/weather events and associated flooding.

No vulnerability assessments have been performed at the Site to date. However, the components at the Site (i.e., monitoring wells) are flush-mounted and thus, are vulnerable to extreme weather events (e.g., flooding). Flooding is possible at the Site since the water table is close to the surface and the Site is near the Hudson River. Consequently, flooding can potentially damage the monitoring wells.

6.2 Green Remediation Evaluation

NYSDEC's DER-31 Green Remediation requires that green remediation concepts and techniques be considered during all stages of the remedial program including site management, with the goal of improving the sustainability of the cleanup and summarizing the net environmental benefit of any implemented green technology.

Transportation to and from the Site and the use of consumables in relation to visiting the Site in order to conduct system checks or collect samples and shipping samples to a laboratory for analyses have direct and/or inherent energy costs. The schedule and/or means of these periodic activities have been designed so that these tasks can be accomplished in a manner that does not impact protectiveness of the remedy, but reduces the expenditure of energy and resources. A Summary of Green Remediation Metrics for Site Management can be found after the in Appendix H - Site Management Forms.

6.3 Remedial System Optimization

A Remedial Site Optimization (RSO) study will be conducted any time that the NYSDEC or the RP requests in writing that an in-depth evaluation of the remedy is needed. An RSO may be appropriate if any of the following occur:

- The remedial system is not performing as expected or as designed;
- Previously unidentified source material may be suspected;
- Plume shift has potentially occurred;
- Site conditions change due to development, change of use, change in groundwater use, etc.;
- There is an anticipated transfer of the site management to another RP or agency; and
- A new and applicable remedial technology becomes available.

An RSO will provide a critique of a site's conceptual model, give a summary of past performance, document current cleanup practices, summarize progress made toward the Site's cleanup goals, gather additional performance or media specific data and information and provide recommendations for improvements to enhance the ability of the present system to reach RAOs or to provide a basis for changing the remedial strategy.

7.0 REPORTING REQUIREMENTS

7.1 Site Management Reports

All site management inspection, maintenance and monitoring events will be recorded on the appropriate site management forms provided in Appendix H. These forms are subject to NYSDEC revision.

All applicable inspection forms and other records, including media sampling data generated for the Site during the reporting period will be provided in electronic format to the NYSDEC in accordance with the requirements of Table 10 and summarized in the PRR.

Table 10: Schedule of Interim Monitoring/Inspection Reports

Task/Report	Reporting Frequency*
Inspection Report	Annually
Periodic Review Report	Every 3 Years, as determined by the Department

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

All interim monitoring/inspections reports will include, at a minimum:

- Date of event or reporting period;
- Name, company, and position of person(s) conducting monitoring/inspection activities;
- Description of the activities performed;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet);
- Type of samples collected (e.g., groundwater);
- Copies of all field forms completed (e.g., monitoring well sampling logs, chain-of-custody documentation, etc.);
- Sampling results in comparison to appropriate standards/criteria;
- A figure illustrating sample type and 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 contaminant conditions have changed since the last reporting event.

Routine maintenance event reporting forms will include, at a minimum:

- Date of event;
- Name, company, and position of person(s) conducting maintenance activities;
- Description of maintenance activities performed;
- Any modifications to the remedial components;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet); and,
- Other documentation such as copies of invoices for maintenance work, receipts for replacement equipment, etc., (attached to the checklist/form).

Non-routine maintenance event reporting forms will include, at a minimum:

- Date of event;
- Name, company, and position of person(s) conducting non-routine maintenance/repair activities;
- Description of non-routine activities performed;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents (included either on the form or on an attached sheet); and
- Other documentation such as copies of invoices for repair work, receipts for replacement equipment, etc. (attached to the checklist/form).

Data will be reported in digital format as determined by the NYSDEC. Currently, data is to be supplied electronically and submitted to the NYSDEC EQuIS™ database in accordance with the requirements found at this link:

http://www.dec.ny.gov/chemical/62440.html.

7.2 Periodic Review Report

A PRR is required to be submitted to the NYSDEC beginning 18 months after the Certificate of Completion or equivalent document (e.g., Satisfactory Completion Letter) is issued. After submittal of the initial PRR, the next PRR shall be submitted three years thereafter to the NYSDEC or at another frequency as may be required by the NYSDEC.

A PRR and IC/EC Certification for the period March 30, 2013 to July 31, 2018 was submitted by URS to the NYSDEC on August 30, 2018 and was approved on December 18, 2018. The frequency of Periodic Reviews for this Site is three (3) years, and the next PRR and IC/EC Certification is due on August 30, 2021.

In the event that the Site is subdivided into separate parcels with different ownership, a single PRR will be prepared that addresses the Site described in Appendix A - Environmental Easement. The report will be prepared in accordance with NYSDEC's DER-10 and submitted within 30 days of the end of each certification period. Media sampling results will also be incorporated into the PRR. The report will include:

- Identification, assessment and certification of all IC/ECs required by the remedy for the Site.
- Results of the required annual Site inspections and severe condition inspections, if applicable.
- All applicable site management forms and other records generated for the Site during the reporting period in the NYSDEC-approved electronic format, if not previously submitted.
- A summary of any discharge monitoring data and/or information generated during the reporting period, with comments and conclusions.
- Data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor, etc.), 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 of contaminant concentration trends.
- 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 in digital format as determined by the NYSDEC. Currently, data is supplied electronically and submitted to the NYSDEC EQuIS™ database in accordance with the requirements found at this link: http://www.dec.ny.gov/chemical/62440.html.

- A site evaluation, which includes the following:
  - The compliance of the remedy with the requirements of the site-specific ROD;
  - Any new conclusions or observations regarding site contamination based on inspections or data generated by the Monitoring and Sampling Plan for the media being monitored;
  - Recommendations regarding any necessary changes to the remedy and/or Monitoring and Sampling Plan; and
  - Trends in contaminant levels in the affected media will be evaluated to determine if the remedy continues to be effective in achieving remedial goals as specified by the decision document.
  - The overall performance and effectiveness of the remedy.

7.2.1 Certification of Institutional Controls

At the end of each certifying period, as determined by the NYSDEC, the following certification will be provided to the Department:

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

- *The institutional control employed at this Site is unchanged from the date the control was put in place, or last approved by the Department;*
- *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 any site management plan for this control;*
- *Access to the Site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control;*
- *If a financial assurance mechanism is required under the oversight document for the Site, the mechanism remains valid and sufficient for the intended purpose under the document;*
- *Use of the Site is compliant with the Environmental Easement.*
- *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] for the Site."

The signed certification will be included in the PRR.

The PRR will be submitted, in electronic format, to the NYSDEC Central Office, Regional Office in which the Site is located and the New York State Department of Health (NYSDOH) Bureau of Environmental Exposure Investigation. The PRR may need to be submitted in hard-copy format, as requested by the NYSDEC project manager.

7.3 Corrective Measures Work 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 institutional control, a Corrective Measures Work Plan will be submitted 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 Work Plan until it has been approved by the NYSDEC.

7.4 Remedial Site Optimization Report

In the event that an RSO is to be performed (see Section 6.3), upon completion of an RSO, an RSO report must be submitted to the NYSDEC for approval. A general outline for the RSO report is provided in Appendix K. The RSO report will document the research/investigation and data gathering that was conducted, evaluate the results and facts obtained, present a revised conceptual site model and present recommendations. RSO recommendations are to be implemented upon approval from the NYSDEC. Additional work plans, design documents, Health and Safety Plans (HASPs), etc., may still be required to implement the recommendations, based upon the actions that need to be taken. A final engineering report and update to the SMP may also be required.

The RSO report will be submitted, in electronic format, to the NYSDEC Central Office, Regional Office in which the Site is located, Site Control and the NYSDOH Bureau of Environmental Exposure Investigation.

8.0 REFERENCES

Dvirka and Bartilucci (DB). 2009. *Site Investigation/Remedial Alternatives Report*.

Groundwater and Environmental Services, Inc. (GES). 2013. *Site Characterization Report*.

New York State Department of Environmental Conservation (NYSDEC). 1998. *Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations*. Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1. June (including January 1999 Errata Sheet, April 2000 Addendum, and June 2004 Addendum).

NYSDEC. 2005. Preliminary Site Assessment. June.

NYSDEC. 2005. *Site Characterization Report*. July.

NYSDEC. 2006. 6NYCRR Part 375, Environmental Remediation Programs. December 14.

NYSDEC. 2010. DER-10 –*Technical Guidance for Site Investigation and Remediation*. May 3. Including Errata Sheet for DER-10.

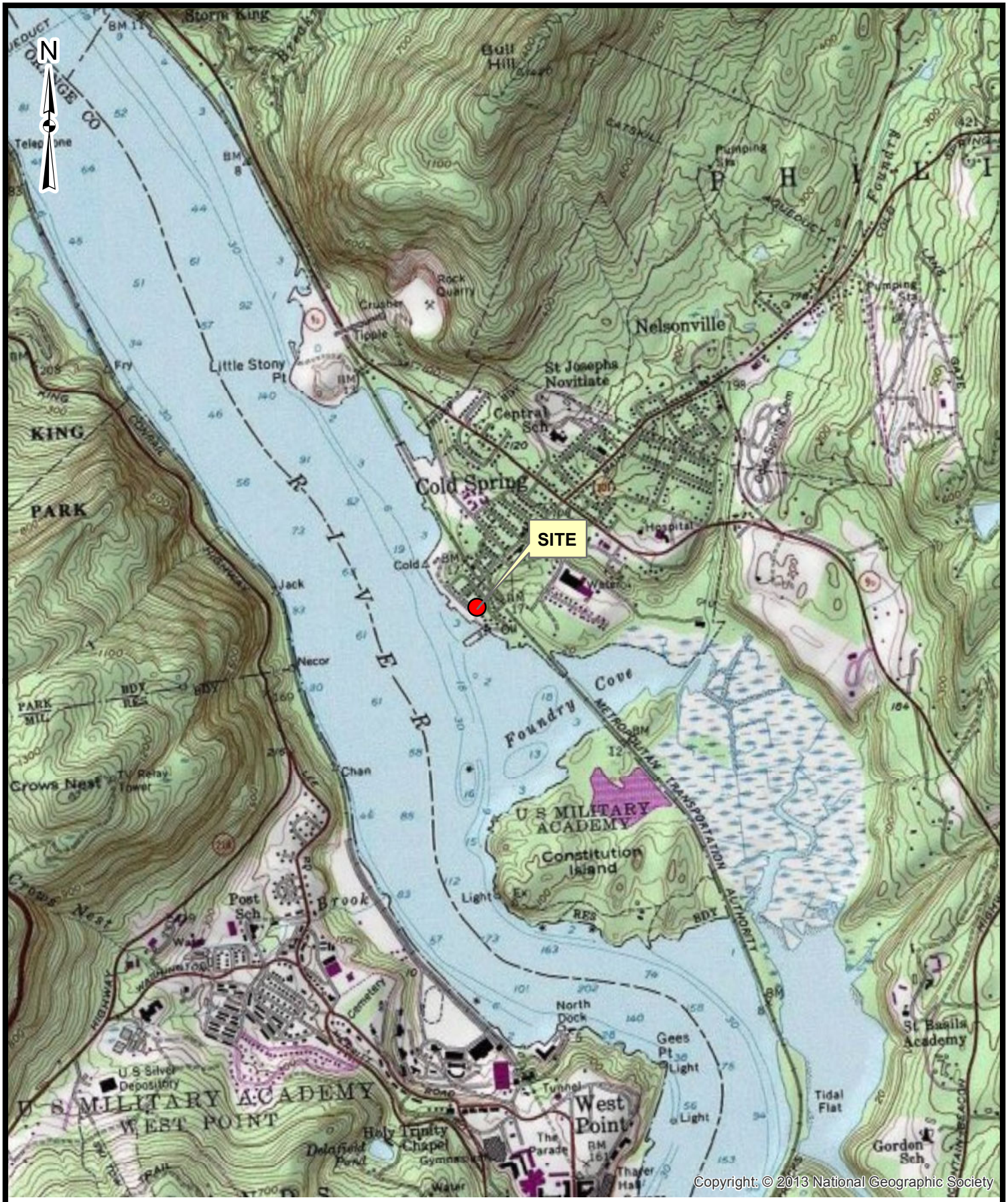
NYSDEC. 2010. *Record of Decision (ROD)*. February.

URS Corporation (URS). 2014. *Pre-Design Investigation Soil Boring Program Report*. February

URS. 2014. *Pre-Design Investigation Report*. September.

URS. 2014. *Pre-Design Geotechnical Summary Report*. September.

URS. 2017. *Final Engineering Report.* September.



Source:
1:24,000-scale USGS Topographic Map, West Point, NY

2,000 0 2,000 Feet

URS

NYSDEC COLD SPRING FORMER MGP SITE
5 NEW STREET
COLD SPRING, NEW YORK

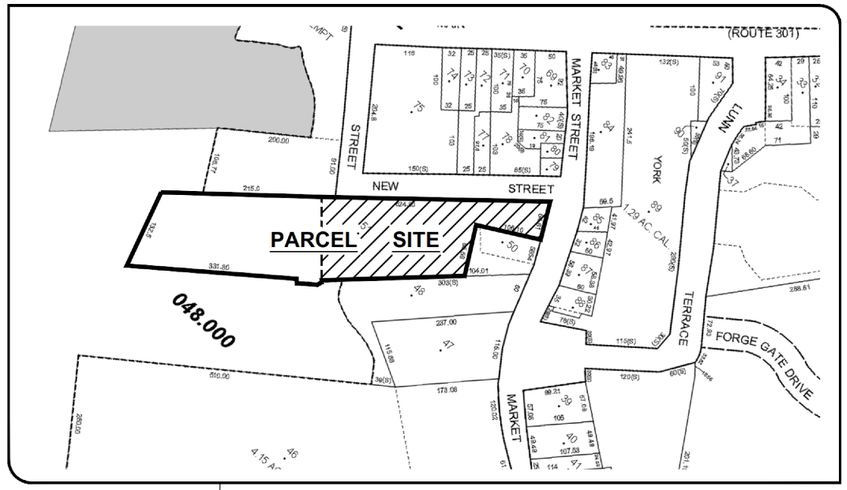
FIGURE 1

I:\19998446.00004\GIS\MAPS\TOPO.mxd 2/25/2010 MDL

	NORTHING	EASTING	COVER ELEV.	PVC ELEV.
NEW GW-06	941,047.5	640,133.0	5.68'	5.34'
NEW GW-07	940,980.2	640,173.7	5.82'	5.31'
ADJUSTED GW-05	941,042.2	640,116.4	5.36'	4.96'

NOTES:

1. SURVEY SHOWN WAS PREPARED FROM AN AUGUST 2016 THROUGH AUGUST 2016 FIELD SURVEY.
2. THE PURPOSES OF THIS SURVEY IS TO DOCUMENT THE POST-CONSTRUCTION CONDITIONS OF THE SITE.
3. SURVEY SUBJECT TO ANY SUBSURFACE CONDITIONS THAT MAY EXIST, IF ANY.
4. UNDERGROUND UTILITIES SHOWN HERON ARE APPROXIMATE AND BASED ON UTILITY EVIDENCE VISIBLE AT GROUND SURFACE AND MAP REFERENCE NO. 1. UTILITIES ARE SUBJECT TO FIELD VERIFICATION BY EXCAVATION. UTILITIES SHOWN DO NOT IMPLY TO CONSTITUTE OR REPRESENT ALL UTILITIES UPON OR ADJACENT TO THE SURVEYED AREA. OTHER UTILITIES MAY EXIST, IF ANY.
5. NMB LAND SURVEYING PERFORMED NO BOUNDARY DETERMINATION FOR THE PURPOSES OF THIS SURVEY. BOUNDARY INFORMATION AND LINES SHOWN ARE FOR REFERENCE ONLY.
6. THE DATUM USED FOR THIS SURVEY IS BASED ON PROJECT CONTROL AS SHOWN ON MAP REFERENCE NO. 1.
7. HORIZONTAL DATUM IS BASED UPON THE NEW YORK STATE PLANE COORDINATE SYSTEM, EAST ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83), PER MAP REFERENCE NO. 1.
8. VERTICAL DATUM IS BASED UPON THE ELEVATIONS OF THE MONITORING WELLS ESTABLISHED BY WILLIAM D. YOUNGBLOOD LAND SURVEYING, P.C. AS SHOWN ON A DRAWING TITLED "SURVEY FOR VILLAGE OF COLD SPRING", FILE #P-1001, DATED 9/11/08, WHICH WAS BASED UPON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) PER MAP REFERENCE NO. 1.

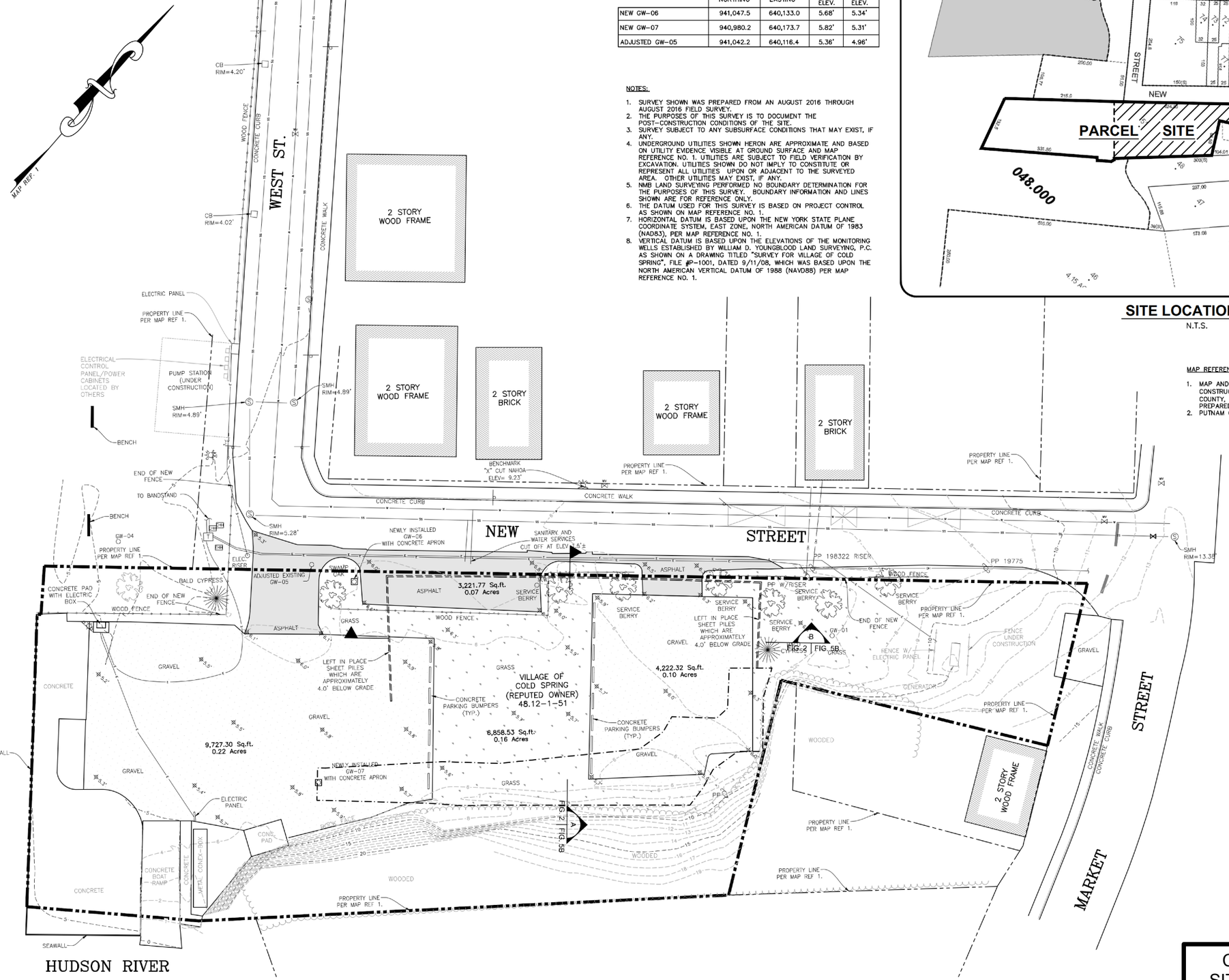


SITE LOCATION MAP

N.T.S.

MAP REFERENCE:

1. MAP AND PLANS ENTITLED "COLD SPRING FORMER MGP SITE REMEDIAL CONSTRUCTION, NYSDEC SITE 340026, COLD SPRING (V), PUTNAM COUNTY, NEW YORK, CONTRACT D009635" DATED MAY 2015 AND PREPARED BY URS CORPORATION.
2. PUTNAM COUNTY TAX MAP 48.12.



LEGEND:

- WATER VALVE
- FIRE HYDRANT
- ELECTRIC TRANSFORMER
- ELECTRIC HANDHOLE
- SIGN (1 POST)
- SIGN (2 POST)
- UTILITY POLE
- LIGHT POST
- M.W. MONITORING WELL
- TREE
- NEWLY INSTALLED FENCE
- EXISTING FENCE
- W WATER LINE
- G GAS LINE
- OH OVERHEAD UTILITY LINE
- SS SANITARY SEWER LINE
- C UNDERGROUND COMMUNICATION LINE
- E UNDERGROUND ELECTRIC LINE
- PROPERTY LINE
- INSTALLED ASPHALT
- INSTALLED GRAVEL
- SHEET PILING LEFT IN PLACE
- FLOWABLE FILL
- BOUNDARY OF SITE/IC BOUNDARY

0 20 40 Feet

Note: Site Property Boundary constitutes Institutional Control Limits
Source: Post-Contruction Mapping Record Drawing, NMB Land Surveying, August 16th, 2016

COLD SPRING FORMER MGP SITE
SITE PLAN - POST REMEDIAL ACTION

URS

FIGURE 2

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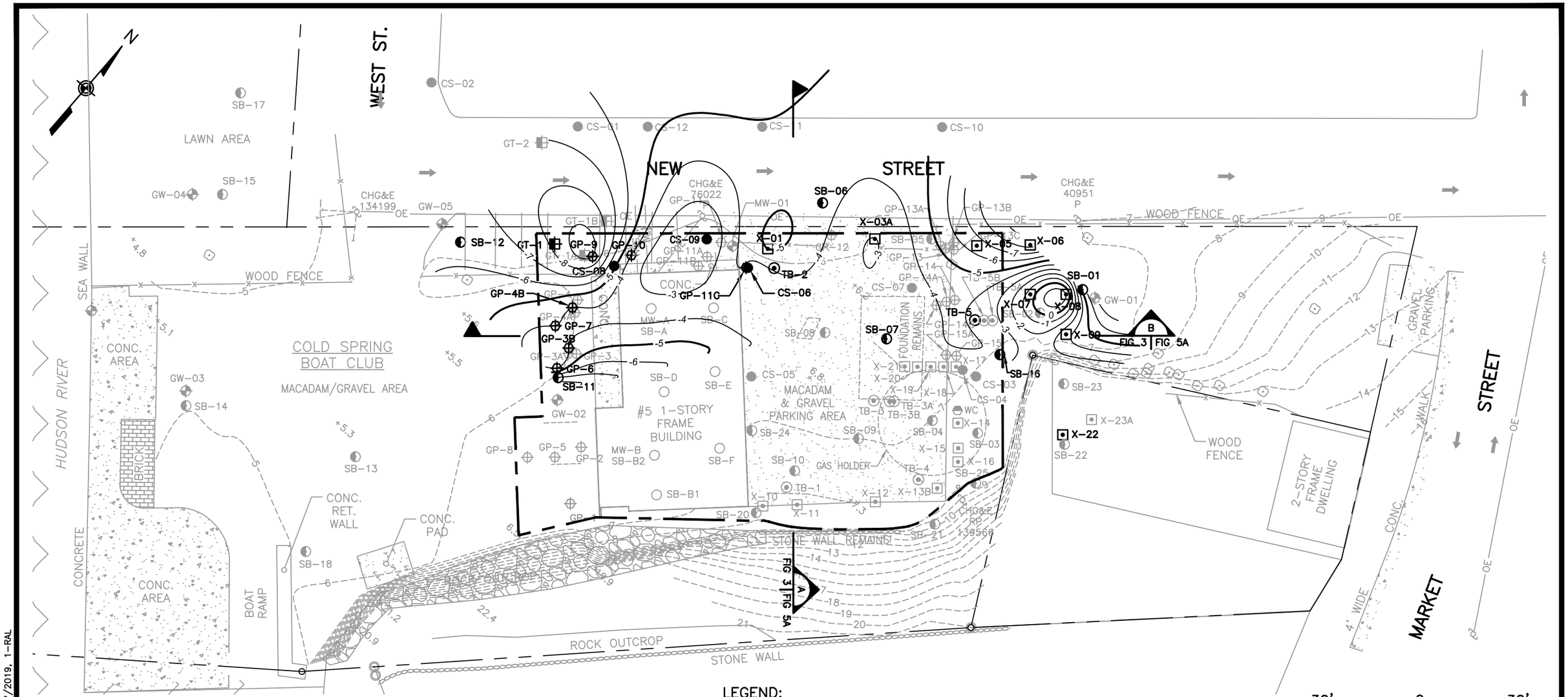

Boring ID	Depth to Clay (ft)
CS-06	9.8
CS-08	11.2
CS-09	8.2
GP-3B	10
GP-4B	10
GP-6	10
GP-7	10
GP-9	15
GP-10	10
GP-11C	10
GT-1	14
SB-01	10
SB-06	10.5

Boring ID	Depth to Clay (ft)
SB-07	10
SB-11	13.1
SB-12	12
SB-16	10.9
TB-2	9
TB-5	8
X-01	11
X-03A	9
X-05	13
X-06	15
X-07	7
X-08	6
X-09	10
X-22	5

LEGEND:

- CS-08 ● NYSDEC BORING COMPLETED IN 2005
- SB-24 ◐ DVIRKA AND BARTILUCCI 2008 SOIL BORING LOCATIONS
- MW-01 ⊕ NYSDEC GROUNDWATER MONITORING WELL, COMPLETED IN 2005
- GW-04 ⊕ NYSDEC GROUNDWATER MONITORING WELL, COMPLETED IN 2005
- SB-D ○ GES 2012 BORINGS (AND MONITORING WELLS WHERE INSTALLED)
- REQUIRED HORIZONTAL EXTENT OF REMEDIATION EXCAVATION
- EXISTING BUILDING FOOTPRINT
- -8- EXISTING GRADE CONTOUR WITH ELEVATION
- -3- TOP OF CLAY CONTOUR WITH ELEVATION
- TB-1 ⊙ URS APRIL 2013 BORINGS
- X-18 ⊡ URS OCTOBER 2013 BORINGS
- GT-1 ⊞ GEOTECHNICAL BORING (URS 2014)
- GP-1 ⊕ GEOPROBE BORING (URS 2014)
- WC WASTE CHARACTERIZATION BORING (URS 2014)
- SUSPECTED FORMER MGP STRUCTURE BASED ON GEOPHYSICAL SURVEYS (URS 2014 AND DVIRKA AND BARTILUCCI 2008)

30' 0 30'

SCALE IN FEET

SOURCE:

1. TOPOGRAPHIC SURVEY INFORMATION, FROM DRAWING P-1001, DATED 9/11/08, PROVIDED BY WILLIAM D. YOUNGBLOOD, LAND SURVEYING, P.C.
2. EXISTING GRADE ELEVATIONS FROM YEC, INC., DATED JUNE 2013.
3. BORINGS AND SAMPLE LOCATIONS SHOWN FULL-TONED ARE USED TO DETERMINE ELEVATIONS OF THE TOP OF CLAY.

COLD SPRING FORMER MGP SITE
BORING LOCATIONS WITH TOP OF CLAY

URS

FIGURE 3

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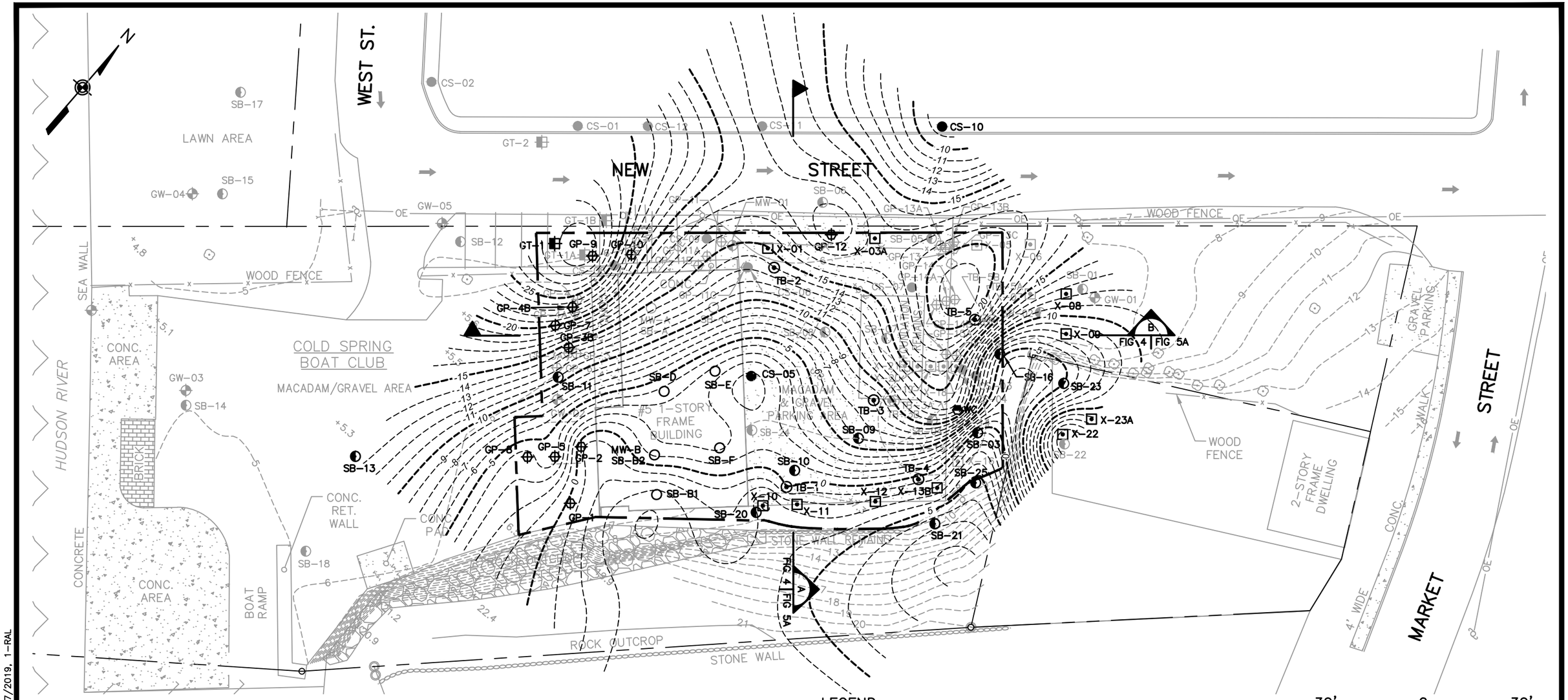

Boring ID	Depth to Bedrock/Refusal (ft)
CS-05	7.5
CS-10	14.5
GP-1	6.5
GP-2	5.8
GP-3B	20.2
GP-4B	29
GP-5	11
GP-7	26
GP-8	10
GP-9	35.2
GP-10	28
GP-12	25.5
GT-1	34.5
MW-B/SB-B2	7.5
SB-B1	3.0

Boring ID	Depth to Bedrock/Refusal (ft)
SB-D	10
SB-E	9
SB-F	8.5
SB-03	7
SB-09	13
SB-10	8
SB-11	17
SB-13	19
SB-16	13.0
SB-20	5
SB-21	3
SB-23	18
SB-25	3.0
TB-1	7.5
TB-2	20

Boring ID	Depth to Bedrock/Refusal (ft)
TB-3	15
TB-4	7
TB-5	26
X-01	20.9
X-03A	23.7
X-08	19.3
X-09	14.4
X-10	3.7
X-11	5.4
X-12	5.4
X-13B	5.6
X-22	27.5
X-23A	24.3
WC	19.0

LEGEND:

- CS-08 ● NYSDEC BORING COMPLETED IN 2005
- SB-24 ◐ DVIRKA AND BARTILUCCI 2008 SOIL BORING LOCATIONS
- MW-01 ⊕ NYSDEC GROUNDWATER MONITORING WELL, COMPLETED IN 2005
- GW-04 ⊕ NYSDEC GROUNDWATER MONITORING WELL, COMPLETED IN 2005
- SB-D ○ GES 2012 BORINGS (AND MONITORING WELLS WHERE INSTALLED)
- REQUIRED HORIZONTAL EXTENT OF REMEDIATION EXCAVATION
- EXISTING BUILDING FOOTPRINT
- -----8----- EXISTING GRADE CONTOUR WITH ELEVATION
- -----6----- TOP OF BEDROCK CONTOUR WITH ELEVATION
- TB-1 ⊙ URS APRIL 2013 BORINGS
- X-18 ⊡ URS OCTOBER 2013 BORINGS
- GT-1 ⊞ GEOTECHNICAL BORING (URS 2014)
- GP-1 ⊕ GENERAL BORING (URS 2014)
- WC ⬬ WASTE CHARACTERIZATION BORING (URS 2014)
- SUSPECTED FORMER MGP STRUCTURE BASED ON GEOPHYSICAL SURVEYS (URS 2014 AND DVIRKA AND BARTILUCCI 2008)

30' 0 30'

SCALE IN FEET

SOURCE:

1. TOPOGRAPHIC SURVEY INFORMATION, FROM DRAWING P-1001, DATED 9/11/08, PROVIDED BY WILLIAM D. YOUNGBLOOD, LAND SURVEYING, P.C.
2. EXISTING GRADE ELEVATIONS FROM YEC, INC., DATED JUNE 2013.
3. BORINGS AND SAMPLE LOCATIONS SHOWN FULL-TONED ARE USED TO DETERMINE ELEVATIONS OF THE TOP OF BEDROCK.

COLD SPRING FORMER MGP SITE
BORING LOCATIONS WITH TOP OF BEDROCK

URS

FIGURE 4

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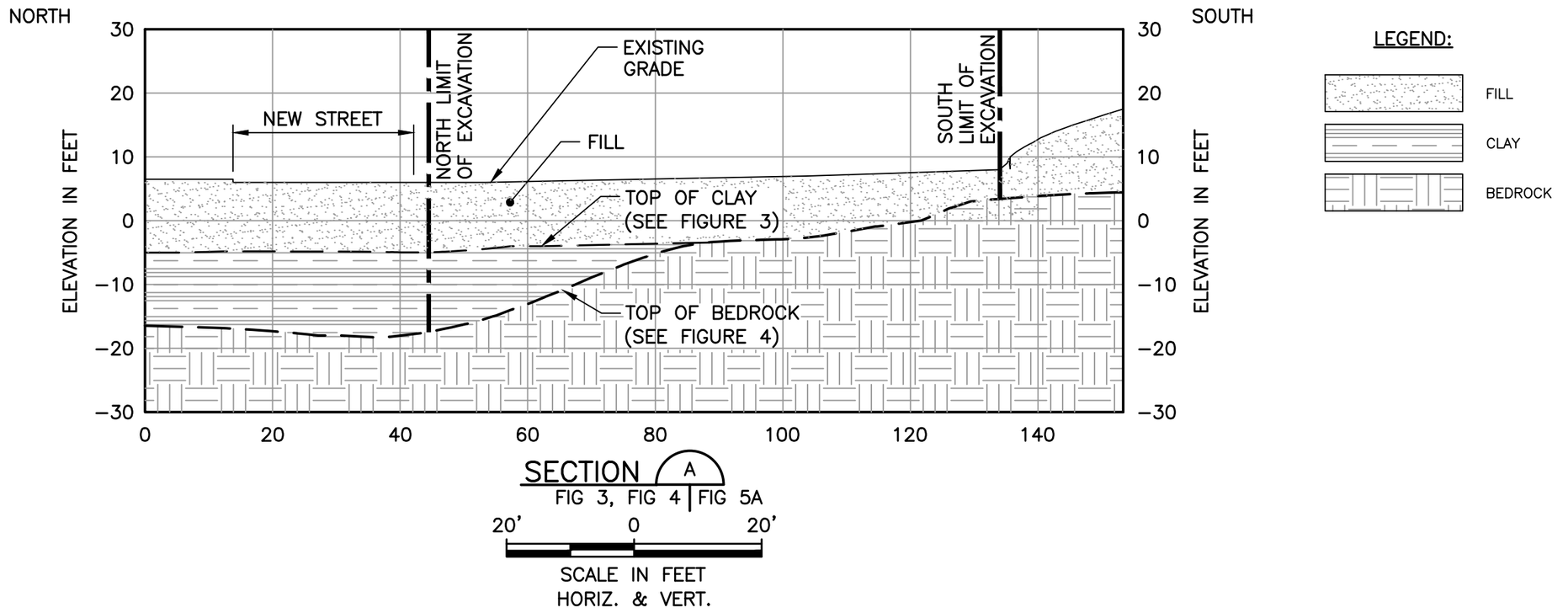
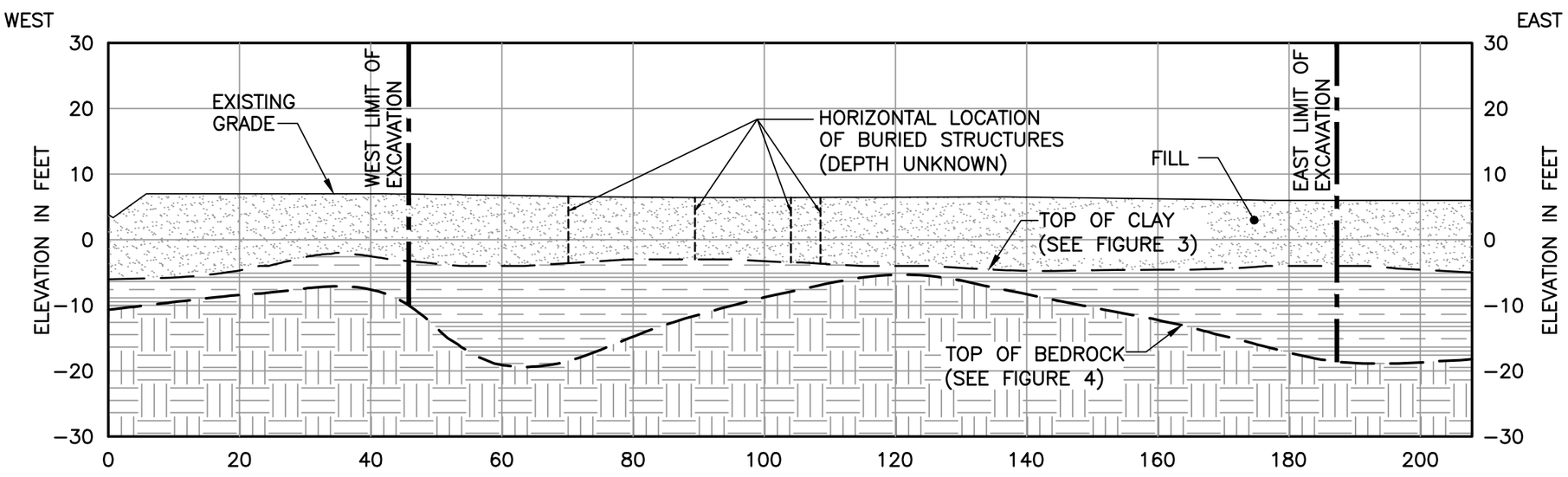


SECTION A
FIG 3, FIG 4 | FIG 5A

20' 0 20'

SCALE IN FEET
HORIZ. & VERT.



SECTION B
FIG 3, FIG 4 | FIG 5A

20' 0 20'

SCALE IN FEET
HORIZ. & VERT.

COLD SPRING FORMER MGP SITE
CROSS SECTIONS – PRE REMEDIAL ACTION

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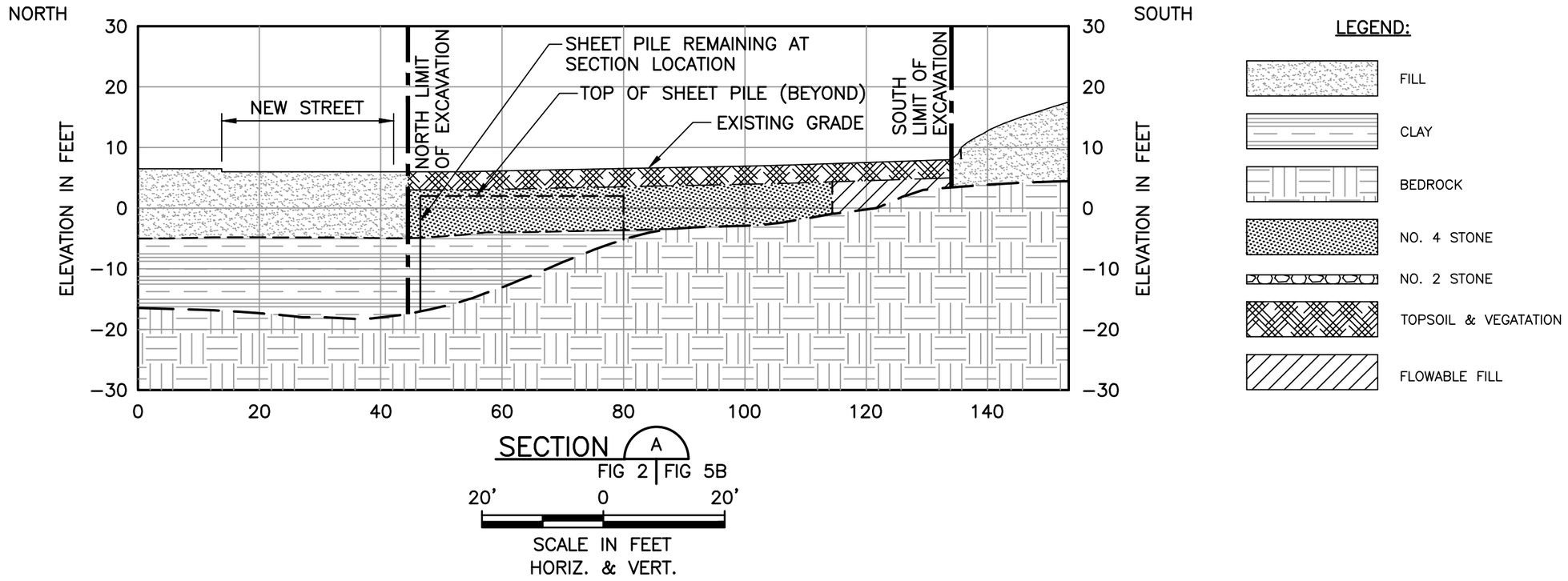
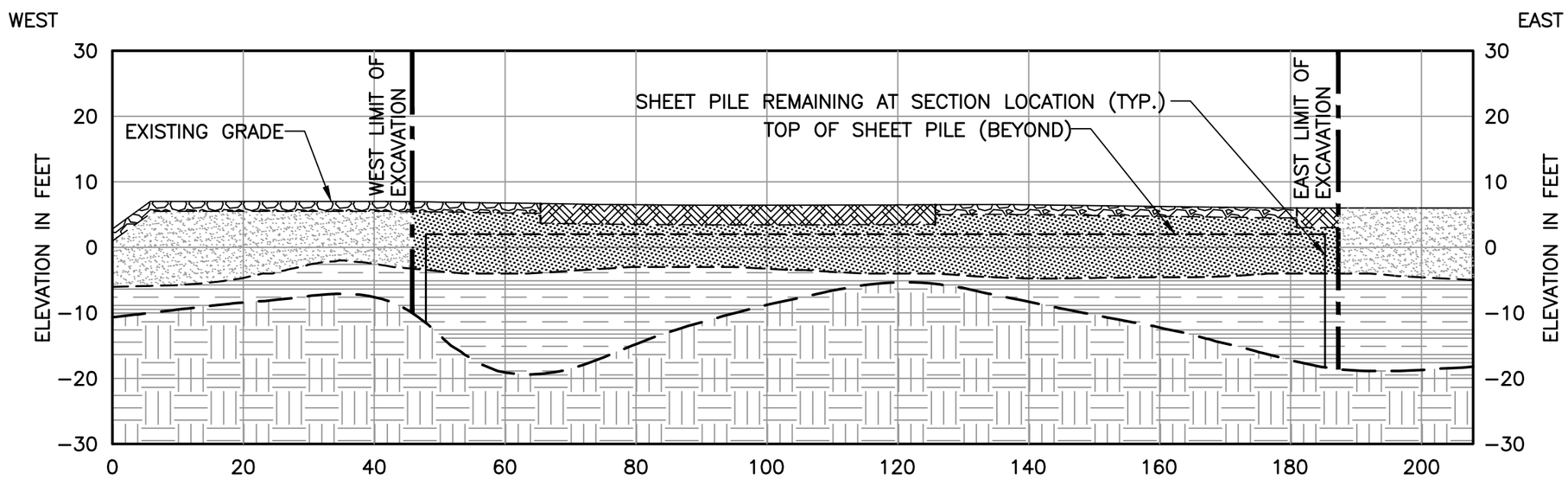
FIGURE 5A

J:\Projects\11176853\CAD\FEB 2019\Figure 5A.dwg, 1:1, 2/28/2019, 1-HAP





COLD SPRING FORMER MGP SITE
CROSS SECTIONS – POST REMEDIAL ACTION

URS

FIGURE 5B

J:\Projects\11176853\CAD\FEB 2019\Figure 5B.dwg, 1:1, 2/28/2019, 1-HAP

N

WEST STREET

NEW STREET

GW-04, 2.18

GW-05, 2.28

GW-06, 2.32

GW-01, 4.08

GW-07, 2.28

AREA OF EXCAVATION

FLOWABLE FILL

2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4

Legend

- Monitoring Well
- Groundwater Flow Direction
- 3.9 Groundwater Elevation Contour
- Limits of Excavation
- Northern Boundary of Flowable Fill
- Flowable Fill

NOTE:
Groundwater elevation data obtained on July 10, 2018 during sampling event performed by GES.

20 0 20 Feet

COLD SPRING FORMER MGP SITE GROUNDWATER ELEVATION MAP

URS

FIGURE 6

J:\Projects\60429529\MISC\GIS\Maps\SMP\06 GW Elevation.mxd 2/28/2019

SAMPLE ID	NORTHING	EASTING	SAMPLE DEPTH
DOC-1	941107.11	640273.09	7.86
DOC-2	941046.66	640197.86	10.44
DOC-3	941110.87	640250.65	12.94
DOC-4	941074.85	640187.54	12.68
DOC-5	941065.12	640168.51	12.79
DOC-6	941148.74	640251.35	11.06
DOC-7	941098.01	640188.98	11.36
DOC-8	941059.39	640145.31	13.00
DOC-9	941062.23	640245.30	9.60
DOC-10	941021.22	640201.01	9.00
DOC-11	941003.65	640174.67	9.60
DOC-12	940995.91	640165.53	6.80
DOC-13	941014.78	640167.85	6.80

WEST STREET

NEW STREET

DOC-8	CRIT	5/16
PAHs:		
Benzo[a]anthracene	1	1.2
Benzo[a]pyrene	1	1.1

DOC-7	CRIT	5/16
PAHs:		
Benzo[a]anthracene	1	2.6
Benzo[a]pyrene	1	2.1
Benzo[a]fluoranthene	1	1.8
Dibenzo[a,h]anthracene	0.33	0.34
Indeno[1,2,3-cd]pyrene	0.5	0.79

DOC-2	CRIT	3/16
PAHs:		
Benzo[a]anthracene	1	1.9
Benzo[a]pyrene	1	1.3
Benzo[a]fluoranthene	1	1.2
Indeno[1,2,3-cd]pyrene	0.5	0.56

DOC-11	CRIT	6/16
PAHs:		
Benzo[a]anthracene	1	1.4
Benzo[a]pyrene	1	1.2
Benzo[a]fluoranthene	1	1.4
Indeno[1,2,3-cd]pyrene	0.5	0.56

DOC-12	CRIT	6/16
PAHs:		
Benzo[a]anthracene	1	1.1
Benzo[a]fluoranthene	1	1.2
Indeno[1,2,3-cd]pyrene	0.5	0.53

DOC-10	CRIT	6/16
PAHs:		
Total	500	1616.3

DOC-01

DOC-03

DOC-04

DOC-05

DOC-06

DOC-13

AREA OF EXCAVATION

FLOWABLE FILL

DOC-9	CRIT	6/16
VOCs:		
Benzene	4.8	66
Ethylbenzene	41	150
Toluene	100	110
Xylenes (total)	100	200
PAHs:		
Total	500	969.3

Legend

- Soil Sample - No Exceedances of RAOs or Restricted Residential Use SCOs
- Soil Sample Exceeding Restricted Residential Use SCOs
- Soil Sample Exceeding RAO (500 mg/Kg Total PAHs)
- Soil Sample Exceeding Both RAOs and Restricted Residential Use SCOs
- Limits of Excavation
- Northern Boundary of Flowable Fill
- Flowable Fill

NOTES:
(1) Units are in milligrams per kilogram.
(2) Criteria (CRIT): 6 NYCRR Subpart 375-6 Restricted Residential Use SCOs, and 500 mg/Kg or more for Total PAHs.
(3) Horizontal datum is based upon the New York State Plane Coordinate System, East Zone, North American Datum of 1983 (NAD83).
(4) Vertical datum is based upon the elevations of the monitoring wells established by William D. Youngblood Land Surveying, P.C. as shown on a drawing titled "Survey For Village Of Cold Spring", file #P-1001, dated 9/11/08, which was based upon the North American Vertical Datum of 1988 (NAVD88).
(5) All samples met RAO of being free of visible tar.
(6) Sample depth is measured from post-remedial action grade.

20 0 20 Feet

COLD SPRING FORMER MGP SITE AREAS OF REMAINING SOIL CONTAMINATION

URS

FIGURE 7

J:\Projects\60429529\MISC\GIS\Maps\SMP\07 DOC Sampling Analytical.mxd 2/28/2019

N

WEST STREET

NEW STREET

GW-04 | CRIT | 07/18
No Compounds Exceed Criteria

GW-05 | CRIT | 07/18
No Compounds Exceed Criteria

GW-06 | CRIT | 07/18
No Compounds Exceed Criteria

GW-01 | CRIT | 07/18
No Compounds Exceed Criteria

AREA OF EXCAVATION

FLOWABLE FILL

GW-07 | CRIT | 07/18

VOCs:		
Benzene	1	2.5
Xylene (total)	5	8.7
SVOCs:		
Acenaphthene	20	32

Legend

- Monitoring Well
- Limits of Excavation
- Northern Boundary of Flowable Fill
- Flowable Fill

Location ID | Criteria | Date

GW-07 | CRIT | 07/18

VOCs:		
Benzene	1	2.5

Parameter — Concentration

NOTES:
(1) Units are in micrograms per liter.
(2) Criteria (CRIT): NYSDEC TOGS 1.1.1 Ambient Water Quality Standards, Class GA.
(3) Data obtained from analysis of samples collected by GES on July 10, 2018.

20 0 20 Feet

COLD SPRING FORMER MGP SITE
GROUNDWATER SAMPLE RESULTS

URS

FIGURE 8

J:\Projects\60429529\MISC\GIS\Maps\SMP\08 GW Analytical.mxd 2/28/2019

GW-04	CRIT 1	CRIT 2	07/18
SVOCs:			
1,4-Dioxane	1	--	0.24
Per- and Polyfluoroalkyl Substances:			
Perfluorobutanesulfonic acid (PFBS)	100	--	6.9
Perfluorobutanoic acid (PFBA)	100	--	13
Perfluorodecanoic acid (PFDA)	100	--	0.61
Perfluoroheptanoic acid (PFHpA)	100	--	5.1
Perfluorohexanesulfonic acid (PFHxS)	100	--	6.5
Perfluorohexanoic acid (PFHxA)	100	--	7.3
Perfluorononanoic acid (PFNA)	100	--	2.4
Perfluorooctanesulfonic acid (PFOS)	10	70	13
Perfluorooctanoic acid (PFOA)	10	70	16
Perfluoropentanoic acid (PFPA)	100	--	11
6:2 Fluorotelomer sulfonate (62FTS)	100	--	ND
8:2 Fluorotelomer sulfonate (82FTS)	100	--	0.55
Total PFOA and PFOS	--	70	25.5
Total Per- and Polyfluoroalkyl Substances	500	--	66.47

GW-05	CRIT 1	CRIT 2	07/18
SVOCs:			
1,4-Dioxane	1	--	ND
Per- and Polyfluoroalkyl Substances:			
Perfluorobutanesulfonic acid (PFBS)	100	--	7.9
Perfluorobutanoic acid (PFBA)	100	--	17
Perfluorodecanoic acid (PFDA)	100	--	ND
Perfluoroheptanoic acid (PFHpA)	100	--	3.6
Perfluorohexanesulfonic acid (PFHxS)	100	--	4.3
Perfluorohexanoic acid (PFHxA)	100	--	4.5
Perfluorononanoic acid (PFNA)	100	--	1.1
Perfluorooctanesulfonic acid (PFOS)	10	70	8.4
Perfluorooctanoic acid (PFOA)	10	70	8.1
Perfluoropentanoic acid (PFPA)	100	--	5.9
6:2 Fluorotelomer sulfonate (62FTS)	100	--	ND
8:2 Fluorotelomer sulfonate (82FTS)	100	--	ND
Total PFOA and PFOS	--	70	16.5
Total Per- and Polyfluoroalkyl Substances	500	--	60.8

GW-06	CRIT 1	CRIT 2	07/18
SVOCs:			
1,4-Dioxane	1	--	0.17
Per- and Polyfluoroalkyl Substances:			
Perfluorobutanesulfonic acid (PFBS)	100	--	7.5
Perfluorobutanoic acid (PFBA)	100	--	23
Perfluorodecanoic acid (PFDA)	100	--	ND
Perfluoroheptanoic acid (PFHpA)	100	--	4.8
Perfluorohexanesulfonic acid (PFHxS)	100	--	4.3
Perfluorohexanoic acid (PFHxA)	100	--	5.8
Perfluorononanoic acid (PFNA)	100	--	1.6
Perfluorooctanesulfonic acid (PFOS)	10	70	11
Perfluorooctanoic acid (PFOA)	10	70	16
Perfluoropentanoic acid (PFPA)	100	--	11
6:2 Fluorotelomer sulfonate (62FTS)	100	--	ND
8:2 Fluorotelomer sulfonate (82FTS)	100	--	ND
Total PFOA and PFOS	--	70	27
Total Per- and Polyfluoroalkyl Substances	500	--	85

NEW STREET

AREA OF EXCAVATION

FLOWABLE FILL

GW-07	CRIT 1	CRIT 2	07/18
SVOCs:			
1,4-Dioxane	1	--	ND
Per- and Polyfluoroalkyl Substances:			
Perfluorobutanesulfonic acid (PFBS)	100	--	1.2
Perfluorobutanoic acid (PFBA)	100	--	5.7
Perfluorodecanoic acid (PFDA)	100	--	ND
Perfluoroheptanoic acid (PFHpA)	100	--	1.1
Perfluorohexanesulfonic acid (PFHxS)	100	--	1.1
Perfluorohexanoic acid (PFHxA)	100	--	2.2
Perfluorononanoic acid (PFNA)	100	--	0.33
Perfluorooctanesulfonic acid (PFOS)	10	70	1.8
Perfluorooctanoic acid (PFOA)	10	70	2.7
Perfluoropentanoic acid (PFPA)	100	--	6.3
6:2 Fluorotelomer sulfonate (62FTS)	100	--	12
8:2 Fluorotelomer sulfonate (82FTS)	100	--	ND
Total PFOA and PFOS	--	70	4.5
Total Per- and Polyfluoroalkyl Substances	500	--	34.43

GW-01	CRIT 1	CRIT 2	07/18
SVOCs:			
1,4-Dioxane	1	--	0.14
Per- and Polyfluoroalkyl Substances:			
Perfluorobutanesulfonic acid (PFBS)	100	--	7
Perfluorobutanoic acid (PFBA)	100	--	6.7
Perfluorodecanoic acid (PFDA)	100	--	ND
Perfluoroheptanoic acid (PFHpA)	100	--	6.6
Perfluorohexanesulfonic acid (PFHxS)	100	--	8.7
Perfluorohexanoic acid (PFHxA)	100	--	11
Perfluorononanoic acid (PFNA)	100	--	0.37
Perfluorooctanesulfonic acid (PFOS)	10	70	11
Perfluorooctanoic acid (PFOA)	10	70	20
Perfluoropentanoic acid (PFPA)	100	--	13
6:2 Fluorotelomer sulfonate (62FTS)	100	--	ND
8:2 Fluorotelomer sulfonate (82FTS)	100	--	ND
Total PFOA and PFOS	--	70	31
Total Per- and Polyfluoroalkyl Substances	500	--	84.37

Legend

- Monitoring Well
- Limits of Excavation
- Northern Boundary of Flowable Fill
- Flowable Fill

Location ID / Criteria 1 / Criteria 2 / Date

GW-07	CRIT 1	CRIT 2	07/18
SVOCs:			
1,4-Dioxane	1	--	ND

Parameter / Concentration

NOTES:
(1) 1,4-Dioxane shown in micrograms per liter, whereas Per- and Polyfluoroalkyl Substances are shown in nanograms per liter.
(2) Criteria (CRIT 1): Recommended Drinking Water Quality Council (DWQC) Screening Level (January 2019).
(3) Criteria (CRIT 2): USEPA Drinking Water Health Advisory (USEPA, May 2016).
(4) Data obtained from analysis of samples collected by GES on July 10, 2018.

20 0 20 Feet

COLD SPRING FORMER MGP SITE
EMERGING CONTAMINANTS
ANALYTICAL RESULTS

URS

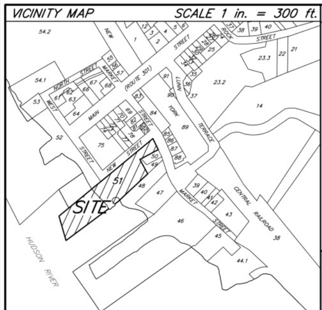
FIGURE 9

J:\Projects\60429529\MISC\GIS\Maps\SMP\09 Emerging Contaminants Analytical.mxd 2/28/2019

APPENDIX A – ENVIRONMENTAL EASEMENT

GEOGRAPHIC INDEX 41-24-58.0 -73-57-35.4

VICINITY MAP SCALE 1 in. = 300 ft.



LEGEND

- GUY
- HEDGES
- MANHOLE
- MONITORING WELL
- MANHOLE (SEWER)
- BOLLARD
- POLE
- SIGN (SMALL)
- TRAFFIC FLOW
- WATER VALVE
- WIRES
- SIGN (LARGE)
- SIGN (SMALL)
- LAMP
- TELEPHONE BOX
- ELECTRIC BOX

DESCRIPTION OF PROPERTY

Deed recorded in Liber 655 at page 338.

All that certain plot, piece, or parcel of land, with the buildings and improvements thereon erected, situate in the village of Cold Spring, Town of Philipstown, County of Putnam and State of New York, bounded and described as follows:

Beginning at a point on the westerly side of Market Street in the Village of Cold Spring, said point being the southwesterly corner of the intersection of Market Street with New Street in said village: and running thence South 58° 5 min. West 346.50 feet, to a point on the westerly side of West Street in said village, said point being the most southwesterly corner of the intersection of West Street with New Street in said village; thence North 27° 58 min. 10 seconds West along the westerly side of West Street a distance of 91.00 feet to a stone monument set in the westerly side of West Street and land of the Village of Cold Spring; thence along same South 62° 1 min. 50 seconds West, a distance of 200.00 feet to a point underwater in the bed of the Hudson River; thence South 20° 10 min. 10 seconds East, a distance of 106.77 feet to a point underwater in the bed of the said Hudson River; thence South 58° 05 min. West, a distance of 62.70 feet, to a point underwater in the bed of the said Hudson River. Thence South 8° 33 min. 10 seconds East, a distance of 124.60 feet to another point underwater in the bed of said Hudson River. Thence North 60° 59 min. 40 seconds East, a distance of 331.80 feet, to another point underwater in the bed of said Hudson River; thence North 55° 14 min. 40 seconds East, a distance of 316.00 feet along the common boundary line of lands of the grantor with lands now or formerly of Pensiero to a point on the westerly side of Market Street; thence along said westerly side of Market St., North 18° 56 min. 30 seconds West, a distance of 14.10 feet to an iron pipe set in the ground at the intersection of the common boundary line of lands of the grantor with lands now or formerly of Nolfo; thence leaving the westerly side of Market Street and running South 70° 57 min. 30 seconds West, a distance of 91.00 feet to an iron pipe set in the ground at the intersection of the common line of lands of the grantor with the lands now or formerly of Nolfo, said point being the most southwesterly corner of the lands of Nolfo; thence along the westerly boundary line of lands now or formerly of Nolfo, a distance of 40.00 feet more or less to the most northwesterly corner of the lands now or formerly of Nolfo; thence North 70° 57 min. 30 seconds East, a distance of 100.00 feet to an iron pipe set in the ground at the westerly side of Market Street. Thence North 18° 56 min. 30 seconds West, a distance of 64.42 feet along the westerly side of Market Street to the point or place of beginning containing 1.667 acres, more or less.

The foregoing description was transcribed from the deed recorded in the Putnam County Clerk's Liber 655 of deeds at page 338. This description includes: land northwest of the southeasterly line of New Street and its southwesterly projection; and land conveyed by the Village of Cold Spring to Helfenstein by deed dated August 22, 1983 and recorded in the Putnam County Clerk's Liber 792 of deeds at page 825, none of which is included in this survey. Additionally, this description does not consider the affect of the subsequent boundary line agreement between Anna P. Kent, et al. and the Village of Cold Spring recorded in the Putnam County Clerk's Liber 771 cp 359.

DESCRIPTION OF ENVIRONMENTAL EASEMENT AREA

AN EASEMENT over, under and through that certain parcel of land situate in the Village of Cold Spring, Town of Philipstown, County of Putnam, and State of New York that is a portion of those lands heretofore conveyed by Cold Spring Lumber Co., Inc. to the Village of Cold Spring by that certain deed dated October 3, 1967, and recorded in the Putnam County Clerk's Liber 655 of deeds at page 338, that is bounded and described as follows:

BEGINNING at the point formed by the intersection of the southwesterly line of Market Street with the southeasterly line of New Street

THENCE from the said point of beginning, southeasterly along the said southwesterly line of Market Street

S 27°04'10" E 64.61 feet,

to a point at the line of lands formerly of Nolfo, formerly of Helfenstein and now or formerly of Pavlik. Thence along the said Pavlik lands and continuing along lands formerly of Helfenstein and now or formerly of said Pavlik, as shown on that certain "Survey of Property prepared for Village of Cold Spring ...," which was filed in the Putnam County Clerk's office on November 19, 1981 as Map No. 1843

S 62°55'50" W 106.10 feet, and
S 27°05'16" E 85.59 feet,

to a point on the line of lands formerly of Pensiero and now or formerly of Zgolinski, as the said line was established by the agreement between Anna P. Kent, Sebastian Pensiero, Josephine M. LaFroscia, John J. Pensiero, Joseph C. Pensiero, Jr., Philip E. Pensiero and William S. Pensiero and The Village of Cold Spring, dated October 1, 1979 and recorded in the Putnam County Clerk's Liber 771 of deeds at page 359, and also shown on said Filed Map No. 1843. Thence along the and beyond said agreed line

S 46°21'58" W 205.34 feet, and
S 53°52'14" W 66.67 feet,

passing through an iron pin set in rock at the southwesterly end of the said agreed line to a point on the high water mark of the easterly edge of the Hudson River. Thence northerly and upstream along the said high water mark of the Hudson River, the following courses:

N 38°50'00" W 113.20 feet,
N 53°08'00" E 1.50 feet, and
N 36°52'00" W 18.80 feet,

to a point in range with the southeasterly line of New Street. Thence northeasterly partly through the lands so conveyed to the Village of Cold Spring and continuing along the said southeasterly line of New Street

N 50°06'00" E 403.60 feet

to the point or place of beginning of this Environmental Easement Area, containing 0.977 Acres.

PROPERTY DATA

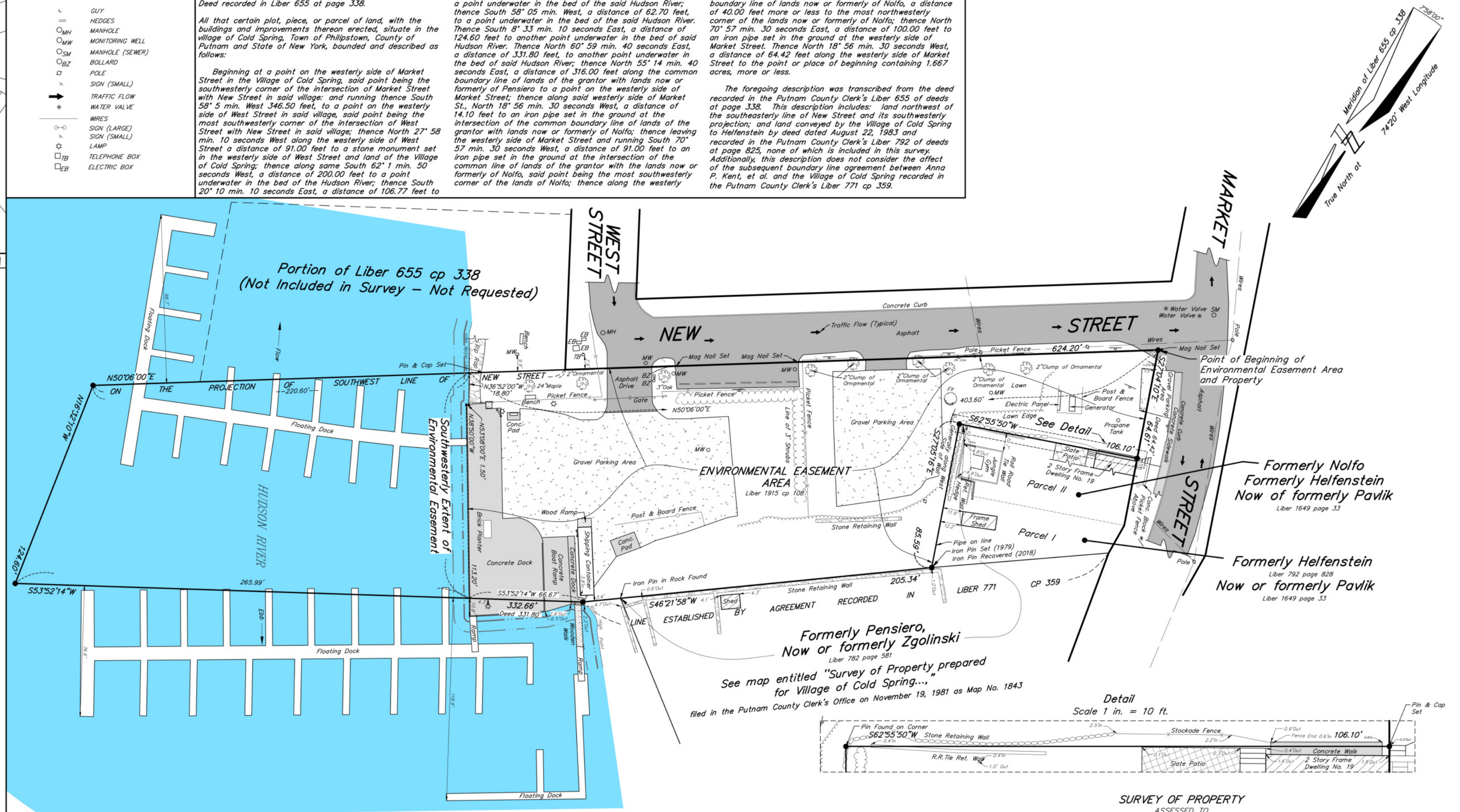
Tax Map Designation: Sheet 48.12, Block 1, Lot 51
Assessed Owner: Village of Cold Spring, Village Hall
85 Main Street
Cold Spring, NY 10516
Property Address: 5 New Street
Cold Spring, NY 10516

This map was prepared for the exclusive use of and is certified only to:

THE VILLAGE OF COLD SPRING
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

BADEY & WATSON
Surveying & Engineering, P.C.
3063 Route 9
Cold Spring, NY 10516
www.Badey-Watson.com
845.265.9217
845.265.4428 (Fax)
877. 3.141593 (Toll Free)

T.M. : 48.12-1-51 On 11-06-18 Closed by JWR/GJW Drawn by NAM Spell checked by NAM Checked by JWR/GJW W.O. No. 24406 Layout: SURVEY Drawing Name: LS24406__R03_V04



Total Area = 1.667 Acres

which includes Environmental Easement Area of 0.977 Acres

N.Y.S DEC. NOTES

This property is subject to an Environmental Easement held by the New York State Department of Environmental Conservation pursuant to Title 36 of Article 71 of the New York Environmental Conservation Law. The Engineering and Institutional Controls for this Easement are set forth in more detail in the Site Management Plan ("SMP"). A copy of the SMP must be obtained by any party with an interest in the property. The SMP must be obtained from the New York State Department of Environmental Conservation, Division of Environmental Remediation, Site Control Section, 625 Broadway, Albany, NY 12233 or at derweb@dec.ny.gov.

ENVIRONMENTAL EASEMENT AREA ACCESS

The DEC or their agent may access the environmental easement area as shown hereon through any existing street access or building ingress/egress access point

ENGINEERING / INSTITUTIONAL CONTROLS

Cover System — Vegetation, NYSDOT Item No. 4 and Item No. 2 stone, the NYSDEC will evaluate the need for additional remediation prior to redevelopment or change of use.

Groundwater Use Prohibition— the use of groundwater underlying the Site is prohibited without treatment rendering it safe for intended use.

Land Use — The site may only be used for Restricted Residential purposes.

Notes

2. Unauthorized alteration or addition to a document prepared by a licensed land surveyor is a violation of Section 7209, Subdivision 2 of the New York State Education Law.
3. All certifications are valid for this map and copies thereof only if said map or copies bear the embossed seal of the surveyor whose signature appears hereon.
4. If underground improvements, easements, or encroachments exist and are neither visible during normal field survey operations nor described in instruments provided to these surveyors, they may not be shown on this map.
5. This property may be affected by instruments which have not been provided to these surveyors. Users of this map should verify title with their attorney or a qualified title examiner.
6. This survey is of a portion of the property described in the Putnam County Clerk's Liber 655 of deeds at page 338. (Cold Spring Lumber Co., Inc. to Village of Cold Spring)
7. Revised on December 18, 2018 as follows:
   a. Added description of Conservation Easement Area;
   b. added Vicinity Map; and
   c. added N.Y.S DEC. notes.
   Survey was not brought to date.
8. Revised on February 15, 2018 to address comments from the Department of Environmental Conservation. Survey was not brought to date.

SURVEY OF PROPERTY
ASSESSED TO

THE VILLAGE OF COLD SPRING

SITUATE PARTIALLY IN THE

VILLAGE OF COLD SPRING

AND ENTIRELY IN THE

TOWN OF PHILIPSTOWN
PUTNAM COUNTY
NEW YORK

SCALE 1 in. = 30 ft. OCTOBER 4, 2018

GRAPHIC SCALE

30 0 15 30 60 120 FEET
10 5 0 10 30 40 METERS

We hereby certify that the survey shown hereon was completed by us on October 4, 2018 that this map was completed on October 12, 2018 and that this survey has been prepared in accordance with the existing Code of Practice for Land Surveys adopted by The New York State Association of Professional Land Surveyors, Inc.
Revised on December 18, 2018. See Note 7.
Revised on February 15, 2019. See Note 8.

STATE OF NEW YORK JENNIFER W REAP 50389 LICENSED LAND SURVEYOR

BADEY & WATSON
Surveying & Engineering, P.C.
by [signature]
NEW YORK STATE LICENSED LAND SURVEYOR
LICENSE No. 50389

PRINTED
FEBRUARY 15, 2019
BADEY & WATSON
Surveying & Engineering, P.C.

FILE No. 79-102

APPENDIX B – LIST OF CONTACTS

APPENDIX B – LIST OF SITE CONTACTS

Name	Phone/Email Address
Owner: Village of Cold Spring – Mayor David Merandy	845.265-3611/mayor@coldspringny.gov
Responsible Party: Village of Cold Spring – Mayor David Merandy	845.265-3611/mayor@coldspringny.gov
Remedial Party: Chuck Dusel, URS (AECOM)	716.856-5636/chuck.dusel@aecom.com
David Chiusano, NYSDEC Project Manager	518.402-9813/ david.chiusano@dec.ny.gov
Michael Cruden, NYSDEC Director, Remedial Bureau E	518.402-9813/Michael.cruden@dec.ny.gov
David Harrington, P.E., NYSDEC Section Chief, NYSDEC-DER	518.402-9813/ david.harrington@dec.ny.gov
Boat Club: Mark Patinella, Commander	914.844-1347/mpatinel@haldaneschool.org
John W. Furst, Esq. Village Attorney	845.764-4273/jfurst@cmmrlegal.com

APPENDIX C – RESPONSIBILITIES OF OWNER AND REMEDIAL PARTY

RESPONSIBILITIES OF OWNER AND REMEDIAL PARTY

Responsibilities

The responsibilities for implementing the Site Management Plan ("SMP") for the Cold Spring MGP site (the "Site"), number 340026, are divided between the Site owner(s) and a Remedial Party, as defined below. The owner(s) is/are currently listed as:

The Village of Cold Spring (the "owner").

Solely for the purposes of this document and based upon the facts related to a particular site and the remedial program being carried out, the term Remedial Party ("RP") refers to any of the following: certificate of completion holder, volunteer, applicant, responsible party, and, in the event the New York State Department of Environmental Conservation ("NYSDEC") is carrying out remediation or site management, the NYSDEC and/or an agent acting on its behalf. The RP is:

URS Corporation, 257 West Genesee Street, Buffalo, New York 14202.

Nothing on this page shall supersede the provisions of an Environmental Easement, Consent Order, Consent Decree, agreement, or other legally binding document that affects rights and obligations relating to the Site.

Site Owner's Responsibilities:

1) The owner shall follow the provisions of the SMP as they relate to future construction and excavation at the Site.
2) In accordance with a periodic time frame determined by the NYSDEC, the owner shall periodically certify, in writing, that all Institutional Controls set forth in a(n) Environmental Easement remain in place and continue to be complied with. The owner shall provide a written certification to the RP, upon the RP's request, in order to allow the RP to include the certification in the site's Periodic Review Report (PRR) certification to the NYSDEC.
3) In the event the Site is delisted, the owner remains bound by the Environmental Easement and shall submit, upon request by the NYSDEC, a written certification that the Environmental Easement is still in place and has been complied with.

4) The owner shall grant access to the Site to the RP and the NYSDEC and its agents for the purposes of performing activities required under the SMP and assuring compliance with the SMP.

5) The owner is responsible for assuring the security of the remedial components located on its property to the best of its ability. In the event that damage to the remedial components or vandalism is evident, the owner shall notify the site's RP and the NYSDEC in accordance with the timeframes indicated in Section 1.3-Notifications.

6) In the event some action or inaction by the owner adversely impacts the Site, the owner must notify the site's RP and the NYSDEC in accordance with the time frame indicated in Section 1.3 Notifications and (ii) coordinate the performance of necessary corrective actions with the RP.

7) The owner must notify the RP and the NYSDEC of any change in ownership of the Site property (identifying the tax map numbers in any correspondence) and provide contact information for the new owner of the Site property. 6NYCRR Part 375-1.11(d) and 375 1-9(f)) contains notification requirements applicable to any construction or activity changes and changes in ownership. Among the notification requirements is the following: Sixty days prior written notification must be made to the NYSDEC. Notification is to be submitted to the NYSDEC Division of Environmental Remediation's Site Control Section. Notification requirements for a change in use are detailed in Section 2.4 of the SMP. A 60-Day Advance Notification Form and Instructions are found at http://www.dec.ny.gov/chemical/76250.html.

Remedial Party Responsibilities

1) The RP must follow the SMP provisions regarding any construction and/or excavation it undertakes at the Site.

2) The RP shall report to the NYSDEC all activities required for remediation, operation, maintenance, monitoring, and reporting. Such reporting includes, but is not limited to, PRR and certifications, electronic data deliverables, corrective action work plans and reports, and updated SMPs.

3) Before accessing the Site property to undertake a specific activity, the RP shall provide the owner advance notification that shall include an explanation of the work expected to be completed. The RP shall provide to (i) the owner, upon the owner's request, (ii) the NYSDEC, and (iii) other entities, if required by the SMP, a copy of any data generated during the Site visit and/or any final report produced.

4) If the NYSDEC determines that an update of the SMP is necessary, the RP shall update the SMP and obtain final approval from the NYSDEC. Within 5 business days after NYSDEC approval, the RP shall submit a copy of the approved SMP to the owner(s).

5) The RP shall notify the NYSDEC and the owner of any changes in RP ownership and/or control and of any changes in the party/entity responsible for the operation, maintenance, and monitoring of and reporting with respect to any remedial system (Engineering Controls). The RP shall provide contact information for the new party/entity. Such activity constitutes a Change of Use pursuant to 375-1.11(d) and requires 60-days prior notice to the NYSDEC. A 60-Day Advance Notification Form and Instructions are found at http://www.dec.ny.gov/chemical/76250.html.

6) The RP shall notify the NYSDEC of any damage to or modification of the systems as required under Section 1.3-Notifications of the SMP.

7) Prior to a change in use that impacts the remedial system or requirements and/or responsibilities for implementing the SMP, the RP shall submit to the NYSDEC for approval an amended SMP.

8) Any change in use, change in ownership, change in site classification (e.g., delisting), reduction or expansion of remediation, and other significant changes related to the Site may result in a change in responsibilities and, therefore, necessitate an update to the SMP and/or updated legal documents. The RP shall contact the Department to discuss the need to update such documents.

Change in RP ownership and/or control and/or Site ownership does not affect the RP's obligations with respect to the Site unless a legally binding document executed by the NYSDEC releases the RP of its obligations.

Future Site owners and RPs and their successors and assigns are required to carry out the activities set forth above.

APPENDIX D – BORING LOGS

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** **Project Name:** Cold Spring MGP	**Boring No.: SB-01** converted to GW-01 **Sheet** 1 **of** 2 **By:** SS
Drilling Contractor: Zebra **Driller:** Evan Moraitis **Drill Rig:** Geoprobe 6600 **Date Started:** 9/17/08	**Geologist:** Scott Schmidt **Drilling Method:** Geoprobe **Drive Hammer Weight:** NA **Date Completed:** 9/17/08	**Boring Completion Depth:** 15' **Ground Surface Elevation:** **Boring Diameter:** 2"

Depth (ft.)	Soil Sample No.	Type	Rec. (inches)	Photo-Ionization Detector (ppm)	Sample Description
0' - 5'	1	MC	28	0.0	0-4" Dark Brown, SILT, trace fine-medium Sand, roots, dry 4-18" Dark Brown, fine-medium SAND, little fine-medium Gravel and Silt, dry. 18-24" Coarse GRAVEL 24-28" Light Brown, Sandy GRAVEL, Coarse-medium GRAVEL, w/some coarse-fine SAND, trace Silt, wet
5 - 10'	2	MC	51	0.0	0-12" Same as above, saturated groundwater 12-51" Light Brown, Clayey SILT, soft, trace fine-medium sub angular Gravel. Wet
10' - 15'	3	MC	40	0.0	0-4" Same as above. 4-10" Brown fine-coarse SAND, wet 10-21" Light Brown, SILT, trace fine-medium Sand, wet 21-27" Light Brown, fine-coarse SAND, little fine-coarse Gravel, trace Silt, wet 27-37" Brown Silty CLAY, soft, trace fine-medium Gravel, trace organics, wet 37-40" Brown SILT, trace fine-medium Sand, wet
					End of exploration at 15 ft. bgs

Sample Types:
HA = Hand Auger
MC = Macrocore

NOTES:
Groundwater at approximately 3 ft. bgs
No sample collected for laboratory analysis.

Dvirka and Bartilucci CONSULTING ENGINEERS	Project No.: Project Name: Cold Spring MGP	Boring No.: SB-14 converted to GW-03 Sheet 1 of 1 By: SS
Drilling Contractor: Zebra Driller: Evan Moraitis Drill Rig: Geoprobe 6600 Date Started: 9/16/08	Geologist: Scott Schmidt Drilling Method: Geoprobe Drive Hammer Weight: NA Date Completed: 9/16/08	Boring Completion Depth: 30' Ground Surface Elevation: Boring Diameter: 2"

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Photo-Ionization Detector (ppm)	Sample Description
0' - 5'	1	MC	36	0.0	0-15" Light Brown fine-coarse SAND, some fine-coarse Gravel 15-30" Black-Gray-Brown, firm, fine-coarse SAND, little fine-coarse Gravel and Silt, glass, oyster shells, brick, dry
5' - 10'	2	MC	20	0.0 0.0 1.8 1.4	Black-Brown, fine-coarse SAND and Gravel, slight tar odor, oyster shells, pottery dishes, all fill, gw wet to saturated
10' - 15'	3	MC	12	156 13.8	0-8" Black, coarse-fine SAND and Gravel, peat, glass, fill, gw saturated with strong tar odor, NAPL blebs, sheen pockets. 8-12" Black-Gray, coarse-fine GRAVEL, some fine-medium Sand, gw saturated, tar odor
15' - 25'	4	MC	37	0.0	Original 15-20 ft., no recovery, pushed to 25 ft. Olive, Silty CLAY, trace fine-coarse sub angular Gravel, trace fragments of shell, slight organic odor, soft, moist
25' - 33'	5	MC	30	0.0	Over drill to 33 ft. Olive, Silty CLAY, trace fine Gravel, moist, soft
					End of exploration at 33 ft. bgs.

Sample Types:
HA = Hand Auger
MC = Macrocore

NOTES:
End of exploration at 33 ft. bgs
Soil Sample selected between 13-15 ft. bgs for laboratory analysis.
Groundwater at approximately 5 ft. bgs.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** **Project Name:** Cold Spring MGP	**Boring No.: SB-15** converted to GW-04 **Sheet** 1 **of** 1 **By:** SS
Drilling Contractor: Zebra **Driller:** Evan Moraitis **Drill Rig:** Geoprobe 6600 **Date Started:** 9/17/08	**Geologist:** Scott Schmidt **Drilling Method:** Geoprobe **Drive Hammer Weight:** NA **Date Completed:** 9/17/08	**Boring Completion Depth:** 33' **Ground Surface Elevation:** **Boring Diameter:** 2"

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Photo-Ionization Detector (ppm)	Sample Description
0' - 5'	1	MC	34	1.9 5.3 9.0 14.7 21.3 18.5	0-3" Topsoil, Dark Brown, fine-medium SAND, some Silt, little medium-fine Gravel, dry 3-12" Brown-gray fine-coarse SAND, some Silt, little fine-coarse Gravel, dry 12-24" Olive-Brown fine-coarse SAND, some fine-coarse Gravel, little Silt, Ash, slight unknown odor, gw wet 24-34" Olive, fine-medium SAND, some fine-coarse Gravel, trace Silt, gw wet
5' – 10'	2	MC	32	21.4 28.9 15.2 14.8 23.3	Olive-Black fine-coarse SAND, some fine-coarse sub rounded Gravel, trace Silt, sheen, blebs, tar odor, gw wet to saturated Background PID 9.3 ppm
10' - 15'	3	MC	12	23.9 214	Black coarse-fine SAND, some coarse-fine Gravel, wood at end of spoon, strong tar odor, blebs, gw saturated
15' - 25'	4	MC	33	6.8 3.7 4.0 3.3 2.9	Olive Silty CLAY-Clayey SILT, soft, trace oyster shells, trace fine-medium Gravel, moist, organic odor Ambient PID 3.2 ppm
25' - 33'	5	MC	38	1.4 1.9 2.0 2.4 2.2 2.6	Same as above. Over drilled to 33 ft. bgs.
					End of exploration at 33 ft. bgs.

Sample Types:
HA = Hand Auger
MC = Macrocore

NOTES:
End of exploration at 33 ft. bgs, over drilled.
Groundwater encountered at approximately 3 ft. bgs.
Soil Sample selected between 13-15 ft. bgs for laboratory analysis.
PID sensitivity, readings varied.

Dvirka and Bartilucci CONSULTING ENGINEERS

Project No.:
Project Name: Cold Spring MGP

Boring No.: SB-12 converted to GW-05
Sheet 1 **of** 1
By: SS

Drilling Contractor: Zebra
Driller: Evan Moraitis
Drill Rig: Geoprobe 6600
Date Started: 9/16/08

Geologist: Scott Schmidt
Drilling Method: Geoprobe
Drive Hammer Weight: NA
Date Completed: 9/16/08

Boring Completion Depth: 33'
Ground Surface Elevation:
Boring Diameter: 2"

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Photo-Ionization Detector (ppm)	Sample Description
0' - 5'	1	MC	34	0.0	0"-4" Brown, medium-coarse SAND w/some gravel, bricks, loose, dry-wet
5' - 10'	2	MC	36	0.0 0.3 0.5 1.4 1.9 2.1	0-18": Brown, medium-fine SAND, some medium-fine gravel 18-24": Brown, medium-coarse GRAVEL, some medium-coarse sand, loose, wet
10'– 15'	3	MC	40	4.0 8.0 156 123 21.1 5.4 4.8	0-7" Brown/Gray coarse SAND with some Gravel, slight tar odor, gw wet 7-24" Black coarse to medium SAND and Gravel, strong tar odor, blebs, sheen, gw wet with blebs. 24-40" Olive CLAY, trace Silt and fine Gravel, moist, slight tar odor.
15' - 20'	4	MC	0	0.0	No Recovery, very soft
20' - 25'	5	MC	4	0.0	Olive, CLAY, little Silt, trace fine Gravel, very soft, moist.
25' - 33'	6	MC	24	0.0	Over drill to 33 ft. Olive, CLAY, trace Silt, little, Oyster Shell, soft, moist.
					End of exploration at 33 ft. bgs

Sample Types:
HA = Hand Auger
MC = Macrocore

NOTES:
Groundwater at approximately 3 ft. bgs.
Soil Sample selected between 12-14 ft. bgs for laboratory analysis.

Watermark

PROJECT INFORMATION

Project Name: **Cold Spring Former MGP Site**

Project Number: **15027-00**

BORING NO. GW-06

SHEET 1 of 1

DATE STARTED 8/4/2016

DATE COMPLETED 8/4/2016

Boring Co.	Summit Drilling Co.	Boring Location	
Driller	Jeremy Vogel	Drilling Method	Hollow-Stem Auger
Logged By	Jeff Goudsward	Drilling Equipment	CME-75
Checked By		TOC Elevation (feet)	TBD

Groundwater Levels		
Date	Time	Depth
5/4/2016	14:30	9.0
5/5/2016	7:40	2.72

DEPTH	SAMPLE INFORMATION: DEPTH (feet)	Type & No.	BLOWS PER 6 INCHES	PEN/REC (inches)	PID/FID	STRATUM / SAMPLE DESCRIPTION: Grading term (if applicable), SOIL GROUP NAME, other soil groups, color, moisture state [density, max particle size, angularity, and shape] or [consistency and plasticity] evidence of contamination (visual, olfactory), formation name, other observations	USCS Symbol	REMARKS (e.g., Well Info)
1	0-2		2-1-3-4	18"	0.2	TOPSOIL/brown to dark brown, organic odor, moist (some organic material)	TS	
2								
3	2-4		3-3-2-6	12"	2.1	0"-6": f SAND, trace silt/brown, no odor, moist	SP	
4					0.8	6"-12": m-f SAND, some silt, trace f gravel/dark brown, no odor, wet	SM	
5	4-6		5-9-5-4	9"	0.1	m-f SAND and c-f gravel, some silt/brown, no odor, moist	GW	
6								
7	6-8		3-3-5-9	9"	0.0	c-f GRAVEL and c-m-f sand, trace silt/brown, no odor, saturated	GW	
8								
9	8-10		3-6-4-5	7"	0.5	c-f GRAVEL and c-m-f sand, trace silt/brown, no odor, saturated	GW	
10								
11	10-12		25-9-2-2	0"	2.8	Gray silty clay in tip; slight coal tar odor, slight sheen	CL	
12								
13	12-14		0-1-1-1	7"	0.0	SILTY CLAY/gray, no odor, moist	CL	
14								
15						End of boring at 14 feet BGS		
16								
17								
18								
19								
20								

Notes: 1)
2)
3)
4)

Watermark

PROJECT INFORMATION

Project Name: **Cold Spring Former MGP Site**

Project Number: **15027-00**

BORING NO. GW-07

SHEET 1 of 1

DATE STARTED 8/4/2016

DATE COMPLETED 8/4/2016

Boring Co. Summit Drilling Co.

Driller Jeremy Vogel

Logged By Jeff Goudsward

Checked By

Boring Location

Drilling Method Hollow-Stem Auger

Drilling Equipment CME-75

TOC Elevation (feet) TBD

Groundwater Levels

Date	Time	Depth
5/4/2016	11:30	9.5
5/5/2016	7:00	2.8

DEPTH	SAMPLE INFORMATION: DEPTH (feet)	Type & No.	BLOWS PER 6 INCHES	PEN/REC (inches)	PID/FID	STRATUM / SAMPLE DESCRIPTION: Grading term (if applicable), SOIL GROUP NAME, other soil groups, color, moisture state [density, max particle size, angularity, and shape] or [consistency and plasticity] evidence of contamination (visual, olfactory), formation name, other observations	USCS Symbol	REMARKS (e.g., Well Info)
1	0-2		5-5-8-5	12"	0.0	0"-6": m-f SAND, some silt, trace gravel/dark brown, no odor, dry	SM	
2					0.0	6"-12": c-m-f SAND, trace gravel, trace silt/brown, no odor, dry	SW	
3	2-4		4-8-4-5	9"	0.0	c-f GRAVEL and c-m-f sand, some silt/brown, no odor, moist to wet	GW	
4								
5	4-6		5-4-3-3	7"	58.8	c-f GRAVEL and m-f sand, some silt/brown, slight petroleum odor, saturated (slight sheen on water)	GW	
6								
7	6-8		2-2-2-50/0"	8"	6.0	c-m-f SAND and c-f gravel, trace silt/brown, no odor, saturated (black staining in bottom 1")	GW	
8						Obstruction at 7.5' bgs. Augered past obstruction (likely cobble or boulder).		
9	8-10		10-41-33-30	15"	16.5	0"-6": c-m-f SAND, c-f gravelly/dark brown, no odor, wet	SW	
10					31.6	6"-15": c-f GRAVEL, some m-f sand, trace silt/dark brown to black, no odor, wet		
11	10-12		18-11-19-50/1"	13"	20.3	0"-9": c-m-f SAND, some f gravel, trace silt/dark brown, no odor, wet	SW	
12					16.2	9"-13": WEATHERED BEDROCK/tan, no odor, wet		
13						Auger and spoon refusal at 12 feet BGS. End of boring.		
14								
15								
16								
17								
18								
19								
20								

Notes: 1)
2)
3)
4)

APPENDIX E – EXCAVATION WORK PLAN

APPENDIX E

EXCAVATION WORK PLAN

COLD SPRING MGP SITE
SITE # 340026
COLD SPRING, NEW YORK

Prepared for:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF ENVIRONMENTAL REMEDIATION
625 BROADWAY
ALBANY, NEW YORK 12233-7011

Prepared by:

URS Corporation
257 West Genesee Street
Suite 400
Buffalo, New York 14202

January 2019

APPENDIX E – EXCAVATION WORK PLAN (EWP)

E-1 NOTIFICATION

This Excavation Work Plan (EWP) applies to the following parcel:

- Section 48.12 Block 1 Lot 51

At least 15 days prior to the start of any activity that is anticipated to encounter remaining contamination, the Site owner or their representative will notify the NYSDEC. Table E-1 includes contact information for the above notification. The information on this table will be updated as necessary to provide accurate contact information. A full listing of site-related contact information is provided in Appendix B of this SMP.

Table E-1: Notifications*

David Chiusano NYSDEC Project Manager	(518) 402-9813 david.chiusano@dec.ny.gov
Michael Cruden Director, Remedial Bureau E	(518) 402-9813 michael.cruden@dec.ny.gov
David Harrington, P.E. Section Chief, NYSDEC-DER	(518) 402-9813 david.harrington@dec.ny.gov

* Note: Notifications are subject to change and will be updated as necessary.

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent of excavation, plans/drawings for Site re-grading, intrusive elements or utilities to be installed below grade, estimated volumes of contaminated soil to be excavated and any work that may impact an engineering control;
- A Dust Control Plan, Community Air Monitoring Plan, Stormwater Pollution Prevention Plan (if necessary), and appropriate data and description for backfill materials, soil re-use on-site (if proposed) and truck transportation routes.
- A summary of environmental conditions anticipated to be encountered in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling;

- A schedule for the work, detailing the start and completion of all intrusive work;
- A summary of the applicable components of this EWP;
- A statement that the work will be performed in compliance with this EWP and 29 Code of Federal Regulation (CFR) 1910.120;
- A copy of the contractor's health and safety plan (HASP), in electronic format, if it differs from the HASP provided in Appendix E of this SMP;
- Identification of disposal facilities for potential waste streams; and
- Identification of sources of any anticipated backfill, along with all required chemical testing results.

E-2 SOIL SCREENING METHODS

Visual, olfactory and instrument-based (e.g., photoionization detector) soil screening will be performed by a qualified environmental professional during all excavations into known or potentially contaminated material (remaining contamination). Soil screening will be performed when invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after issuance of the certificate of completion (COC).

Soils will be segregated based on previous environmental data and screening results into material that requires off-site disposal and material that requires testing to determine if the material can be reused on-site.

E-3 SOIL STAGING METHODS

Soil stockpiles will be continuously encircled with a berm and/or silt fence. Hay bales will be used as needed near catch basins, surface waters and other discharge points.

Stockpiles will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced.

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 and available for inspection by the NYSDEC.

E-4 MATERIALS EXCAVATION AND LOAD-OUT

A qualified environmental professional or person under their supervision will oversee all invasive work and the excavation and load-out of all excavated material.

The owner of the property and remedial party (if applicable) and its contractors are responsible for safe execution of all invasive work, the structural integrity of excavations, proper disposal of excavation spoils and water, control of runoff from open excavations into remaining contamination, and for any future structures that may be affected by excavations. The site owner will ensure that any future site development activities will not interfere with, or otherwise impair or compromise, the engineering controls described in this SMP.

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

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 (NYSDOT) requirements (and all other applicable transportation requirements).

A truck wash will be operated on-site, as appropriate. The qualified environmental professional will be responsible for ensuring that all outbound trucks will be washed at the truck wash before leaving the Site until the activities performed under this section 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 shall 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 intrusive excavation activities. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to site-derived materials.

E-5 MATERIALS TRANSPORT OFF-SITE

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 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 be used.

Truck transport routes shall be described in the pre-excavation notification (see Section E-1). All trucks loaded with Site materials will exit the vicinity of the Site using only these approved truck routes. The proposed route shall take into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting off-site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; (f) overall safety in transport; and (g) community input .

Trucks will be prohibited from stopping and idling in the neighborhood outside the project Site.

Egress points for truck and equipment transport from the Site will be kept clean of dirt and other materials during site remediation and development.

Queuing of trucks will be performed on-site in order to minimize off-site disturbance. Off-site queuing will be prohibited.

E-6 MATERIALS DISPOSAL OFF-SITE

All material excavated and removed from the Site will be treated as contaminated and regulated material and will be transported and disposed in accordance with all local, State (including 6NYCRR Part 360) and Federal regulations. If disposal of material from this 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 the NYSDEC. Unregulated off-site management of materials from this Site will not occur without formal NYSDEC approval.

Off-site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate (i.e., hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, construction and demolition [C&D] recycling facility, etc.). Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic Review Report (PRR). This documentation will include: waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts.

Non-hazardous historic fill and contaminated soils taken off-site will be handled, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2. Material that does not meet Unrestricted SCOs is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility).

E-7 MATERIALS REUSE ON-SITE

All details for materials reuse on-site shall be included in the pre-excavation notification (See Section E-1). 'Reuse on-site' means reuse on-site of material that originates at the Site and which does not leave the Site during the excavation. Material reuse on-site will comply with the requirements of NYSDEC DER-10 Section 5.4(e)4. The following topics should be covered:

- Procedure for determining if reuse is appropriate:
  - Sampling (methods and analytical)
  - Stockpile segregation scheme for on-site reuse
- Size of stockpiles, location (figure)

The qualified environmental professional will ensure that procedures defined for materials reuse in this SMP are followed and that unacceptable material does not remain on-site. Contaminated on-site material, including historic fill and contaminated soil, that is acceptable for reuse on-site will be placed below the demarcation layer or impervious surface, and will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines.

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

E-8 FLUIDS MANAGEMENT

All liquids to be removed from the Site, including but not limited to, excavation dewatering, decontamination waters and groundwater monitoring well purge and development waters, will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. Dewatering, purge and development fluids will not be recharged back to the land surface or subsurface of the Site, and will be managed off-site, unless prior approval is obtained from NYSDEC.

Discharge of water generated during large-scale construction activities to surface waters (i.e., a local pond, stream or river) will be performed under a SPDES permit.

E-9 BACKFILL FROM OFF-SITE SOURCES

All the methods for the import, handling and placement of backfill material from off-site shall be described in the pre-excavation notification (See Section E-1). The requirements for backfill used at the Site should be consistent with the backfill requirements provided in DER-10 (e.g., Appendix 5).

The following topics should be covered:

- Source area approval process
- Sources of backfill material
- Source area background check
- DOT Certification
- Chemical sampling
- Analytes
- Frequency
- Imported Soil Chemical Quality Standards

- Applicability of protection of groundwater SCOs
- Applicability of protection of ecological resources SCOs
- Stockpile procedures for imported backfill material
- Size of stockpiles, cover, etc.

All materials proposed for import onto the Site will be approved by the qualified environmental professional and will be in compliance with provisions in this SMP prior to receipt at the Site. A Request to Import/Reuse Fill or Soil form, which can be found at http://www.dec.ny.gov/regulations/67386.html, will be prepared and submitted to the NYSDEC project manager allowing a minimum of 5 business days for review.

Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites will not be imported to the Site.

All imported soils will meet the backfill and cover soil quality standards established in 6NYCRR 375-6.7(d) and the soil cleanup objectives for restricted residential use established in 6NYCRR-6.5, unless otherwise directed by the NYSDEC. Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this Site, will not be imported onto the Site without prior approval by NYSDEC. Solid waste will not be imported onto the Site.

Trucks entering the Site with imported soils will be securely covered with tight fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases.

E-10 STORMWATER POLLUTION PREVENTION

For large excavations, a Stormwater Pollution Prevention Plan that conforms to the requirements of the NYSDEC Division of Water guidelines and NYS regulations shall be submitted with the pre-excavation notification (See Section E-1).

Barriers and hay bale checks 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 the NYSDEC. All necessary repairs shall 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 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.

E-11 EXCAVATION CONTINGENCY PLAN

If underground tanks or other previously unidentified contaminant sources are found during post-remedial 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, etc. as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for a full list of analytes (TAL metals; TCL volatiles and semi-volatiles, TCL pesticides and PCBs), 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 the NYSDEC for approval prior to sampling.

Identification of unknown or unexpected contaminated media identified by screening during invasive site work will be promptly communicated by phone to NYSDEC's Project Manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be also included in the PRR.

E-12 COMMUNITY AIR MONITORING PLAN

A Community Air Monitoring Plan shall be included with the pre-excavation notification. Guidance can be obtained in Appendix 1A of DER-10, Generic Community Air Monitoring Plan. At minimum, the CAMP shall include:

- Details of the perimeter air monitoring program;
- Action levels to be used;
- Methods for air monitoring ;
- Analytes measured and instrumentation to be used;
- A figure of the location(s) of all air monitoring instrumentation. A figure showing specific locations must be presented for monitoring stations based on generally prevailing wind conditions, with a note that the exact locations to be monitored on a given day will be established based on the daily wind direction.

Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers.

E-13 ODOR CONTROL PLAN

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 remedial party's Remediation Engineer, and any measures that are implemented will be discussed in the PRR.

All necessary means will be employed to prevent on- and off-site nuisances. At a minimum, these measures will include: (a) limiting the area of open excavations and size of soil stockpiles; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous soils. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for off-site disposal; (e) use of chemical odorants in spray or misting systems; and, (f) use of staff to monitor odors in surrounding neighborhoods.

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.

E-14 DUST CONTROL PLAN

A dust suppression plan shall be included in the pre-excavation notification that addresses dust management during invasive on-site work will include, at a minimum, the items listed below:

- 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 will be done in stages to limit the area of exposed, unvegetated 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.

E-15 OTHER NUISANCES

A plan for rodent control will be developed and utilized by the contractor prior to and during site clearing and site grubbing, and during all remedial work.

A plan will be developed and utilized by the contractor for all remedial work to ensure compliance with local noise control ordinances.

APPENDIX F – HEALTH AND SAFETY PLAN

HEALTH AND SAFETY PLAN
FOR THE
SITE MANAGEMENT PLAN
COLD SPRING MGP SITE
SITE # 340026
VILLAGE OF COLD SPRING, PUTNAM COUNTY, NEW YORK

Prepared For

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF ENVIRONMENTAL REMEDIATION
WORK ASSIGNMENT D007622-29

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1.0 INTRODUCTION

This Health and Safety Plan (HASP) includes appropriate health and safety procedures to be followed by all URS Corporation (URS) personnel during site management activities at and in the vicinity of the Cold Spring MGP site in the Village of Cold Spring, Putnam County, New York. Anticipated field activities at the site will include:

- Groundwater monitoring well sampling

The procedures presented in this plan comply with the following regulatory or guidance documents:

AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS (ACGIH)

ACGIH-0118	2018 TLVs and BEIs - Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices.
ACGIH-0396	Guide to Occupational Exposure Values - 2018.
ACGIH-0460	Guidelines for the Selection of Chemical Protective Clothing, 3rd Edition.

CODE OF FEDERAL REGULATIONS (CFR)

29 CFR Part 1904	Recording and Reporting Occupational Injuries and Illnesses.
29 CFR Part 1910	Occupational Safety and Health Standards, especially Part 1910.120-Hazardous Waste Site Operations and Emergency Response.
29 CFR Part 1926	Safety and Health Regulations for Construction, especially Part 1926.65-Hazardous Waste Site Operations and Emergency Response.
49 CFR Part 171	General Information, Regulations, and Definitions.
49 CFR Part 172	Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (USEPA)

Publication No. 9285.1-03. (June 1992) Standard Operating Safety Guides, Office of Emergency and Remedial Response.

USEPA Order 1440.2 (1981) Health and Safety Requirements for Employees Engaged in Field Activities.

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH (NIOSH)

NIOSH Pub. No. 85-115 (October 1985) NIOSH/OSHA/USCG/USEPA, Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities.

NIOSH Pub. No. 2005-149 (September 2007) NIOSH Pocket Guide to Chemical Hazards.

All personnel who will be involved in intrusive activities on site must have completed the appropriate waste site worker training as required by OSHA 1910.120(e)(2), 1910.120(e)(3), and 1910.120(e)(8), as applicable, and the required medical surveillance as required by OSHA 1910.120(f). Training certificates and medical surveillance certification for all field personnel shall be available upon request.

2.0 RESPONSIBILITIES

The following is a summary of the health and safety responsibilities of project personnel.

2.1 Project Health and Safety Officer

The responsibilities of the Project Health and Safety Officer (HSO) are to develop and coordinate the Site Health and Safety Program, and to provide necessary direction and supervision to the Site HSO. The Project HSO will review and confirm changes in personal protection requirements when site conditions are found to be different from those originally anticipated. The Project HSO will be involved in all discussions on health and safety matters with NYSDEC, OSHA, local health authorities, or other governmental or labor representatives. In addition, this individual will provide the Site HSO with details concerning the task-specific health and safety considerations. The Project HSO reports directly to the Project Manager and the Corporate Health and Safety Director.

2.2 Site Health and Safety Officer

The responsibilities of the Site HSO are as follows:

- Implement this HASP
- Enforce day-to-day health and safety protocols in effect on the site
- Require that all workers who will be involved in intrusive activities on the site have had appropriate waste site worker training and medical examinations, and review and maintain training and medical certifications on site
- Require that all personnel entering the site understand the provisions of this HASP
- Conduct periodic training sessions in proper use and maintenance of personal protective equipment and safety practices
- Conduct periodic emergency response drills
- Conduct daily health and safety meetings each morning
- Direct and advise onsite personnel, visitors, and subcontractor HSO on all aspects, especially changes, related to health and safety requirements at the site

- Conduct necessary health and safety monitoring
- Administer any air monitoring program
- Monitor site conditions and determine all necessary changes in levels of personal protection and, if warranted, execute work stoppages
- Report changes in site conditions and changes in personal protection requirements to the Project HSO
- Prepare accident/incident reports

The Site HSO reports directly to the Project HSO. A qualified backup will be designated for the Site HSO prior to the initiation of onsite activities.

2.3 Field Team Personnel

Field team personnel will be responsible for understanding and complying with site health and safety requirements. Field team personnel on site will be trained in first aid and CPR, and will be certified by the American Red Cross. Field team personnel will have completed the required waste site worker training to comply with 29 CFR, Part 1910.120.

3.0 SITE DESCRIPTION AND HISTORY

Site description and history is presented in Section 2.0 of the Site Management Plan for the Cold Spring MGP site.

4.0 TRAINING REQUIREMENTS

All personnel conducting field activities on site are required to be certified in health and safety practices for hazardous waste operations as specified in the Federal OSHA Regulations (29 CFR 1910.120) (revised March 6, 1990). Paragraph (e) (2) of the above-referenced regulations requires that each employee, at the time of job assignment, receive a minimum of 40 hours of initial instruction off the site, and a minimum of three days of supervised field experience. The waste site worker training program components are presented in Appendix A.

Paragraph (e) (3) of the above-referenced regulations requires that all onsite management and supervisory personnel directly responsible for, or who supervise employees engaged in hazardous waste operations, must initially receive eight hours of additional specialized training. Management and supervisory training must emphasize health and safety practices related to managing hazardous waste work. The waste site worker supervisory training program components are presented in Appendix A.

Paragraph (e)(8) of the above-referenced regulations requires that workers and supervisors receive eight hours of refresher training annually on the items specified in Paragraph (e)(1) and/or (e)(3). The waste site work annual refresher training components are presented in Appendix A.

Additionally, all personnel must receive adequate site-specific training, in the form of an Onsite Health and Safety Briefing given by the Project HSO prior to participating in onsite field work. This will involve a review of this Health and Safety Plan with emphasis on the following:

- Protection of the adjacent community from hazardous substances which may be released during intrusive activities
- Attention to health effects and hazards of substances known to be present on site
- Attention to physical hazards on site, and the importance of knowing proper means of avoiding these hazards.

- Health hazards, protective measures, emergency and first aid measures, fire and explosion information, reactivity, incompatible materials, and emergency procedures for spills of hazardous chemicals brought onto the site for use during normal field operations
- Hazards and protection against heat/cold
- The need for vigilance in personal protection, and the importance of attention to proper use, fit, and care of personal protective equipment
- The effectiveness and limitations of personal protective equipment
- Prescribed decontamination procedures
- Site control, including work zones, access, and security
- The proper observance of daily health and safety practices, such as the entry and exit of work zones and site, proper hygiene during lunch, break, etc.
- Recognition in oneself or in others of physical conditions requiring immediate medical attention, and application of simple first aid measures
- Emergency procedures to be followed (with rehearsals) in cases of fire, explosion, or sudden release of hazardous gases

Health and Safety Meetings will be conducted daily by the Site HSO and will cover protective clothing and other equipment to be used that day, potential chemical and physical hazards, emergency procedures, and conditions and activities from the previous day.

All visitors entering an Exclusion Zone or Contamination Reduction Zone will be required to receive the necessary site-specific training from the Site HSO and must be equipped with the proper personal protective equipment.

5.0 MEDICAL SURVEILLANCE REQUIREMENTS

All personnel who engage in onsite activities for 30 days or more per year participate in the Medical Surveillance Program, which involves undergoing a medical examination once every year. A physician who is board-certified in occupational medicine must conduct the examination. The physician will have been made familiar with the job-related duties of each worker examined. All project personnel involved in onsite activities at the site must participate in the Medical Surveillance Program.

6.0 SITE HAZARD EVALUATION

6.1 Chemical Hazards

The primary chemicals of concern on site are benzene, toluene, ethylbenzene and xylene (BTEX) and polycyclic aromatic hydrocarbons (PAHs) based on detections of these compounds in soil and water samples from previous investigations. The health and safety characteristics and occupational exposure values of these compounds are summarized in Table 6-1. The risk of exposure to these contaminants can be by the dermal or respiratory route, depending on the type of contaminant and activity being conducted.

6.2 Physical Hazards

Physical hazards range from the dangers of tripping and falling on uneven ground to those associated with the operation of heavy equipment such as boat lifts. Physical hazards also include scattered debris, dry-docked boats, vehicles, and changes to surface conditions (pavement to crushed stone to turf).

During site activities, workers may have to work near heavy equipment. At least one people on site must be currently American Red Cross-certified in first aid and CPR. Personnel trained and certified in first aid should be prepared to take care of cuts and bruises as well as other minor injuries. A first aid kit approved by the American Red Cross will be present and available during all field activities.

Animals and some insects may bite and thereby pose a health hazard in the form of irritation, illness, or poisoning. Anyone bitten should be given immediate first aid as necessary, and shall be transported to the nearest medical facility (if necessary). Members of the field sampling team will be properly briefed regarding the potential for encountering insects and animals. The potential threat of the deer tick and the possibility of contracting Lyme disease is a serious matter. The likelihood of contracting Lyme disease will be greatly decreased by field personnel wearing long pants, long sleeved shirts, and hard hats. All field personnel will be instructed to take a shower daily upon returning to the hotel or place of residence to further decrease the likelihood of contracting Lyme disease.

Improper lifting by workers is one of the leading causes of industrial injuries. Field workers in the sampling program may be required to lift or move heavy objects (purge water buckets, drums, etc.). Therefore, all members of the field crew should be trained in the proper methods of lifting heavy objects. All workers should be cautioned against lifting objects too heavy for one person.

6.3 Temperature Stress

A Heat/Cold Stress Log will be kept and maintained on a daily basis for all personnel wearing protective ensembles on site.

6.3.1 Heat Stress

The combination of high ambient temperature, high humidity, physical exertion, and personal protective apparel which limits the dissipation of body heat and moisture can cause heat stress. The Site HSO is responsible for monitoring heat stress in the field team personnel.

The following prevention, recognition, and treatment strategies will be implemented to protect personnel from heat stress. Personnel will be trained to recognize the symptoms of heat stress, and to apply the appropriate treatment.

A. Prevention

1. Provide plenty of liquids. Available in the Support Zone will be a 50% solution of fruit punch in water, or the like, or plain water.
2. Provide cooling devices. A portable, pump-activated sprayer and containers of tap water will be available in the Contamination Reduction Zone to reduce body temperature, cool protective clothing, and/or act as a quick-drench shower in case of an exposure incident.
3. Adjustment of the work schedule. During the hot summer days, labor intensive tasks which pose a high potential risk of heat stress can be performed during the coolest part of the day.

B. Recognition and Treatment

Any person who observes any of the following forms of heat stress, either in themselves or in another worker, will report this information to the Site HSO immediately after implementing treatment, if possible.

1. Heat Rash (prickly heat):

   Cause: Continuous exposure to hot and humid air, aggravated by chafing clothing.

   Symptoms: Eruption of red pimples around sweat ducts, accompanied by intense itching and tingling.

   Treatment: Remove source of irritation and cool the skin with water or wet cloths.

2. Heat Syncope (fainting):

   Cause: Sun rays beating down on victim's head and prolonged upright position can lead to mild dehydration and contraction of the blood vessels resulting in a temporary deficiency of blood to the brain.

   Symptoms: Brief loss of consciousness.

   Treatment: Worker should assume a horizontal position and drink 2 liter to one liter of fluid (not alcohol). Elevate the legs and cover the head.

3. Heat Cramps (heat prostration):

   Cause: Profuse perspiration accompanied by inadequate replenishment of body water and electrolytes.

   Symptoms: Sudden development of pain and/or muscle spasms in the abdominal region.

   Treatment: Move the worker to the Contamination Reduction Zone. Remove protective clothing. Provide fluids orally. Decrease body temperature and allow a period of rest in a cool location.

4. Heat Exhaustion (heat toxemia, sunstroke):

Cause: Overexertion in a hot environment and profuse perspiration accompanied by inadequate replenishment of body water and electrolytes. A serious condition.

Symptoms: Muscular weakness, tiredness, staggering gait, nausea, dizziness, shallow breathing, pale and clammy skin, approximately normal body temperature.

Treatment: Perform the following while simultaneously making arrangements for transport to a medical facility: Move the worker to the Contamination Reduction Zone. Remove protective clothing. Lie the worker down on his or her back, in a cool place, and raise the feet 6 to 12 inches. Keep warm, but loosen all clothing. If conscious, provide sips of a salt water solution using one teaspoon of salt in 12 ounces of water. Transport the worker to a medical facility.

5. Heat Stroke:

Cause: Same as heat exhaustion. An extremely serious condition.

Symptoms: Dry, red, hot skin, dry mouth, dizziness, nausea, headache, rapid pulse. Temperature continues to rise unless treatment is implemented.

Treatment: The basic principle is to lower the body temperature rapidly.

1. Move the victim out of the sun.
2. Remove clothes.
3. Soak victim completely with water, wet hair as well.
4. Place victim in front of a fan or in a breeze, if possible.
5. If ice is available, apply directly to the victim, especially under the arms and on the head.
6. Monitor body temperature with available thermometers. Temperature should start to decrease within minutes.

7. As temperature approaches 101°F, stop cooling measures and initiate transport to a hospital or declare an emergency response. The temperature should continue to fall, often to subnormal, during this period.

Other considerations in treating heat stroke are:

1. Rub skin briskly during cooling process.
2. If cardiac arrest occurs, perform CPR (ONLY IF CERTIFIED) and continue cooling.
3. If a seizure occurs, continue cooling; the seizure will stop.
4. No drugs of any kind are to be given to the victim.

C. Heat Stress - Predisposing Factors

Preventing heat stress is clearly preferred to treatment. The following factors increase the individual's risk of heat stress:

- Physically unfit
- Age
- Not accustomed to heat
- Sunburn
- Alcohol and drugs
- Dehydration
- Heavy or non-breathable clothing
- Not covering one's head

6.3.2 Cold Stress

Personnel can be susceptible to cold stress while conducting field work during cold weather months. To guard against cold stress and to prevent cold injuries, appropriate warm clothing should be worn, warm shelter must be previously identified and readily available, rest periods should be adjusted as needed, and the physical conditions of onsite field personnel should be closely monitored. All personnel working onsite must be able to recognize the signs and

symptoms of cold stress and apply first aid as needed. The Site HSO is responsible for monitoring the signs and symptoms of cold stress among field personnel.

The development of cold stress and cold injuries is influenced by three factors: the ambient temperature, the velocity of the wind, and the amount of sunshine. Fingers, toes, and ears are the most susceptible parts of the body affected by cold.

A. Frost Nip: Frost nip is the first sign of frost bite and is the only form of local cold injury that can be definitively treated in the field.

   Symptoms: A whitened area of the skin which is slightly burning or painful.

   Treatment: Rewarming the affected part.

B. Frost Bite: Local damage is caused by exposure to low temperature environmental conditions. It results at temperatures when ice crystals form, either superficially or deeply, in the fluids and underlying soft tissues of the skin. The nose, cheeks, ears, fingers, and toes are most commonly affected.

   Symptoms: Skin is cold, hard, white, and numb. There may also be blisters. The affected parts will feel intensely cold; however, there may not be any pain. The victim may not know that he or she is frost-bitten.

   As time goes on, the victim may experience mental confusion and impairment of judgment. The victim may stagger and eyesight may fail. The victim may fall and become unconscious. Shock is evident and breathing may cease. If death occurs, it is usually due to heart failure.

   Treatment: Generally, definitive thawing should not be performed in the field, because if re-freezing occurs, it could result in severe damage. The victim should be transported to a medical facility after the following measures are instituted:

   <u>Do Not</u>:

   – Do not walk on a thawed foot or toes or use thawed hands.
   – Do not allow victim to smoke or drink alcohol.
   – Do not rub affected area with anything.
   – Do not break any blisters.

– Do not apply heat of any kind.

Do:

– Do place victim in protected environment.

– Do prevent further heat loss (warmer clothes).

– Do protect from further damage (warm covering).

D. Mild Hypothermia

Symptoms: The single most important sign of mild hypothermia is a change in behavior. Some signs that can be observed are:

– Decrease in work efficiency
– Decreased level of communication
– Forgetfulness
– Poor judgment
– Poor motor skills (difficulty in handling objects, dropping tools)

The target organ of mild hypothermia is the brain. During mild hypothermia, most of the body's protective mechanisms for temperature control are intact. Shivering is usually present and "goose flesh" and pale skin persist. When asked directly, the victim will usually say that he feels cold. A worker impaired by mild hypothermia can be a danger to himself and co-workers.

Treatment: The victim should be moved indoors or into a heated vehicle.

– Remove all wet or damp clothing, dry skin, and apply dry clothing.
– The head should be covered with a hat or blanket.
– Blankets should be put on the victim.
– The victim should be given hot fluids (no alcohol).
– If possible, monitor the victim's temperature at 15 minute intervals.

E. Moderate Hypothermia: For field purposes, this may be defined as the stage at which the patient is clearly incapable of functioning effectively, but is conscious.

Symptoms: The victim's body temperature is well below normal and some mental changes may occur which include:

– Disorientation to people, place, and time

– Hallucinations

– Inappropriate laughing or crying

– Bizarre behavior for that individual

During moderate hypothermia, shivering is absent, "goose flesh" disappears, and the heart rate may slow down. The victim does not "feel" cold.

Treatment: First, treat the patient for mild hypothermia.

– Provide warming with hot blowers or heaters.

– Use human body heat.

– Watch for signs of returning to normal (e.g., shivering, goose flesh, teeth chattering).

– Monitor mental status.

After these steps are initiated, the victim should be taken to a medical facility. The patient should not return to work for at least 48 hours.

F. Severe Hypothermia:

Symptoms: Characterized by a decrease in the body temperature which results in a deep coma in which even vital signs become very weak and finally undetectable. Most occupational cases occur when the victim is alone or lost. These victims, for all practical purpose, appear to be dead, but the saying "not dead until warm and dead" applies to severe hypothermia. Many of these victims can survive.

Treatment:

1. The patient is not to be considered dead.
2. Remove wet clothes, dry skin, and apply dry clothes.
3. Activate rewarming.

4. Prepare to transfer the victim to a medical facility.
5. If the patient is pulse-less and is not breathing, perform CPR (ONLY IF CERTIFIED), while en-route to the medical facility.
6. Very cold victims often tolerate long periods of arrest, even without CPR. The victim must be handled very carefully because of extreme susceptibility to even minor trauma.

TABLE 6-1

CHEMICAL CONTAMAMINANTS OF CONCERN

SUBSTANCE	TOXICITY/CARCINOGENICITY	PERMISSIBLE EXPOSURE LIMITS (PELs)
Benzene	Confirmed human carcinogen. Moderately toxic by ingestion, inhalation, and skin adsorption. Irritant to eyes, nose, and throat.	1 ppm (1) 5 ppm STEL
Ethylbenzene	Moderately toxic by ingestion and skin adsorption. Irritant to skin and eyes. Experimental teratogen.	100 ppm
Toluene	Moderately toxic by oral, inhalation, and intraperitoneal routes, low toxicity by dermal route.	200 ppm (Skin) (2) (ACGIH) 300 ppm (Ceiling) (3)
Xylene	Moderately toxic by oral, inhalation, intraperitoneal, and subcutaneous routes.	100 ppm
Polycyclic Aromatic Hydrocarbons (PAHs)	Many PAHs are toxic by inhalation and easily absorbed by the skin. Prolonged exposure may result in tissue injury, dermatitis, and chemical burns. Inhalation of high concentrations can result in bronchial irritation, cough, hoarseness, and pulmonary edema. Acute doses are toxic to many tissues, but the thymus and spleen are particularly sensitive.	Some PAH compounds have no established PELs, while many have a PEL of 0.2 mg/m^3.

Notes

(1) PELs are 8-hour Time-Weighted Averages (TWAs) unless otherwise noted.
(2) STEL – Short Term Exposure Limit – 15 minute TWA exposure which should not be exceeded at any time during a work day.
(3) "Skin" Notation – Listed substances followed by the designation "Skin" refer to the potential significant contribution to the overall exposure by the cutaneous route, including mucous membranes and the eyes, either by contact with vapors or, of probable greater significance, by direct skin contact with the substance.
(4) Ceiling – The concentration that should not be exceeded during any part of the working exposure.

References

- "Guide to Occupational Exposure Values – 2002." American Conference of Governmental Industrial Hygienists, Cincinnati, Ohio, 2002.
- "2002 TLVs and BEIs-Threshold Limit Values for Chemical Substances, Physical Agents, and Biological Exposure Indices." American Conference of Governmental Industrial Hygienists, Cincinnati, Ohio, 2002.
- "NIOSH Pocket Guide to Chemical Hazards." National Institute for Occupational Safety and Health, Publication No. 97-140, Cincinnati, Ohio, December 2001.
- Hawley, Gessner, G. The Condensed Chemical Dictionary, Tenth Edition, New York, Van Nostrand Reinhold, 1981.
- Sax, R. Irving. Dangerous Properties of Industrial Materials, Sixth Edition, New York, Van Nostrand Reinhold, 1984.

7.0 SITE CONTROL

As the project operations will be undertaken in a roadway or parking lot, motor vehicles may be a hazard. High visibility apparel (e.g., traffic safety vests) will be worn by project personnel. Traffic control devices such as signs, markings, flags, cones, lighting devices, etc. will be used as necessary. Project vehicles can also be parked in a manner that shields personnel from vehicular traffic.

7.1 Support Zone

The Support Zone for the Cold Spring MGP site will be established on site. The support facilities will contain personal protective equipment (disposable suits, gloves, boots, etc.), a first aid kit, a fire extinguisher, an eyewash station, sampling equipment, sample containers, and drinking water or other fluids.

8.0 PERSONAL PROTECTION

Since personnel working on site may be exposed to chemical contaminants released during intrusive activities, or may come in contact with contaminants in water, various levels of protection must be available. Components of all levels of personal protection that will be available are listed in Table 8-1. The anticipated levels of protection for various field activities are given in Table 8-2.

In the event that unexpected levels of organic vapors are encountered, any personnel working at Level D or D+ protection will don their respirators (change to Level C). The Site HSO will consult with the Project HSO to decide if and when Level D or D+ protection may be resumed, or if a higher level of personal protection is required.

Some modification in safety equipment (e.g., switching from poly-coated disposable coveralls to standard disposable coveralls) may be implemented in order to balance concerns for full contaminant protection against concerns for the possibility of heat stress resulting from the need to wear more restrictive protective equipment. Such modifications may be implemented only if approved in advance by the Site HSO, following consultation with the Project HSO. Protective equipment which fully complies with the requirements of all required levels of protection will be immediately available at all times on the site.

Level C respiratory protection will normally be provided using NIOSH-approved full-face respirators, with high efficiency particulate air P-100 (HEPA) combination filter cartridges approved for removal of organic vapors, particulates, gases, and fumes. The filter cartridges will be changed at the end of each work day or when breakthrough occurs, whichever comes first. All field team members will have been fit-tested for respirators using irritant smoke prior to project assignment. Due to difficulties in achieving a proper seal between face and mask, persons with facial hair will not be allowed to work in areas requiring respiratory protection.

TABLE 8-1

COMPONENTS OF PERSONAL PROTECTION LEVELS

Level D Protection	**Level D+ Protection**	**Level C Protection**
• Safety glasses with side shields (or goggles)	• Safety glasses with side shields (or goggles)	• Hard hat
• Hard hat	• Hard hat	• Disposable poly-coated coveralls (Tyvek or equivalent)
• Ordinary coveralls	• Face shield (optional)	• Inner gloves of snug-fitting latex or vinyl
• Ordinary work gloves	• Disposable poly-coated coveralls (Tyvek or equivalent)	• Outer gloves of neoprene or nitrile
• Steel-toe, steel-shank work shoes or boots (chemical resistant)	• Inner gloves of snug-fitting latex or vinyl	• Steel-toe, steel-shank work shoes or boots (chemical resistant)
• Outer boots of neoprene or butyl rubber (optional)	• Outer gloves of neoprene or nitrile • Outer boots of neoprene or butyl rubber • Steel-toe, steel-shank work shoes or boots (chemical resistant) • Full-face air-purifying respirator (immediately available) • Disposable outer "booties" (optional)	• Outer boots of neoprene or butyl rubber • Full-face air-purifying respirator (to be worn) • Taping of gloves and boots to disposable coveralls • Disposable outer "booties" (optional)

1. The use of optional equipment is dependent upon site conditions.
2. Respirator to be fitted with NIOSH-approved high-efficiency filter (P-100) combination respirator cartridges approved for organic vapors, particulates, gases, and fumes.

TABLE 8-2

PLANNED LEVELS OF PERSONAL PROTECTION FOR EACH MAJOR ACTIVITY

Field Activity	Level of Protection*
A. Non-Intrusive Activities	
1. Setting up Support Facilities/Mobilization	D
2. Staging of Drummed IDW	D
3. Support Zone Activities	D
B. Intrusive Activities	
1. Groundwater Sampling	D/D+/C
2. Equipment Decontamination	D/D+/C

* These are the levels of protection at which work will commence during the various activities on the site. Due to onsite conditions, and as directed by the Site Health and Safety Officer, it may become necessary to upgrade, or it may be possible to downgrade, the level of personal protection.

9.0 AIR MONITORING

Air monitoring will not be performed for routine tasks such as site inspections, groundwater sampling, and other tasks where organic vapors are not anticipated or previous monitoring has shown that concentrations are below threshold criteria. In the event that suspicious chemical-like odors are encountered, work will stop immediately. Work will resume after air monitoring equipment is brought to the site and used to determine the levels of VOCs and the appropriate level of PPE.

If it is determined air monitoring is necessary, monitoring frequencies will be as summarized in Table 9-1. Air monitoring equipment will be calibrated daily and all data will be recorded in the field notebook and transferred to Instrument Reading Logs. Work will not begin until the instruments are calibrated and background levels are taken and recorded. Air will be monitored for total volatiles with a photoionization detector (PID) (MiniRAE 3000, or equivalent). All real-time air monitoring results and meteorological data (e.g., temperature range, wind speed, wind direction, etc. obtained from onsite measurements and/or national weather service, radio, or airport) will be recorded in the field notebook and will be transferred to Instrument Reading Logs.

9.1 Total Volatiles

Air monitoring for total volatiles (organic vapors) will be performed using a PID (MiniRAE 3000, or equivalent) equipped with the standard probe, which contains a 10.2 eV lamp. When readings less than 1 part per million (ppm) above background in the breathing zone are observed consistently, monitoring will take place at least every 10 minutes or for every sample retrieved and Level D protection will be utilized. When readings between 1 ppm and 5 ppm above background in the breathing zone are observed consistently, monitoring will be continuous and Level D+ protection will be utilized. If readings from 5 to 10 ppm above background in the breathing zone are observed, and all other action levels indicate that intrusive activities can proceed, monitoring will be continuous and Level C protection will be utilized. If organic vapor readings exceed 10 ppm above background in the breathing zone, or other instrument readings necessitate work suspension, intrusive activities will be halted and the level of protection used by onsite personnel will be reassessed. Monitoring frequencies during intrusive activities will be as summarized in Table 9-1.

9.2 Work Stoppage Responses

The following responses will be initiated whenever one or more of the action levels necessitating a work stoppage is exceeded:

- The Site HSO will be consulted immediately.
- All personnel (except as necessary for continued monitoring and contaminant mitigation, if applicable) will be cleared from the work area (e.g., from within the Exclusion Zone).

Any chemical release to air, water, or soil must be reported to the Site HSO at once. Any exposure resulting from protective equipment failure must be immediately reported to the Site HSO and to the Project HSO in writing within 24 hours.

9.3 Calibration of Air Monitoring Instruments

Photoionization Detector: The photoionization detector will be calibrated to a benzene surrogate daily (prior to field activities) and the results will be recorded in the field notebook and transferred to Instrument Reading Logs.

TABLE 9-1

ACTION LEVELS DURING SITE ACTIVITIES

Organic Vapors (PID)	Responses
1 ppm Above Background, Sustained Reading	• Continue site activities. • Level D protection. • Continue monitoring every 10 minutes/every sample retrieved in work area.
1-5 ppm Above Background, Sustained Reading	• Continue site activities. • Level D+ protection. • Continuous monitoring for organic vapors in the work area
Greater than 5-10 ppm Above Background, Sustained Reading	• Stop work • Contact HSO and project manager before proceeding.

Notes:

Air monitoring for action levels will occur in the breathing zone.

If action levels for any one of the monitoring parameters is exceeded , the appropriate responses listed in the right hand column should be taken.

10.0 HANDLING OF SAMPLES

The collection and analysis of environmental samples will require caution, not only to ensure safety of site sampling and support personnel, but also to ensure accuracy of results. To minimize hazards to lab personnel, sample volumes will be no larger than necessary, and the outside of all sample containers will be wiped clean prior to shipment.

11.0 DECONTAMINATION PROCEDURES

11.1 Decontamination of Personnel

Non-disposable protective clothing, boots, and gloves should be decontaminated by a thorough soap-and-water wash prior to leaving the site. Personnel performing intrusive tasks in potentially contaminated areas (e.g., environmental sampling) will be advised that all clothing worn under protective clothing (i.e., underwear, shirts, socks, trousers) should be laundered separately from street clothing before re-wearing. If protective clothing is breached and personal clothing becomes contaminated, the personal clothing will be disposed.

11.2 Decontamination of Equipment

Decontamination of sampling equipment is described in the Field Sampling and Analysis Plan. Other light equipment (such as tools, containers, monitoring instruments, radios, clipboards, etc.) will be wiped off with damp paper towels.

12.0 EMERGENCY PROCEDURES

The most likely incidents for which emergency measures might be required are:

- an exposure-related worker illness
- a sudden release of hazardous gases/vapors during drilling
- an explosion or fire occurring during drilling
- a heavy equipment-related accident, or other accident resulting in personal injury
- slipping, tripping, or falling resulting in personal injury
- spill of contaminated liquid or solid

Emergency procedures established to respond to these incidents are covered under the sections that follow.

12.1 Communications

Communications will be centered in the field vehicle, one of which will contain a cellular telephone for direct outside communications with emergency response organizations. If the site HSO or his designee leaves the immediate area, a cellular phone will be carried by him at all times. A cellular phone will be maintained with any groups of personnel who are performing tasks on site (e.g., environmental sampling).

12.2 Escape Routes

In the event of a sudden release of hazardous gases, or a fire, all personnel will be required to move upwind or at 90 degrees away from the location of the release or fire. This may require personnel to move into an offsite area without proper decontamination. At the conclusion of the emergency, they should perform proper decontamination.

12.3 Evacuation Signal

In the event of a sudden release or fire requiring immediate evacuation of the site, three quick blasts will be sounded on an air horn. Sounding the air horn will be the responsibility of the supervising personnel. The horns will be kept in a conspicuous place for quick access by

personnel. The person will also contact the Site HSO to report the incident and request aid if necessary. The NYSDEC and the Project HSO will be notified by telephone, and later by written report, whenever a site evacuation is executed.

12.4 Other Signals

Emergency hand signals for use by personnel wearing air-purifying respirators are summarized in Table 12-1.

12.5 Fire

In the event of a fire that cannot be controlled with available equipment, the local fire department will be summoned immediately by the Site HSO or his designee, who shall apprise them of the situation upon their arrival. NYSDEC will also be notified. (See Table 12-2 for telephone numbers of emergency response agencies).

12.6 First Aid

At the startup of field activities, the Project HSO will contact hospital personnel regarding the potential hazards at the site. First aid for personal injuries will be administered, if possible, at the site by the Site HSO or his designee. If a site worker should require further treatment, he or she will be transported to the hospital in the vehicle located on site or an ambulance will be summoned. The onsite vehicle will carry written directions to the urgent care clinic or hospital as well as a copy of Figures 12-1 and 12-2 showing the route.

All accidents, however insignificant, will be reported to the Site HSO, who will report the accident to the Project HSO. All personnel designated to administer first aid will have received a minimum of eight hours training in first aid and CPR, and be certified by the American Red Cross.

In the event of a serious personal injury requiring offsite medical attention, an attempt will be made to go through the decontamination procedures, including removal of protective clothing. If the injury is life-threatening, decontamination will be of secondary importance, and the injured party will be taken directly to the hospital. If a head, neck, back, or spinal injury is suspected, the injured person will not be moved and an ambulance will be summoned to the site.

12.7 Emergency Assistance

The name, telephone number, and location of police, fire, hospital, and other agencies whose services might be required, or from whom information might be needed, will be kept in the support zone. The list is presented in Table 12-2.

12.8 Spills

The potential for spills to occur during onsite work at the site is minimal, however, since the direct handling of hazardous waste containers (drums) is expected to be part of the scope of work, spills may occur. In the event that residual materials are spilled on site, the following procedures will be implemented:

12.8.1 Liquid Spills

If a liquid (decontamination water, well purge water, etc.) is spilled on a permeable surface, 2 inches of surface soil will be removed where the spill occurred and drummed. The area will later be either backfilled with clean soil or regraded. If liquid is spilled on an impermeable surface, a sorbent material will be applied to the spill area. The sorbent material will be swept up and drummed, and the spill area washed down with clean water.

12.9 Reports

Any emergencies, spills, or releases that occur on the site will be reported to the Project HSO and NYSDEC within one hour and will be followed by written notification within 24 hours.

12.10 Accident Investigation and Reporting

12.10.1 Accident Investigations

All accidents requiring first aid which occur incidental to activities on site will be investigated. Standard OSHA formats will be used for reporting any accidents/injuries/illness that occur on the site. The investigation format will be as follows:

- interviews with witnesses,
- pictures, if applicable, and
- necessary actions to alleviate the problem.

12.10.2 Accident Reports

In the event that an accident or some other incident such as an explosion or exposure to toxic chemicals occurs during the course of the project, the Project HSO will be telephoned within one hour and receive a written notification within 24 hours. The report shall include the following items:

- Name, telephone number, and location of the contractor, if not URS personnel.
- Name and title of person(s) reporting.
- Date and time of accident/incident.
- Location of accident/incident, (i.e., building number, facility name).
- Brief summary of accident/incident giving pertinent details including type of operation ongoing at the time of the accident/incident.
- Cause of accident/incident.
- Casualties (fatalities, disabling injuries).
- Details of any existing chemical hazard or contamination.
- Estimated property damage, if applicable.
- Nature of damage; effect on contract schedule.
- Action taken by contractor/URS to ensure safety and security.
- Other damage or injuries sustained (public or private).

TABLE 12-1

EMERGENCY HAND SIGNALS

- Hand gripping throat	- Can't breathe.
- Grip partner's wrist, or place both hands around wrist	- Leave area immediately, no debate!
- Hands on top of head	- Need assistance.
- Thumbs up	- I am all right, OK, I understand.
- Thumbs down	- No, negative.

TABLE 12-2

EMERGENCY TELEPHONE NUMBERS

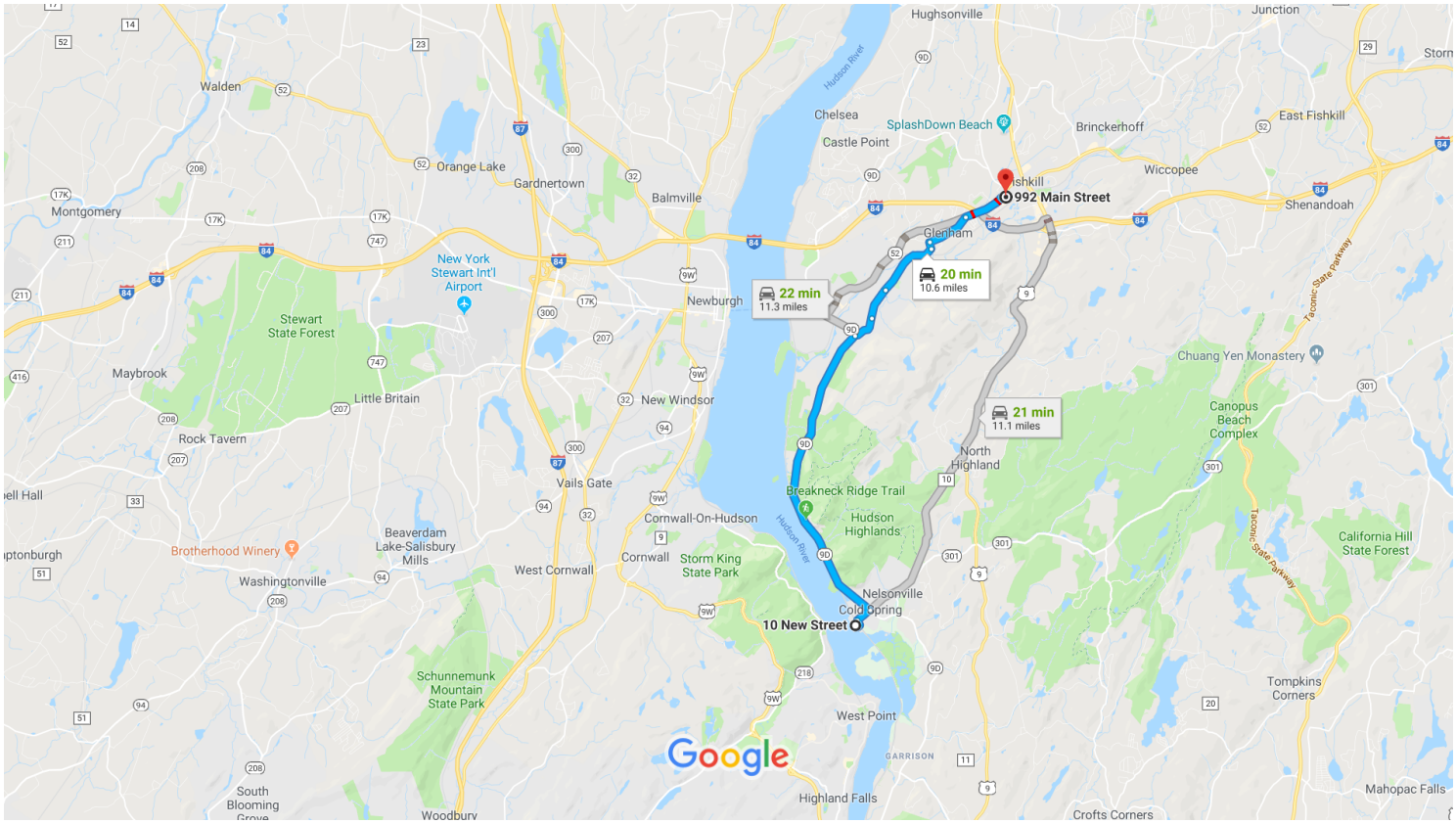
Emergency Response Agencies	
Fire	911
Police	911
Ambulance	911
Medical Facilities	
Excel Urgent Care of Fishkill, NY 992 Main St Fishkill, NY 12524	(845) 765-2240
New York Presbyterian Hudson Valley Hospital 1980 Compound Road Cortland, NY 10567	
Environmental and Health Agencies	
New York State Department of Environmental Conservation	(518) 402-9814
New York State Department of Health	(518) 408-5300
USEPA National Response Center (Chemical spills, oil spills, pollutant discharges)	(800) 424-8802

Google Maps

10 New Street, Cold Spring, NY to 992 Main St, Fishkill, NY 12524

Drive 10.6 miles, 20 min

ROUTE to Excel Urgent Care of Fishkill, NY



Map data ©2018 Google 2 mi

10 New St

Cold Spring, NY 10516

Take Lunn Terrace and Main St to NY-9D N/Morris Ave

3 min (0.5 mi)

1. Head northeast on New St toward Market St

131 ft

2. Turn right onto Market St

282 ft

3. Turn left onto Lunn Terrace

0.2 mi

4. Turn right onto Main St

0.3 mi

5. Turn left onto NY-9D N/Morris Ave

Continue to follow NY-9D N

8 min (5.9 mi)

Take Washington Ave and Old Glenham Rd to NY-52/Main St in Fishkill

7 min (3.3 mi)

6. Turn right onto Howland Ave

0.5 mi

7. Continue onto Depuyster Ave

0.6 mi

8. Merge onto Washington Ave

1.2 mi

9. Continue onto Maple St

0.1 mi

10. Turn right onto Old Glenham Rd

0.8 mi

11. Turn right onto NY-52/Main St

2 min (0.8 mi)

Drive to your destination

45 s (322 ft)

12. Turn right

213 ft

13. Turn left

Destination will be on the right

108 ft

992 Main St

Fishkill, NY 12524

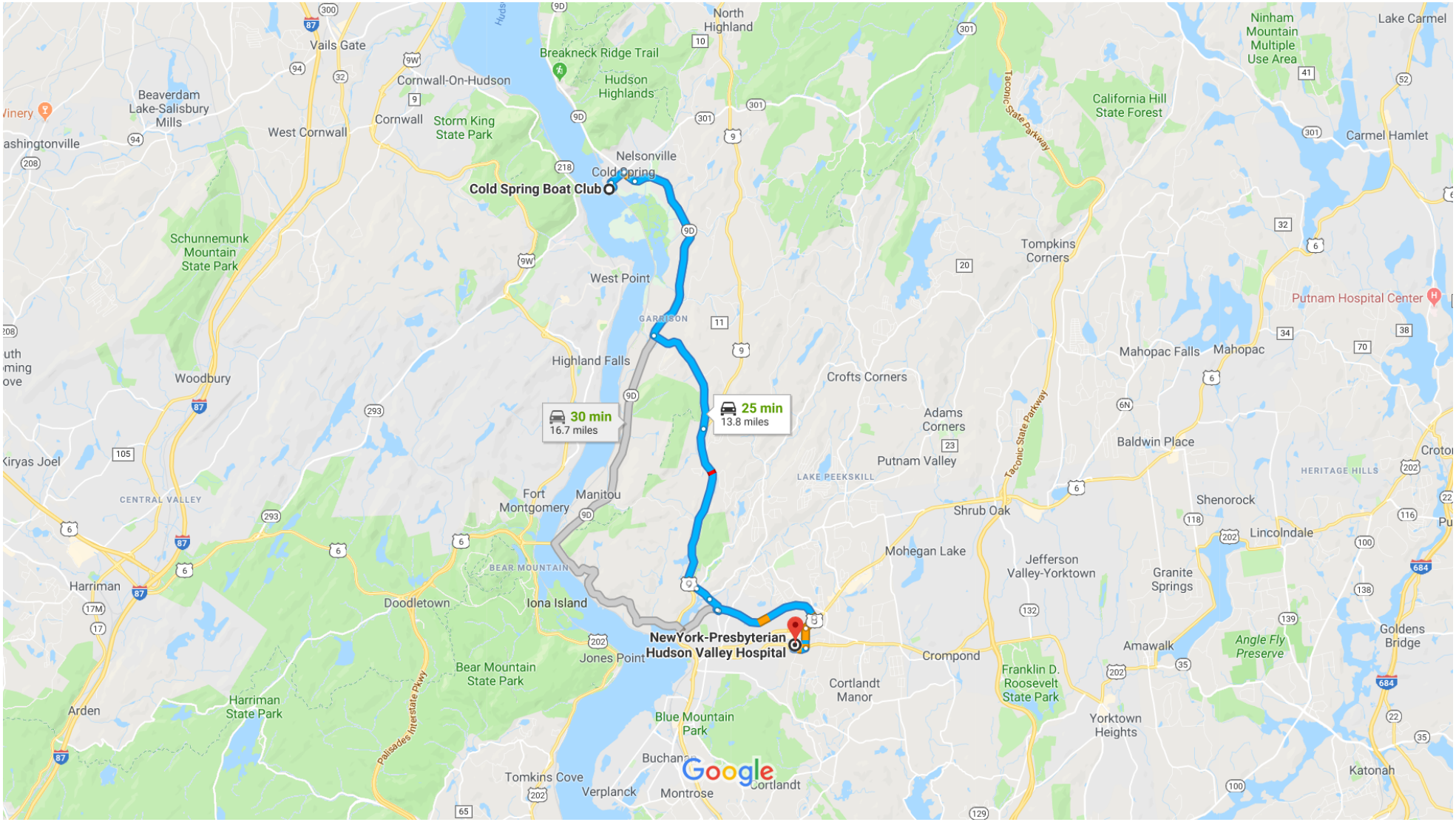
These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

Google Maps

Cold Spring Boat Club to NewYork-Presbyterian Hudson Valley Hospital

Drive 13.8 miles, 25 min

FIGURE 12-2 - ROUTE TO HOSPITAL



Map data ©2019 Google 2 mi

Cold Spring Boat Club

5 New St, Cold Spring, NY 10516

Take Lunn Terrace and Main St to Chestnut St

3 min (0.6 mi)

1. Head northeast on New St toward Market St

262 ft

2. Turn right onto Market St

282 ft

3. Turn left onto Lunn Terrace

0.2 mi

4. Turn right onto Main St

0.3 mi

Drive from NY-9D S, NY-403 S, U.S. 9 S and Bear Mountain State Pkwy to Cortlandt

21 min (13.2 mi)

5. Turn right onto Chestnut St

0.3 mi

6. Continue onto NY-9D S

3.8 mi

7. Turn left onto NY-403 S

2.3 mi

8. Continue straight onto U.S. 9 S

3.0 mi

9. Slight left onto Highland Ave

0.2 mi

10. Continue onto Albany Post Rd

0.3 mi

11. Continue onto Highland Ave

0.3 mi

12. Sharp right onto the ramp to Bear Mountain State Pkwy/New York State Reference Rte 987H

322 ft

13. Sharp right onto Bear Mountain State Pkwy/New York State Reference Rte 987H (signs for Bear Mtn Pkwy E)
Continue to follow Bear Mountain State Pkwy

2.1 mi

14. Turn right to stay on Bear Mountain State Pkwy

427 ft

15. Turn right onto US-6 W
Pass by Burger King (on the right)

0.2 mi

16. Turn left after Valvoline Instant Oil Change (on the left)

0.4 mi

17. Turn right onto US-202 W

0.2 mi

Drive to your destination

45 s (358 ft)

18. Turn right

223 ft

19. Turn right
Destination will be on the right

135 ft

NewYork-Presbyterian Hudson Valley Hospital

1980 Crompond Rd, Cortlandt, NY 10567

APPENDIX A

WASTE SITE WORKER TRAINING PROGRAMS

APPENDIX A
TABLE 1

WASTE SITE WORKER TRAINING PROGRAM (40 HOURS)

Introduction to Program
Sources of Reference
Hazardous Waste Operations and Emergency Response (29 CFR 1910.120)
Heat Stress/Cold Exposure
Chemical & Physical Hazards
Chemical Protective Clothing (CPC)

Toxicology
Respiratory Protection Principles
Air-Purifying Respirators (APR)
APR Inspection, Donning, and Doffing
Self Contained Breathing Apparatus (SCBA)
SCBA Checkout
SCBA Field Exercise
Review of SCBA Lab and Field Exercise
Air-Line Respirators (ALR)

Site Safety
Site Control
Decontamination
Air Monitoring Equipment
Entry Permit Development
Material Handling and Spill Containment

Health and Safety Plans (HASP)
Emergency Response Plans (ERP)
HASP & ERP Development

Level A/B Field Exercise
Level B/C Field Exercise
Air Monitoring Equipment Lab
SCBA Proficiency Checkout

Review of Lab & Field Exercises
Review of Air Monitoring Equipment Lab
Medical Monitoring
Hazard Communication (29 CFR 1910.120)
Risk Assessment
APR Fit Test Demonstration and Certification
Written Test

APPENDIX A

TABLE 2

WASTE SITE WORKER SUPERVISORY TRAINING PROGRAM (8 HOURS)

Record keeping Requirements Under Standard 29 CFR 1910.120
OSHA Inspections
Establishing Community Relations
Employee Training and Motivation
Management Traits
Dermal Protection Program
Respiratory Protection Program
Preventative Heat Stress and Cold Exposure Management
Medical Monitoring Requirements
Reporting and Recording Occupational Injuries, Illnesses, and Exposures
Accident Prevention
Spill Containment Program
Determining the Effectiveness of Decontamination Procedures
Implementation of Site Health and Safety Plans
Implementation of Emergency Response Plans
Implementation of the Hazard Communication Standard (29 CFR 1910.120)
Responsibilities of the Site Safety and Health Supervisor and Project Manager
Personnel Sampling
Interpretation of Air Monitoring Data

APPENDIX A

TABLE 3

WASTE SITE WORKER ANNUAL REFRESHER TRAINING PROGRAM (8 HOURS)

OSHA Requirements
Hazardous Wastes
Toxicology
Exposure Limits
Chemical Hazards
Temperature Stress
Other Physical Hazards
Radiation
Site Control at Hazardous Waste Sites
Decontamination Procedures
Personal Protective Equipment
Air Monitoring Equipment
Field Exercises

APPENDIX B

STANDARD OPERATING

SAFETY PROCEDURES

APPENDIX B STANDARD OPERATING SAFETY PROCEDURES

Rules for onsite personal safety are shown in Appendix B, Table 1; rules for operational safety appear in Appendix B, Table 2.

APPENDIX B

TABLE 1

PERSONAL SAFETY RULES

- Visual contact must be maintained between crew members on site.
- Any practice that increases the probability of hand-to-mouth transfer and ingestion of materials is prohibited in any area designated as contaminated. These practices include as a minimum, eating, drinking, chewing gum or tobacco, and smoking.
- Hands and face must be thoroughly washed upon leaving the work area, and before engaging in any other activities, especially eating or drinking.
- Due to interference of facial hair with the mask-to-face seal on air-purifying respirators, personnel working on site will not be permitted to wear facial hair that interferes with the seal.
- Contact with contaminated surfaces or surfaces suspected of contamination should be avoided. Site personnel should avoid walking through puddles, mud, or other discolored areas, and should not kneel or sit on the ground.
- Field personnel shall be familiar with the physical characteristics of the site, including:

  - wind direction in relation to the working area
  - accessibility to associates, equipment, and vehicles
  - communications
  - work zones
  - site access

- Medicine and alcohol can exacerbate the effect from exposure to toxic chemicals. Prescribed drugs should not be taken by field personnel where the potential for absorption, inhalation, or ingestion of toxic substances exists unless specifically approved by a qualified physician. Alcoholic beverage and controlled substance intake is strictly forbidden during onsite operations.

APPENDIX B

TABLE 2

OPERATIONAL SAFETY RULES

- No visitors shall be allowed into any Exclusion Zone without the permission of the NYSDEC.
- Onsite personnel must use the buddy system when wearing respiratory protective equipment. A third person, suitably equipped, is required as a safety backup during initial site entries.
- During day-to-day operations, onsite workers will act as a safety backup to each other. Offsite personnel will provide emergency assistance.
- Wind indicators will be set up so as to be visible from the Exclusion Zone.
- Daily briefings will be held to review site hazards, changes in level of personal protection required, special safety precautions for assigned work activities, and emergency response.
- All personnel going on site must be thoroughly briefed on anticipated hazards, and trained on equipment to be worn, safety procedures, emergency procedures, and communications.

APPENDIX G – QUALITY ASSURANCE PROJECT PLAN

COLD SPRING MGP SITE

VILLAGE OF COLD SPRING

PUTNAM COUNTY, NEW YORK

NYSDEC SITE NUMBER: 340026

QUALITY ASSURANCE PROJECT PLAN

Prepared For:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

625 Broadway

Albany, New York 12233

Prepared By:

URS CORPORATION

257 West Genesee Street, Suite 400

Buffalo, New York 14202-2657

FEBRUARY 2019

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QUALITY ASSURANCE PROJECT PLAN

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TABLES

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1.0 INTRODUCTION

This Quality Assurance Project Plan (QAPP) is designed to provide an overview of quality assurance/quality control (QA/QC) procedures and programs which will be adhered to during the post-remediation long-term monitoring activities, as described in the Site Management Plan (SMP) (URS, 2018). The QAPP will identify specific methods and QA/QC procedures for chemically testing environmental samples collected from the Cold Spring MGP Site, located in the Village of Cold Spring, Putnam County, New York (NYSDEC Site Number: 340026).

2.0 PROJECT/SITE DESCRIPTION

A complete project description of the Cold Spring MGP site is provided in Section 2.0 of the Cold Spring MGP Site Management Plan (URS, 2018).

3.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

The Project QA Officer is responsible for verifying that corporate QA procedures are followed and will ensure that all project deliverables undergo a thorough QA review by senior staff members who are qualified and experienced in appropriate disciplines.

The Project Manager will be responsible for technical and financial management of the project, and for overall coordination and review of component work activities. The Project Manager will serve as the initial and primary contact with the client throughout the project and will be responsible for successful implementation of the field QA/QC activities. The Project Manager may delegate a portion of the tasks required for successful implementation of the work plans to a qualified individual who will be on site during the investigation (e.g., the Onsite Environmental Scientist). This person will work under the direction of the Project Manager and will be responsible for implementing applicable QC procedures in the field and verifying that all other field personnel adhere to these procedures and perform all activities as described in the project work plans.

The onsite Environmental Scientist is responsible for verifying that QA procedures are followed in the field so that valid, representative samples are collected. The onsite Environmental Scientist also will be responsible for coordinating the activities of all personnel involved with implementing the project in the field, and will be in daily communication with the Project Manager. This person will verify that all field work is carried out in accordance with the approved project plans.

The Project Chemist is responsible for verifying that the analytical laboratory adheres to the QA/QC requirements specified in this QAPP. The Project Chemist will be the point-of- contact for the Laboratory Project Manager and will be in continual contact to verify that all efforts are being made to perform sample analyses in a manner such that the resulting data will be of sufficient quality for its intended purpose.

The analytical laboratory to be used for the analysis of groundwater and leachate shall hold applicable New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) certifications for the analyses to be performed. The QA Manager of the laboratory will be responsible for performing project-specific audits and for overseeing the quality control data generated. Also, the Laboratory Project Manager will be in daily communication with the Project Chemist.

4.0 DATA QUALITY OBJECTIVES

4.1 Background

Data quality objectives (DQOs) are qualitative and quantitative statements, which specify the quality of data required to support the post-remediation groundwater monitoring activities at the Cold Spring MGP site. The project DQOs focus on the identification of the end use of the data to be collected. The project DQOs will be achieved utilizing definitive data categories, as outlined in *Guidance on Systematic Planning Using the Data Quality Objectives Process*, EPA QA/G-4, EPA/240/B-06/001, USEPA (February 2006). The definitive data are generated using rigorous analytical methods, such as approved United States Environmental Protection Agency (USEPA) reference methods. The analytical methods to be used are presented in Table 4-1.

The project DQOs for data collected during the site management of the Cold Spring MGP Site activities are to:

- Perform annual sampling and analysis of groundwater samples.
- Sample quantitation limits for groundwater must not exceed NYSDEC, Division of Water Technical and Operational Guidance Series (TOGS 1.1.1), *Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations*, June 1998, as listed on Table 4-2.

4.2 QA Objectives for Chemical Data Measurement

For the definitive data category described above, the data quality indicators of precision, accuracy, representativeness, comparability, completeness, and sensitivity (PARCCS) will be measured during offsite chemical analysis.

4.1.1 Precision

Precision examines the distribution of the reported values about their mean. The distribution of reported values refers to how different the individual reported values are from the average reported value. Precision may be affected by the natural variation of the matrix or contamination within that

TABLE 4-1
SUMMARY OF SAMPLES TO BE COLLECTED AND ANALYTICAL PARAMETERS
COLD SPRING MGP SITE
NYSDEC SITE NUMBER: 540026

Parameter	Analytical Method[1]	Number of Samples	Field QA/QC Samples				Estimated Total No. of Samples per event
			Field Duplicates [2]	MS/MSD Pairs [2]	Rinsate Blanks [2]	Field or Trip Blanks [2]	
I. Groundwater Samples - Annual Monitoring (per event)							
Benzene, Toluene, Ethylbenzene, Xylenes (BTEX)	SW8620C	5	1	1	0	1	9
Polycyclic Aromatic Hydrocarbons (PAHs)	SW8270D	5	1	1	0	0	8
Per- and Polyfluoroalkyl Substances (PFAS)	USEPA 537 - modified	5	1	1	1	1	10

Notes:
1. NYSDEC Analytical Services Protocol (ASP), July 2005 Edition.

2. Field duplicates and MS/MSD pairs will be collected at a frequency of 1 per 20 samples per matrix per sampling event. Rinsate blanks will be collected for PFAS sampling. For all other parameters a rinse blank will only when non-dedicated (e.g. , non-disposable) equipment are used, at a frequency of 1 per sampling equipment type per sampling event. Trip blanks will be collected at the rate of one per sample shipment for aqueous VOCs only. A field blank shall be collected for PFAS sampling.
MS/MSD - Matrix Spike/Matrix Spike Duplicate
QA/QC Quality Assurance/Quality Control MGP - Manufactured Gas Plant

TABLE 4-2
GROUNDWATER QUANTITATION LIMITS AND AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES
COLD SPRING MGP SITE
NYSDEC SITE NUMBER: 540026

Matrix: Groundwater			
Analytical Method [1]	**Parameter**	**PQL (ug/L)***	**GW Class GA Criteria [2] (ug/L)**
SW8260C BTEX	Benzene	1	1
	Ethylbenzene	1	5
	Toluene	1	5
	Xylene (Total)	3	5
SW8270D Polycyclic Aromatic Hydrocarbons (PAHs)	Acenaphthene	10	20
	Acenaphthylene	10	NS
	Anthracene	10	50
	Benzo(a)anthracene	10	0.002
	Benzo(a)pyrene	10	ND
	Benzo(b)fluoranthene	10	0.002
	Benzo(g,h,i)perylene	10	NS
	Benzo(k)fluoranthene	10	0.002
	Chrysene	10	0.002
	Dibenz(a,h)anthracene	10	NS
	Fluoranthene	10	50
	Fluorene	10	50
	Indeno(1,2,3-cd)pyrene	10	0.002
	Naphthalene	10	10
	Phenanthrene	10	50
	Pyrene	10	50
USEPA 537 - modified	**Parameter**	**PQL (ng/L)***	**DWQC Recommended Screening Level (ng/L)[3]**
Per- and Polyfluoroalkyl Substances (PFAS)	N-Methyl perfluorooctanesulfonamidoacetic acid	17	100
	Perfluorobutanesulfonic acid (PFBS)	1.7	100
	Perfluorobutanoic acid (PFBA)	1.7	100
	Perfluorodecane sulfonate (PFDS)	1.7	100
	Perfluorodecanoic acid (PFDA)	1.7	100
	N-Ethyl perfluorooctanesulfonamidoacetic acid	17	100
	Perfluorododecanoic acid (PFDoA)	1.7	100
	Perfluoro-1-heptanesulfonate (PFHPS)	1.7	100
	Perfluoroheptanoic acid (PFHpA)	1.7	100
	Perfluorohexanesulfonic acid (PFHxS)	1.7	100
	Perfluorohexanoic acid (PFHxA)	1.7	100
	Perfluorononanoic acid (PFNA)	1.7	100
	Perfluorooctane sulfonamide (FOSA)	1.7	100
	Perfluorooctanesulfonic acid (PFOS)	1.7	10
	Perfluorooctanoic acid (PFOA)	1.7	10
	Perfluoropentanoic acid (PFPA)	1.7	100
	Perfluorotetradecanoic acid (PFTeA)	1.7	100
	Perfluorotridecanoic acid (PFTriA)	1.7	100
	Perfluoroundecanoic acid (PFUnA)	1.7	100
	6:2 Fluorotelomer sulfonate (62FTS)	17	100
	8:2 Fluorotelomer sulfonate (82FTS)	17	100

Notes:
1. NYSDEC Analytical Services Protocol (ASP), July 2005 Edition.
2. NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent
3. Screening Level - Drinking Water Quality Council (DWQC) screening level (January 2019)

* Lab dependent
MGP - Manufactured Gas Plant
ND - Not detected
NS - No Standard or Guidance Value
PQL - Practical Quantitation Limit
ug/L - Micrograms per Liter
ng/L - Nanograms per Liter

matrix, as well as by errors made in the field and/or laboratory handling procedures. Precision is evaluated using analyses of a laboratory matrix spike/matrix spike duplicate (MS/MSD) and field duplicate samples, which not only provide a measure of sampling and analytical precision, but also indicate analytical precision through the reproducibility of the analytical results. Relative percent difference (RPD) is used to evaluate precision. RPD criteria for all analyses being performed as part of this work assignment shall meet method-specific QC requirements.

4.1.2 Accuracy

Accuracy measures the analytical bias in a measurement system. Sources of error are the sampling process, field contamination, preservation, handling, sample matrix, sample preparation, and analysis techniques. Sampling accuracy may be assessed by evaluating the results of rinse and trip blanks. These data help to assess the potential contamination contribution from various outside sources. The laboratory objective for accuracy is to equal or exceed the accuracy demonstrated for the applied analytical methods on samples of the same matrix. The percent recovery criterion is used to estimate accuracy based on recovery in the MS/MSD and laboratory control sample (LCS)/matrix spike blank (MSB). The MS/MSD analyses, which will give an indication of matrix effects that may be affecting target compounds, are also a good gauge of method efficiency. Surrogate recovery results will also be measured. Acceptable criteria for all analyses being performed as part of this work assignment shall meet method-specific QC requirements.

4.1.3 Representativeness

Representativeness expresses the degree to which the sample data accurately and precisely represent the characteristics of a population of samples, parameter variations at a sampling point, or environmental conditions. Representativeness is a qualitative parameter, which is most concerned with the proper design of the sampling program or subsampling of a given sample. Objectives for representativeness are defined for sampling and analysis tasks and are a function of the investigative objectives. The sampling procedures, as described in Sections 2.0, 3.0, and 4.0 of the Cold Spring MGP site Field Sampling and Analysis Plan (FSAP) have been selected with the goal of obtaining representative samples for the media of concern.

4.1.4 Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. An objective for this program is to produce data with the greatest possible degree of comparability. This goal is achieved through using standard techniques to collect and analyze representative samples, and reporting analytical results in appropriate units. Complete field documentation using standardized data collection forms will support the assessment of comparability. Comparability is limited by the other parameters (e.g., precision, accuracy, representativeness, and completeness), because only when precision and accuracy are known can data sets be compared with confidence. For data sets to be comparable, it is imperative that the analytical methods and procedures be explicitly followed.

4.1.5 Completeness

Completeness is defined as a measure of the amount of valid data obtainable from a measurement system compared to the amount that was expected to be obtained under normal conditions. To meet project needs, it is important that appropriate QC procedures be maintained to verify that valid data are obtained. For the data generated, a goal of 90% is required for completeness (or usability) of the analytical data. If this goal is not met, then NYSDEC and contractor project personnel will determine whether the deviations may cause the data to be rejected, and what further actions, if any, need to be taken.

4.1.6 Sensitivity

Sensitivity, as it pertains to analytical methods/instrumentation, is defined as the lowest concentration that can be distinguished from background noise. Sensitivity is measured by method detection limit (MDL) determinations, which are performed by laboratories for each analyte and matrix following procedures specified in 40 CFR Part 136, Appendix B, Revision 2. The MDL is the minimum concentration of an analyte that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero. MDLs are determined by the laboratory on an annual basis.

Analytical results are typically reported down to the quantitation limit (QL), which represents the lowest point of the calibration curve, and are typically 3-10 times higher than MDLs. Analytical results reported above the MDL but below the QL are considered estimated values (qualified "J"). QLs for the parameters to be analyzed as part of this work assignment, where applicable, are presented in Tables 4-2.

5.0 SAMPLING LOCATIONS AND PROCEDURES

Sampling locations and procedures are discussed in Sections 2.0, 3.0, and 4.0 of the Cold Spring MGP site FSAP (URS, 2018).

6.0 SAMPLE CUSTODY AND HOLDING TIMES

Proper documentation of sample collection and the methods used to control these documents are referred to as chain-of-custody procedures. Chain-of-custody procedures are essential for presenting sample analytical results as evidence in litigation or at administrative hearings held by regulatory agencies. Chain-of-custody procedures also serve to minimize loss or misidentification of samples and to ensure that unauthorized persons do not tamper with collected samples.

The procedures used in these investigations will follow the chain-of-custody guidelines of *NEIC Policies and Procedures*, prepared by the National Enforcement Investigations Center (NEIC) of the USEPA Office of Enforcement.

6.1 Custody Definitions

- Chain-of-Custody Officer - The employee responsible for oversight of all associated chain-of-custody activities is the Onsite Environmental Scientist (or his/her designee).
- Under Custody - A sample is "Under Custody" if:
  - It is in one's possession, or
  - It is in one's view, after being in one's possession, or
  - It was in one's possession and one locked it up, or
  - It is in a designated secure area.

6.2 Responsibilities

The onsite Environmental Scientist will be responsible for monitoring all chain-of-custody activities and for collecting legally admissible chain-of-custody documentation for the permanent project file. The onsite Environmental Scientist will be responsible for:

- Initially reviewing sample labels or tags, closure tapes, and chain-of-custody record forms. The onsite Environmental Scientist shall document this review for the project file.
- Training all field sampling personnel in the methodologies for carrying out chain-of-custody and the proper use of all chain-of-custody forms and record documents.

- Monitoring the implementation of chain-of-custody procedures.
- Submit copies of the completed chain-of-custody forms to the Project Manager daily.

6.3 Chain-of-Custody

Chain-of-custody is initiated in the laboratory when the sample containers are cleaned, packed, and shipped to the site for use in the field. When the containers are received from the laboratory, they will be checked for any breach of custody including, but not limited to incomplete chain-of-custody records, broken chain-of-custody seals, or any evidence of tampering. Upon receipt of the samples, the laboratory will check for breach of custody as previously described.

6.4 Sample Containers and Holding Times

Table 6-1 identifies the analytical method, container, preservation, and holding time requirements. All holding times begin with the date/time of sample collection, except where noted otherwise in Table 6-1.

TABLE 6-1
SAMPLE CONTAINER, PRESERVATION, AND HOLDING TIME REQUIREMENTS
COLD SPRING MGP SITE
NYSDEC SITE NUMBER: 540026

Analytical Parameter	Container Size/Type*	Containers Per Sample	Preservation	Maximum Holding Time**
I. Groundwater Samples				
BTEX	Glass, Teflon-Lined, Septum Cap	3	HCl to pH <2, Cool, 4°C, No Headspace	14 days. 7 days if not pH preserved to < 2.
PAHs	Glass 250 mL Amber	2	Cool, 4°C	7 days until extraction; 40 days after extraction
PFAS	HDPE 250 mL	2	Trizma®, Cool, 4°C	14 days until extraction; 28 days after extraction

Notes:
* Number and size of containers may vary based on laboratory sample volume requirements.
** - Holding times are from date of sample collection unless otherwise noted.

7.0 ANALYTICAL PROCEDURES

Table 4-1 identifies the specific methods to be performed on the individual matrices. All analyses will be performed in accordance with the following documents:

- *New York State Department of Environmental Conservation Analytical Services Protocol,* July 2005 Edition.
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,* EPA publication SW-846, Third Edition, Final Updates I (1993), II (1995), IIA (1994), IIB (1995), III (1997), IIIA (1999), IIIB (2005), IV (2008), and V (2015).
- *Method 537. Determination Of Selected Perfluorinated Alkyl Acids In Drinking Water By Solid Phase Extraction And Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS),* USEPA Document #: EPA/600/R-08/092

8.0 CALIBRATION PROCEDURES AND FREQUENCY

In order to obtain a high level of precision and accuracy during sample processing procedures, laboratory instruments must be calibrated properly. Several analytical support areas must be considered so the integrity of standards and reagents is upheld prior to instrument calibration. The following sections describe the analytical support areas and laboratory instrument calibration procedures.

8.1 Analytical Support Areas

Prior to generating quality data, several analytical support areas must be considered:

Standard/Reagent Preparation - Primary reference standards and secondary standard solutions shall be obtained from National Institute of Standards and Technology (NIST), or other reliable commercial sources to verify the highest purity possible. The preparation and maintenance of standards and reagents will be accomplished per the methods referenced in Table 4-1. All standards and standard solutions are to be formally documented (i.e., in a bound logbook) and should identify the supplier, lot number, purity/concentration, receipt/preparation date, preparer's name, method of preparation, expiration date, and any other pertinent information. All standard solutions shall be validated prior to use. Care shall be exercised in the proper storage and handling of standard solutions (e.g., separating volatile standards from nonvolatile standards). The laboratory shall continually monitor the quality of the standards and reagents through well documented procedures.

Balances - The analytical balances shall be calibrated and maintained in accordance with American Society of Testing Materials (ASTM) specifications. Calibration is conducted with two Class-1 weights that bracket the expected balance use range. The laboratory shall check the accuracy of the balances daily and properly document results in permanently bound logbooks.

Refrigerators/Freezers - The temperature of the refrigerators and freezers within the laboratory shall be monitored and recorded daily. This will verify that the quality of the standards and reagents is not compromised and the integrity of the analytical samples is upheld. Appropriate acceptance ranges ($4^{o}C \pm 2^{o}C$ for refrigerators) shall be clearly posted on each unit in service.

Water Supply System - The laboratory must maintain a sufficient water supply for all project needs. The grade of the water must be of the highest quality (analyte-free) in order to eliminate false-positives from the analytical results. Ultraviolet cartridges or carbon absorption treatments are

recommended for organic analyses. Appropriate documentation of the quality of the water supply system(s) will be performed on a regular basis.

Air Supply System - The laboratory must maintain a sufficient clean (analyte free) air supply for all project needs if required. The grade of the air must be of the highest quality (analyte-free) in order to eliminate false-positives from the analytical results. Appropriate documentation of the quality of the air supply system(s) will be performed on a regular basis by the laboratory.

8.2 Laboratory Instruments

Calibration of instruments is required to verify that the analytical system is operating properly and at the sensitivity necessary to meet method established quantitation limits. Each instrument for organic analysis shall be calibrated with standards appropriate to the type of instrument and linear range established within the analytical method(s). Calibration of laboratory instruments will be performed according to methods specified in Table 4-1.

Calibration of an instrument must be performed prior to the analysis of any samples (initial calibration) and then at periodic intervals (continuing calibration) during the sample analysis to verify that the instrument is still properly calibrated. If the contract laboratory cannot meet the method-required calibration requirements, corrective action shall be taken as discussed in Section 11.0. All corrective action procedures taken by the contract laboratory are to be documented, summarized within the case narrative, and submitted with the analytical results.

9.0 INTERNAL QUALITY CONTROL CHECKS

Internal QC checks are used to determine if analytical operations at the laboratory are in control, as well as determining the effect sample matrix may have on data being generated. Two types of internal checks are performed - batch QC and matrix-specific QC procedures. The type and frequency of specific QC samples performed by the laboratory will be determined by the specified analytical method and project specific requirements. Acceptable criteria and/or target ranges for these QC samples shall meet method-specific QC requirements.

QC results, which vary from acceptable ranges shall result in the implementation of appropriate corrective measures, potential application of qualifiers, and/or an assessment of the impact these corrective measures have on the established data quality objectives. Quality control samples including any project-specific QC will be analyzed are discussed below.

9.1 Batch QC

Method Blanks - A method blank is defined as laboratory demonstrated analyte free water or solid that is carried through the entire analytical procedure. The method blank is used to determine the level of laboratory background contamination. Method blanks are analyzed at a frequency of one per analytical batch.

Matrix Spike Blank Samples - An MSB or LCS is an aliquot of demonstrated analyte free water or solid spiked (fortified) with all or a representative group of the analytes being analyzed. The MSB or LCS is a measure of precision and accuracy used to verify that the analysis being performed is in control. An MSB or LCS will be performed for each matrix as required by the analytical methods referenced in Table 4-1. Acceptable criteria and/or target ranges for these QC samples shall meet method-specific QC requirements.

9.2 Matrix-Specific QC

Matrix Spike Samples - An aliquot of sample is spiked with known concentrations of specific compounds as stipulated by the methodology. The MS/MSD samples are subjected to the entire analytical procedure in order to assess both accuracy and precision of the method for the matrix by measuring the percent recovery of each analyte and RPD between the concentrations of each analyte in the two spiked samples. The samples are used to assess matrix interference effects on the method, as well as to evaluate instrument performance. MS/MSDs are analyzed at a frequency of one each

per twenty samples, as listed in Table 4-1. Acceptable criteria and/or target ranges for these QC samples shall meet method-specific QC requirements.

9.3 Additional QC

Rinsate (Equipment) Blanks – Rinsate blanks are not required when dedicated non-disposable sampling equipment are used. A rinsate blank is a sample of laboratory demonstrated analyte-free water passed over or through the cleaned sampling equipment. A rinsate blank is used to indicate potential contamination from sample instruments used to collect and transfer samples. The water must originate from one common source within the laboratory and must be the same water used by the laboratory performing the analysis. The rinsate blank should be collected, transported, and analyzed in the same manner as the samples acquired that day. Rinsate blanks will be performed at the rate listed in Table 4-1.

Trip Blanks - Trip blanks are not required for non-aqueous matrices. Trip blanks are required for aqueous sampling events when volatile organics are collected. They consist of a set of sample bottles filled at the laboratory with laboratory demonstrated analyte-free water. These samples then accompany the bottles that are prepared at the laboratory into the field and back to the laboratory, along with the collected samples for analysis. These bottles are never opened in the field. Trip blanks must return to the laboratory with the same set of bottles they accompanied to the field. Trip blanks will be analyzed for volatile organics only. Trip blanks will be analyzed at the frequency stated in Table 4-1.

Field Blanks - Field blanks are required for sampling events when per- and polyfluoroalkyl substances (PFAS) samples are collected. They consist of a set of sample bottles filled in the field with laboratory demonstrated analyte-free water. These samples then accompany the bottles that are collected samples for analysis. Field blanks will be analyzed at the frequency stated in Table 4-1.

Field Duplicates – A field duplicate (FD) sample pair are independent samples, which are collected as close as possible to the same point in space and time. They are two separate samples taken from the same source, stored in separate containers, and analyzed independently. Field duplicates are useful in documenting the precision of the sampling process. Blind field duplicates will be collected at the frequency listed on Table 4-1. The field duplicates will be labeled so that the laboratory cannot determine or identify the location from, which the field duplicate was collected.

10.0 CALCULATION OF DATA QUALITY INDICATORS

10.1 Precision

Precision is evaluated using results from field duplicate and/or MS/MSD analyses. The RPD between the parent sample/field duplicate or between the MS/MSD concentrations is used to evaluate precision and calculated by the following formula:

$$RPD = \left[\frac{|X_1 - X_2|}{(X_1 + X_2)/2} \right] x100\%$$

where:

X_1 = *Measured value of sample or matrix spike*

X_2 = *Measured value of duplicate or matrix spike duplicate*

RPD criteria for this project shall meet method-specific QC requirements.

10.2 Accuracy

Accuracy is defined as the degree of difference between the measured or calculated value and the true value. Analytical accuracy is expressed as the %R of a compound that has been added to the environmental sample or laboratory demonstrated analyte free matrix at known concentrations before analysis. Accuracy will be determined from MS, MSD, MSB (or LCS) samples as well as from surrogate compounds and is calculated as follows:

$$\%R = \frac{(X_s - X_u)}{K} \, x \, 100\%$$

where:

X_s - Measured value of the spike sample

X_u - Measured value of the unspiked sample

K - Known amount of spike in the sample

%R criteria for this project shall meet method-specific QC requirements.

10.3 Completeness

Completeness is calculated on a per matrix basis for the project and is calculated as follows:

$$\%\ Completeness = \frac{(N - X_n)}{N}\ x\ 100\%$$

where:

X_n - Number of invalid measurements

N - Number of valid measurements expected to be obtained

11.0 CORRECTIVE ACTIONS

Laboratory corrective actions shall be implemented to resolve problems and restore proper functioning to the analytical system when errors, deficiencies, or out-of-control situations exist at the laboratory. Full documentation of the corrective action procedure needed to resolve the problem shall be filed in the project records, and the information summarized in the analytical report case narrative. A discussion of the corrective actions to be taken is presented in the following sections.

11.1 Incoming Samples

Problems noted during sample receipt shall be documented by the laboratory. The Project Chemist (or designee) shall be contacted immediately for problem resolution. All corrective actions shall be documented thoroughly.

11.2 Sample Holding Times

If any sample extractions and/or analyses exceed method holding time requirements, the Project Chemist (or designee) shall be notified immediately for problem resolution. All corrective actions shall be documented thoroughly.

11.3 Instrument Calibration

Sample analysis shall not be allowed until all laboratory instrumentation is properly calibrated in accordance with method requirements. If any initial/continuing calibration standards exceed method QC limits, recalibration must be performed and, if necessary, samples back to the previous acceptable continuing calibration standard must be reanalyzed.

11.4 Quantitation Limits

The laboratory must meet all quantitation limits listed in Tables 4-2. If difficulties arise in achieving these limits due to a particular sample matrix, the laboratory must notify the Project Chemist for problem resolution. When any sample requires a secondary dilution due to high levels of target analytes, the laboratory must report the results from initial analyses and secondary dilution analyses. Dilution will be permitted only to bring target analytes within the linear range of

calibration. If samples are analyzed at a dilution with no target analytes detected, the Project Chemist (or designee) will be immediately notified so that appropriate corrective actions can be initiated.

11.5 Method QC

All QC, including blanks, matrix spikes, matrix spike duplicates, surrogate recoveries, matrix spike blank samples, and other method-specified QC samples, shall meet the requirements of the methods referenced in Table 4-1and Table 4-2. Failure of method-required QC will result in the possible qualification of all affected data. If the laboratory cannot find any errors, the affected sample(s) shall be reanalyzed within method-required holding times to verify the presence or absence of matrix effects. If matrix effect is confirmed, the corresponding data shall be flagged accordingly using the flagging symbols and criteria as defined by the data validation guidelines identified in Section 12.2. If matrix effect is not confirmed, then the entire batch of samples may have to be reanalyzed. The Project Chemist shall be notified as soon as possible to discuss possible corrective actions should unusually difficult sample matrices be encountered.

11.6 Calculation Errors

All analytical results must be reviewed systematically for accuracy prior to submittal. If upon data review, calculation and/or reporting errors exist, the laboratory will be required to reissue the analytical data report with the corrective actions appropriately documented in the case narrative.

12.0 DATA REDUCTION, VALIDATION, AND USABILITY

For all analyses, NYSDEC ASP Category B (or equivalent) deliverable requirements will be employed for documentation and reporting of all data. The standard NYSDEC Data Package Summary (or equivalent) will be completed by the analytical laboratory and included in the deliverable data packages. In addition, analytical results will be reported in an electronic data deliverable (EDD) format.

12.1 Data Reduction

Laboratory analytical data are first generated in raw form at the instrument. These data may be either graphic or printed tabular form. Specific data generation procedures and calculations are found in each of the referenced methods. Analytical results must be reported consistently. Data for aqueous samples will be reported in concentrations of micrograms per liter (µg/L) or milligrams per liter (mg/L).

Identification of all analytes must be accomplished with an authentic standard of the analyte traceable to NIST or other reliable commercial sources. Individuals experienced with a particular analysis and knowledgeable of requirements will perform data reduction.

12.2 Data Validation

Data validation is a systematic procedure of reviewing a body of data against a set of established criteria to provide a specified level of assurance of validity prior to its intended use.

Data validation will be performed by the Project Chemist and/or environmental chemists under his/her supervision. All analytical samples collected will receive a limited data review. This review will include:

- a review of holding times;
- completeness of all required deliverables;
- review of QC results (surrogates, spikes, duplicates, and instrument calibration data blanks) to determine if the data is within the protocol-required limits and specifications;
- a determination that all samples were analyzed using established and agreed upon analytical protocols;

- an evaluation of the raw data to confirm the reported sample results; and
- a review of laboratory data qualifiers.

The methods referenced in Table 4-1 as well as the general guidelines presented in the most current USEPA Region II data validation guidelines will be used to aid the chemist during the data review.

12.3 Data Usability

A Data Usability Summary Report (DUSR) will be prepared in accordance with NYSDEC Division of Environmental Remediation *DER-10 Technical Guidance for Site Investigation and Remediation, Appendix 2B, Guidance for Data Deliverables and the Development of Data Usability Summary Reports*, dated May 2010, and will describe the samples and the analytical parameters. Data deficiencies, analytical protocol deviations, and quality control problems are identified and their effect on the data will be discussed. The DUSR, which will be submitted to the NYSDEC, will also include recommendations on resampling/reanalysis.

13.0 PREVENTIVE MAINTENANCE

The laboratory is responsible for maintaining its analytical equipment. Preventive maintenance is provided on a regular basis to minimize down-time and the potential interruption of analytical work. Instruments are maintained in accordance with the manufacturer's recommendations. If instruments require maintenance, only trained laboratory personnel or manufacturer-authorized service specialists are permitted to do the work. Maintenance activities will be documented and kept in permanent logs. These logs will be available for inspection by auditing personnel.

14.0 PERFORMANCE AND SYSTEM AUDITS

Audits are evaluations of both field and laboratory QC procedures, and are performed before or shortly after systems are operational. Performance audits are conducted by introducing control samples into the data production process. These control samples may include performance evaluation samples, or field samples spiked with known amounts of analytes.

System audits are onsite qualitative inspections and reviews of the quality assurance system used by some part of or the entire measurement system. They provide a quantitative measure of the quality of the data produced by one section or the entire measurement process. The audits are performed against a set of requirements, which may be a quality assurance project plan or work plan, a standard method, or a project statement of work. The primary objective of the systems audits is to verify that the QA/QC procedures are being followed.

14.1 Performance and External Audits

In addition to conducting internal reviews and audits, as part of its established quality assurance program, the laboratory is required to take part in regularly scheduled performance evaluations and laboratory audits from state and federal agencies. They are conducted as part of the certification process and to monitor the laboratory performance. The audits also provide an external quality assurance check of the laboratory, and provide reviews and information on the management systems, personnel, standard operating procedures, and analytical measurement systems. Acceptable performance on evaluation samples and audits is required for certification and accreditation. The laboratory shall use the information provided from these audits to monitor and assess the quality of its performance. Problems detected in these audits shall be reviewed by the QA Manager and Laboratory Management, and corrective action shall be instituted as necessary.

14.2 Systems/Internal Audits

As part of its Quality Assurance Program, the Laboratory Quality Assurance Manager shall conduct periodic checks and audits of the analytical systems. The purpose of these is to verify that the analytical systems are working properly, and that personnel are adhering to established procedures and documenting the required information. These checks and audits also assist in determining or detecting where problems are occurring.

The QA Manager periodically will submit laboratory control samples. These samples will serve to check the entire analytical method, the efficiency of the preparation method, and the analytical instrument performance. The results of the control samples are reviewed by the QA Manager who reports the results to the analyst and the Laboratory Director. When a problem is indicated, the QA Manager will assist the analyst and laboratory management in determining the reason and in developing solutions. The QA Manager will also recheck the systems as required.

REFERENCES

Comprehensive Environmental Response Compensation and Liability Act (CERCLA) Quality Assurance Manual, Final Copy, Revision I, October 1989.

National Enforcement Investigations Center of USEPA Office of Enforcement. *NEIC Policies and Procedures.* Washington: USEPA.

New York State Department of Environmental Conservation (NYSDEC), 1998. Division of Water Technical and Operational Guidance Series (TOGS 1.1.1), *Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitation*. June, including January 1999 Errata, April 2000 and June 2004 Addenda

NYSDEC. 2005. Analytical Services Protocol, July.

NYSDEC. 2010. Division of Environmental Remediation, *DER-10 Technical Guidance for Site Investigation and Remediation, Appendix 2B, Guidance for Data Deliverables and the Development of Data Usability Summary Reports*. May.

USEPA. 1987. *A Compendium of Superfund Field Operations Methods*, EPA/540/P-87-001, (OSWER Directive 9355.0-14). December. Cincinnati, OH: USEPA.

USEPA. 2006. *Guidance on Systematic Planning Using the Data Quality Objectives Process*, EPA QA/G-4, EPA/240/B-06/001. February.

APPENDIX H – SITE MANAGEMENT FORMS

COLD SPRING MGP SITE
NYSDEC SITE NO. 340026
INSPECTION FORM

GENERAL INFORMATION

Date:		**Inspector:**	
Weather:		**Signature:**	
Temperature:		**Company:**	
Season (circle one): Winter Spring Summer Fall			

SITE INSPECTION LOG SHEET*

Evidence of Site-Wide Disturbance(s)	Yes No	**Description of Disturbance(s)**	
Evidence of Surface Soil Disturbance(s)	Yes No	**Description of Disturbance(s)**	
Evidence of Excavation	Yes No	**Description of Excavation**	
Evidence of Building Construction	Yes No	**Description of Building Construction**	
Evidence of Change in Site Use	Yes No	**Description of New/Additional Site Use**	
Comments:			

* If answering Yes, attach map showing locations and any other information as required.

COLD SPRING MGP SITE
NYSDEC SITE NO. 340026
INSPECTION FORM

WELL INSPECTION LOG SHEET (provide for each well inspected)

Well ID:		**Time:**	

Area	**Item Inspected**	**Description of Condition (attach additional sheet if needed)**	**Additional Maintenance Needed?**	**Inspector's Initials**
Exterior	**Casing and collar**		**Yes / No**	
	Well label		**Yes / No**	
	Lock and Cover		**Yes / No**	
Interior	**Well cap**		**Yes / No**	
	Well riser		**Yes / No**	
	Annular space		**Yes / No**	
Comments:				

Summary of Green Remediation Metrics for Site Management

Site Name: _____ Site Code: _____

Address: _____ City: _____

State: _____ Zip Code: _____ County: _____

Initial Report Period (Start Date of period covered by the Initial Report submittal)

Start Date: _____

Current Reporting Period

Reporting Period From: _____ To: _____

Contact Information

Preparer's Name: _____ Phone No.: _____

Preparer's Affiliation: _____

I. Energy Usage: Quantify the amount of energy used directly on-site and the portion of that derived from renewable energy sources.

	Current Reporting Period	**Total to Date**
Fuel Type 1 (e.g., natural gas (cf))		
Fuel Type 2 (e.g., fuel oil, propane (gals))		
Electricity (kWh)		
Of that Electric usage, provide quantity:		
Derived from renewable sources (e.g., solar, wind)		
Other energy sources (e.g., geothermal, solar thermal (Btu))		

Provide a description of all energy usage reduction programs for the Site in the space provided on Page 3.

II. Solid Waste Generation: Quantify the management of solid waste generated on-site.

	Current Reporting Period (tons)	**Total to Date (tons)**
Total waste generated on-site		
OM&M generated waste		
Of that total amount, provide quantity:		
Transported off-site to landfills		
Transported off-site to other disposal facilities		
Transported off-site for recycling/reuse		
Reused on-site		

Provide a description of any implemented waste reduction programs for the Site in the space provided on Page 3.

III. Transportation/Shipping: Quantify the distances travelled for delivery of supplies, shipping of laboratory samples, and the removal of waste.

	Current Reporting Period (miles)	Total to Date (miles)
Standby Engineer/Contractor		
Laboratory Courier/Delivery Service		
Waste Removal/Hauling		

Provide a description of all mileage reduction programs for the Site in the space provided on Page 3. Include specifically any local vendor/services utilized that are within 50 miles of the Site.

IV. Water Usage: Quantify the volume of water used on-site from various sources.

	Current Reporting Period (gallons)	Total to Date (gallons)
Total quantity of water used on-site		
Of that total amount, provide quantity:		
Public potable water supply usage		
Surface water usage		
On-site groundwater usage		
Collected or diverted storm water usage		

Provide a description of any implemented water consumption reduction programs for the Site in the space provided on Page 3.

V. Land Use and Ecosystems: Quantify the amount of land and/or ecosystems disturbed and the area of land and/or ecosystems restored to a pre-development condition (i.e., Green Infrastructure).

	Current Reporting Period (acres)	Total to Date (acres)
Land disturbed		
Land restored		

Provide a description of any implemented land restoration/green infrastructure programs for the Site in the space provided on Page 3.

Description of green remediation programs reported above (Attach additional sheets if needed)
Energy Usage:
Waste Generation:
Transportation/Shipping:
Water usage:
Land Use and Ecosystems:
Other:

CERTIFICATION BY CONTRACTOR

I, _____ (**Name**) do hereby certify that I am _____ (**Title**) of the Company/Corporation herein referenced and contractor for the work described in the foregoing application for payment. According to my knowledge and belief, all items and amounts shown on the face of this application for payment are correct, all work has been performed and/or materials supplied, the foregoing is a true and correct statement of the contract account up to and including that last day of the period covered by this application.

_____

Date **Contractor**

APPENDIX I – FIELD SAMPLING AND ANALYSIS PLAN

COLD SPRING MGP SITE

VILLAGE OF COLD SPRING

PUTNAM COUNTY, NEW YORK

NYSDEC SITE NUMBER: 340026

FIELD SAMPLING AND ANALYSIS PLAN

Prepared for:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

625 Broadway

Albany, New York 12233

Prepared by:

URS CORPORATION

257 West Genesee Street, Suite 400

Buffalo, New York 14202

FEBRUARY 2019

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FIELD SAMPLING AND ANALYSIS PLAN

1.0 INTRODUCTION

This Field Sampling and Analysis Plan (FSAP) is designed to provide detailed step-by-step procedures for the field activities performed during the long-term groundwater monitoring program at the Cold Spring MGP site (Site) located in the Village of Cold Spring, Putnam County, New York (Figure 1). It will serve as the field procedures manual to be strictly followed by all project personnel. Adherence to these procedures will ensure the quality and defensibility of the field data collected. In addition to the field procedures outlined in this document, all personnel performing field activities must do so in compliance with: (1) the Quality Assurance/Quality Control (QA/QC) measures outlined in the existing Quality Assurance Project Plan; (QAPP); (2) the appropriate Health and Safety guidelines found in the existing Health and Safety Plan (HASP); and (3) the scope of work outlined in the Site Management Plan (SMP) (URS 2019). When sampling for per- and polyfluoroalkyl substances (PFAS), sampling personnel must undergo PFAS sample training. Groundwater monitoring locations are shown on Figure 2. A groundwater level measurement will be recorded at each sampled monitoring well. Table 1 lists, on an annual basis, which monitoring wells will undergo water level measurements and water quality sampling.

2.0 GROUNDWATER SAMPLING PROCEDURES

2.1 Water Level Monitoring Procedures

Summary: Determination of groundwater depths in monitoring wells is necessary to calculate required purge volumes prior to groundwater sampling and to make potentiometric surface maps. Water levels in monitoring wells scheduled to be sampled during the field work will be measured using an electronic interface probe/water level indicator. During each monitoring event, water levels to be used to generate potentiometric groundwater surface contour maps will be collected from all sampled monitoring wells. Water level measurement procedures are presented below.

Procedure:

1) Clean the water level probe and the lower portion of cable following standard decontamination procedures and test water level meter to ensure that the batteries are charged.
2) Lower the probe slowly into the monitoring well until the solid audible alarm indicates water.
3) Read the depth to the nearest hundredth of a foot from the graduated cable using the V-notch on the riser pipe as a reference.
4) Repeat the measurement for confirmation and record the water level.
5) Lower the probe slowly to the bottom of the monitoring well. Record the bottom depth of the well.
6) Remove the probe from the well slowly, drying the cable and probe with a clean paper towel.
8) Replace the well cap.
9) Decontaminate the water level meter if additional measurements are to be taken.

2.2 Well Purging Procedures

Well purging will be completed using the low-flow purging technique as follows:

1) The well cover will be carefully removed to avoid having any foreign material enter the well.
2) Using an electronic interface probe, the water level below top of casing will be measured. The depth of the well will be measured to determine the volume of water in the well. The end of the probe will be decontaminated between wells. The depth to bottom of the well will be recorded from the V notch in the top of the casing (if present). If there is no V notch, the depth shall be recorded from the top of casing.

3) Calibrate field instruments [e.g., pH, dissolved oxygen (DO), oxidation-reduction potential (ORP), specific conductance, temperature, and turbidity].

4) Start the flow rate low and maintain it between 100 and 500 ml/min, optimally at a rate where the water level remains stable.

5) Purge the required water volume (i.e., until stabilization of pH, DO, ORP, temperature, specific conductivity, and turbidity) using a low-flow pump (e.g., peristaltic pump) and dedicated high density polyethylene (HDPE) tubing. During purging, it is permissible to by-pass the flow cell until the groundwater has cleared. New dedicated tubing will be used for each well.

6) Purge the well until the water quality parameters have stabilized. Collect groundwater parameters every five minutes until the well has stabilized. The respective measurements of the parameters must fall within the stated range for three consecutive readings. If stability or five well volumes has been achieved for the parameters listed below, the well can be sampled. The stabilization criteria are: DO ± 10% full-scale range; ORP ± 10%; specific conductivity ± 3% full-scale range; pH ± 0.10 pH unit; temperature ± 0.2°C, and turbidity ± 10% if greater than 50 nephelometric turbidity unit (NTU).

7) Purging of three well volumes is not necessary if the indicator parameters are stable. However, a minimum of thirty minutes of purging or at one well volume is required before sampling, even if the parameters are stable. At the start of purging, it is permissible to by-pass the flow cell until the groundwater has cleared.

8) Well purging data are to be recorded on the Low Flow Groundwater Purging/Sampling Log (Figure 3).

2.3 Groundwater Sampling Procedures

The following groundwater sampling procedures will be used for monitoring wells after purging has been conducted:

Procedures

1) After well purging is completed, the flow cell will be disconnected and drained and a sample will be collected into the appropriate laboratory supplied containers from the well tubing, without changing the purge rate.

2) Direct water flow toward the inside wall of the sample container to minimize volatilization. Fill volatile sample containers so no headspace (air bubbles) is present. If containers are pre-preserved, do not overfill sample containers. Note if effervescence is observed.

3) All sample bottles will be labeled in the field using a waterproof permanent marker. They will be filled in the following order: VOCs, SVOCs, pesticides, herbicides, metals, and wet chemistry parameters.

4) Samples will be collected into laboratory-provided sample bottles (containing required preservatives) and placed on ice in coolers for processing (preservation

and packing) prior to shipment or delivery to the analytical laboratory. A chain-of-custody (COC) record (Figure 4) will be initiated. The analytical laboratory will provide certified analyte-free sample bottles.

6) After the required sample containers have been filled, remove dedicated/disposable HDPE tubing. Decontaminate reusable sampling equipment with laboratory grade soap and distilled water and rinse with distilled water before reassembling.

7) Well sampling data are to be recorded in the field notebook and on the Well Purging Log.

8) Groundwater samples will be placed on ice, and delivered to the laboratory either by the sampler, laboratory courier, or common courier (e.g. FedEx) under COC control. The volume of sample required, bottle type and required quality assurance/quality control (QA/QC) may be found in Table 2. Groundwater samples will be collected for the parameters referenced in Table 3 (e.g., BTEX, PAHs, PFAS). Samples must be received by the laboratory less than 24 hours after collection.

9) If samples are shipped via common courier, the sample cooler must be sealed with a custody seal.

Any observations of sheen, blebs, free-phase product, staining or coating of the sampling equipment, odor, etc. that were made during sampling of groundwater are to be included in the groundwater sample collection log.

3.0 SAMPLE LABELING

Summary: In order to prevent misidentification and to aid in the handling of environmental samples collected during the field investigation, the following procedures will be used:

Procedure: Each container will have the following information placed on the laboratory supplied sample label:

- Site name
- Sample identification
- Project number
- Collection Date/time
- Sampler's initials
- Analysis required and preservatives

Sample identification numbers will be assigned based on the well identification and will be the same for all parameters collected. For example, a groundwater sample extracted from monitoring well GW-01 would have the same identifier assigned, GW-01 for BTEX, PAHs, etc.

Field duplicate samples will be assigned a unique identification alphanumeric code that specifies the data of collection, the letters DUP (for field duplicate) and an ascending number that records the number of duplicate samples collected that day. For example, the first field duplicate collected on November 17, 2018 would be assigned the following sample number using the code shown below:

DUP-MMDDYYYY = DUP-11172018

Subsequent duplicates collected on the same day would be assigned DUP-2-11172018, DUP-3-11172018, etc. The field duplicate IDs are “blind”, so that the laboratory cannot trace them to their parent samples. Field sampling crew will record the duplicate sample information on the appropriate Sampling Field Data Sheets and also in the field notebook. The sample will be added to the COC with the time of collection of 0000.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) samples will use the same well identification name as the parent sample, with the acronym MS/MSD after it; for example, GW-01 (MS/MSD). The sample will be added to the COC with the same time of collection as the parent sample.

Rinsate (Equipment) Blank samples will be labeled with the letters RB (rinsate blank) and the date of collection in the same order as for the field duplicate and added to the COC (e.g., using the same date as above, RB-11172018).

Trip or field blanks will be labeled with the letters TB (trip blank) or FB (field blank) and the date in the same order as the field duplicate and added to the COC (e.g., for example, using the same date as above, TB-11172018).

4.0 QUALITY ASSURANCE/ QUALITY CONTROL SAMPLING

QA/QC procedures are described in the Quality Assurance Procedure Plan (QAPP). QA/QC samples will be collected as follows:

- Field duplicates will be collected per matrix at the rate of one per twenty (5%) samples collected. It will be collected immediately following the collection of the parent sample for the same parameters as the parent sample.
- Matrix Spike/ Matrix Spike Duplicate (MS/MSD) samples will be collected for each matrix at a rate of one per twenty (5%) samples collected. It will be collected immediately following the collection of the parent sample for the same parameters as the parent sample.
- Rinsate (Equipment) Blank samples will be collected one time per sampling event. Laboratory provided deionized water will be run through the clean reused equipment and collected for the same parameters as the sampling program. If dedicated, disposal sampling equipment is used, rinsate blanks are not required.
- Field Blank samples will be collected for each sampling event. Laboratory provided analyte-free water will be poured to a sample container in the field and collected per- and polyfluoroalkyl substances (PFAS). A field blank will be collected the rate of one per sample shipment.
- Trip Blanks will be provided by the laboratory filled with analyte-free water and returned at the rate of one per sample shipment. Trip blanks will be analyzed for VOCs only.

5.0 FIELD DOCUMENTATION

Field notebooks will be used during all on-site work. A dedicated permanently-bound field notebook will provide a legal record and will be maintained by the field technician overseeing the site activities. Entries will be written with waterproof ink and will be of sufficient detail that a complete daily record of significant events, observations, and measurements is developed. At the conclusion of each day of fieldwork, entries will be signed and dated. Erroneous entries will be corrected by the field technician that made the entries. Corrections will be made by drawing a single line through the error, entering the correct information, and initialing/dating the correction.

The field sampling team will maintain the daily field notebook and logs, which will minimally include the following information:

1) Project name and location of field activity
2) Date and time of entry
3) Names and titles of field team members onsite
4) Names, titles of any site visitors, as well as date and time entering and leaving site
5) Weather information (e.g., temperature, precipitation, cloud coverage, wind speed and direction, etc.)
6) Purpose of field activity and detailed description of fieldwork conducted
7) Sample media to be collected
8) Sample Identification
9) Date and time of sample collection
10) Field observations and measurements (e.g., PID, water levels)
11) Sampling methods and devices
12) Purge volumes (groundwater)
13) Groundwater purge parameters e.g., pH, temperature, ORP, DO, conductivity, water levels, turbidity, etc.
14) Chain of custody and shipping information.

6.0 SAMPLE SHIPPING

Summary: Proper documentation of sample collection and the methods used to control these documents are referred to as chain-of-custody (COC) procedures. COC procedures are essential for presentation of sample analytical chemistry results as evidence in litigation or at administrative hearings held by regulatory agencies. COC procedures also serve to minimize loss or misidentification of samples and to ensure that unauthorized persons do not tamper with collected samples.

The procedures used in this study follow the chain-of-custody guidelines outlined in NEIC Policies and Procedures, prepared by the National Enforcement Investigations Center (NEIC) of the U.S. Environmental Protection Agency Office of Enforcement.

Procedure:

1) A COC record is initiated at the analytical laboratory performing the sample analyses and will accompany the sample containers during preparation, delivery of the sample containers to the field, and during return shipment to the laboratory.

2) The COC record (Figure 4) should be completely filled out by field personnel with all applicable/relevant information as samples are collected and packed for shipment e.g., project name and number, field technician name, sample ID, date/time of collection, matrix, requested parameters, number of sample bottles, relinquishing/receipt signatures, method of sample shipment with shipper airbill number (if available), name of analytical laboratory, etc. Any erroneous markings will be crossed-out with a single line and initialed by the author.

3) The original COC accompanies the samples. It should be placed in a Ziploc bag and placed inside the cooler containing the samples. The sampler should retain a copy of the COC for the project records.

4) All groundwater samples should be placed and stored on ice immediately after sample collection in the laboratory supplied coolers.

5) If the laboratory provides a courier to collect the samples from the site, samples should be picked up on the day of collection. If that is not possible, the samples shall be stored on ice in a secure area then delivered to the laboratory the next day, or as soon as possible.

6) If the courier is not provided, samples can be shipped via common courier. Pack the coolers with the samples wrapped in bubble wrap, place ice in plastic baggies to prevent any melt from leaking out of the cooler, and make sure samples will

not shift in the cooler. Place the lab address on top of sample cooler. Affix numbered custody seals across the cooler lid. Cover seals with wide, clear tape.

7) Ship samples via overnight carrier the same day that they are collected, if possible, and must be delivered to the laboratory the following morning after shipment (e.g., priority overnight).

8) The COC seal(s) must be applied in a manner where they must be broken in order to open the shipping container. Breakage of the seal before receipt at the laboratory may indicate tampering. If tampering is evident, the laboratory must immediately contact the laboratory Project Manager, whom further contacts the URS Project Manager for further instructions (i.e., cancel or proceed with analyses).

7.0 FIELD SAMPLING INSTRUMENTATION

URS-owned and rented field sampling equipment will require no maintenance beyond decontamination between sampling locations. Calibration procedures for electronic instruments can be found in the equipment operating manuals. Calibration and maintenance procedures for the common instrumentation that will be used during field investigations are discussed in the equipment operating manuals. A copy of the manufacturer's operating manual for each instrument will be kept with the instrument or the operator. All field analytical equipment will be calibrated immediately prior to each day's use. Calibration procedures will conform to manufacturer's standard instructions. The calibration procedures and results will be recorded in the field notebook. All changes to instrumentation will be noted in the field notebook.

The following field instruments may be used during project site work:

1) Multi-Parameter Meter (MultiRAE PLUS PGM-50 Monitor (10.6 eV lamp) with PID, %LEL) - Calibration of the meter and a battery check will be performed daily in accordance with manufacturer's specifications. Standards used for calibration will be National Institute of Standards and Technology (NIST) traceable. All calibration data will be recorded in the field notebook.

2) Turbidity Meter – The turbidity meter will be checked daily in accordance with manufacturer's specifications. All daily data will be recorded in the field notebook.

3) Horiba U-22 Multi-Parameter Meter – Calibration of the meter will be performed daily in accordance with manufacturer's specifications. All daily data will be recorded in the field notebook.

8.0 SAMPLING EQUIPMENT DECONTAMINATION PROCEDURES

Summary: To assure that no outside contamination will be introduced into the samples/data, thereby invalidating the samples/data, the following cleaning protocols will apply for all equipment used to collect samples/data during the field investigations.

Procedures:

1) Thoroughly clean equipment with laboratory-grade soap and water, until all visible contamination is gone.
2) Rinse with water, until all visible evidence of soap is removed.
3) Rinse several times with deionized water.
4) Air dry before using.
5) If equipment will not be used immediately, wrap in aluminum foil.
6) Decontamination materials will be collected and placed in 55 gallon drums.
7)

9.0 INVESTIGATION-DERIVED WASTE CHARACTERIZATION AND DISPOSAL

All decontamination water, purge water, and used sampling equipment will be contained in 55-gallon drums.

Since investigation-derived wastes (IDW) were properly characterized during site remediation activities, there is no reason for further characterization of the IDW during the post-remediation long-term groundwater monitoring program.

The IDW subcontractor will be responsible for removing IDW from the work site as needed. All waste will be disposed of at a permitted off-site disposal facility.

10.0 ANALYSIS

Each groundwater sample will be analyzed by a NYSDOH Environmental Laboratory Accreditation Program (ELAP) certified laboratory for those parameters referenced in Table 2 (e.g., BTEX, PAHs and PFAS). Field personnel will coordinate with the laboratory for sample pick-up, delivery and/or shipment of the samples to the laboratory.

TABLES

Table 1
Water Quality Measurements and Water Quality Sampling
Cold Spring MGP Site

Sampling Locations	Water Level Measurements	Analytical Parameters			Frequency
		BTEX (SW8620C)	PAHs (SW8270D)	PFAS (USEPA 537 modified)	
GW-01	X	X	X	X	Annual
GW-03	X	X	X	X	Annual
GW-04	X	X	X	X	Annual
GW-05	X	X	X	X	Annual
GW-06	X	X	X	X	Annual
GW-07	X	X	X	X	Annual

BTEX - benzene, toluene, ethylbenzene, xylenes
PAHs - polycyclic aromatic hydrocarbons
PFAS - Per- and Polyfluoroalkyl Substances

TABLE 2
SAMPLE CONTAINER, PRESERVATION, AND HOLDING TIME REQUIREMENTS
COLD SPRING MGP SITE
NYSDEC SITE NUMBER: 540026

Analytical Parameter	Container Size/Type*	Containers Per Sample	Preservation	Maximum Holding Time**
I. Groundwater Samples				
BTEX	Glass, Teflon-Lined, Septum Cap	3	HCl to pH <2, Cool, 4°C, No Headspace	14 days. 7 days if not pH preserved to < 2.
PAHs	Glass 250 mL Amber	2	Cool, 4°C	7 days until extraction; 40 days after extraction
PFAS	HDPE 250 mL	2	Trizma®, Cool, 4°C	14 days until extraction; 28 days after extraction

Notes:
* Number and size of containers may vary based on laboratory sample volume requirements.
** - Holding times are from date of sample collection unless otherwise noted.

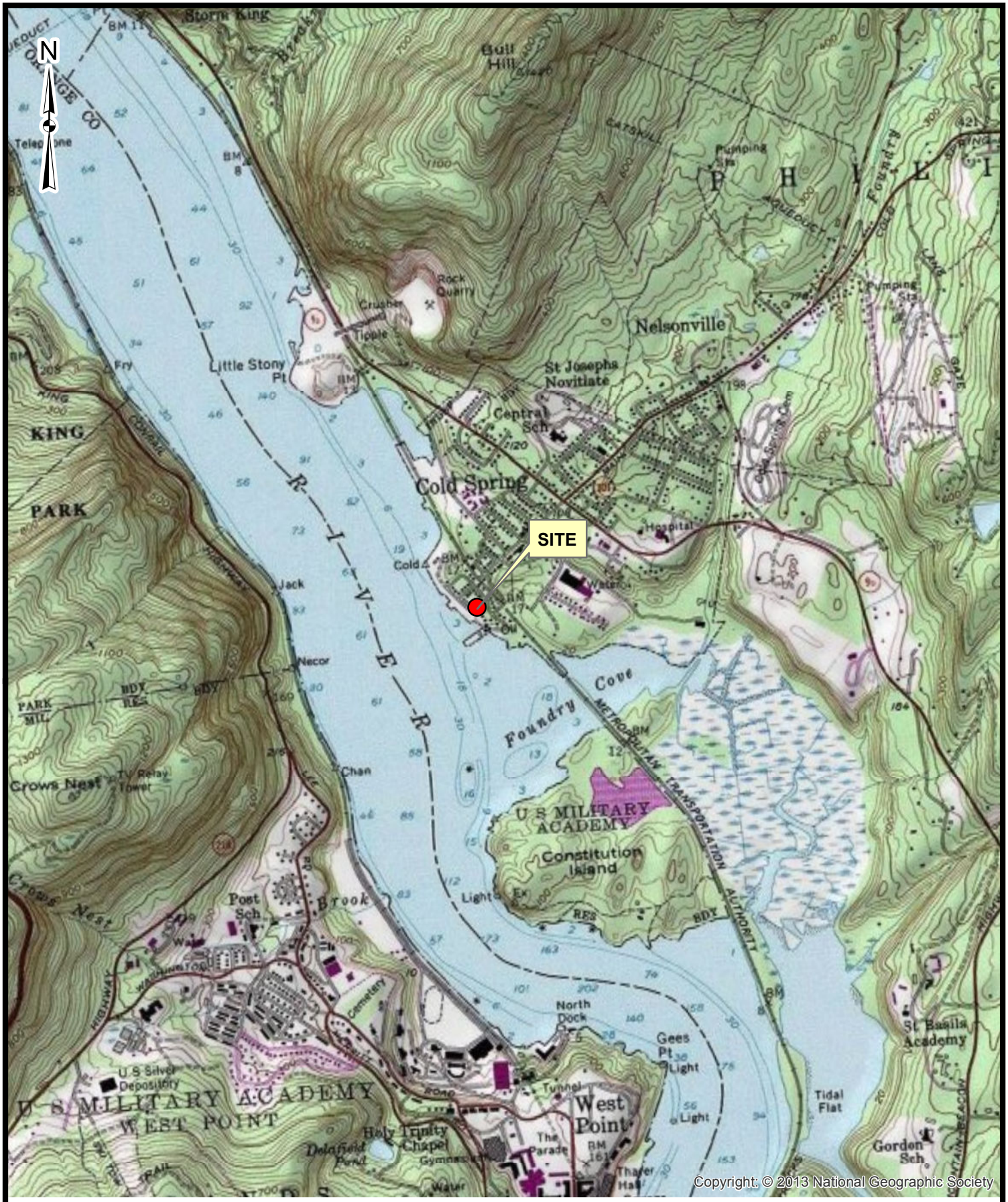
TABLE 3
SUMMARY OF SAMPLES TO BE COLLECTED AND ANALYTICAL PARAMETERS
COLD SPRING MGP SITE
NYSDEC SITE NUMBER: 540026

Parameter	Analytical Method[1]	Number of Samples	Field QA/QC Samples				Estimated Total No. of Samples per event
			Field Duplicates [2]	MS/MSD Pairs [2]	Rinsate Blanks [2]	Field or Trip Blanks [2]	
I. Groundwater Samples - Annual Monitoring (per event)							
Benzene, Toluene, Ethylbenzene, Xylenes (BTEX)	SW8620C	5	1	1	0	1	9
Polycyclic Aromatic Hydrocarbons (PAHs)	SW8270D	5	1	1	0	0	8
Per- and Polyfluoroalkyl Substances (PFAS)	USEPA 537 - modified	5	1	1	1	1	10

Notes:
1. NYSDEC Analytical Services Protocol (ASP), July 2005 Edition.

2. Field duplicates and MS/MSD pairs will be collected at a frequency of 1 per 20 samples per matrix per sampling event. Rinsate blanks will be collected for PFAS sampling. For all other parameters a rinse blank will only when non-dedicated (e.g. , non-disposable) equipment are used, at a frequency of 1 per sampling equipment type per sampling event. Trip blanks will be collected at the rate of one per sample shipment for aqueous VOCs only. A field blank shall be collected for PFAS sampling.
MS/MSD - Matrix Spike/Matrix Spike Duplicate
QA/QC Quality Assurance/Quality Control MGP - Manufactured Gas Plant

FIGURES



Source:
1:24,000-scale USGS Topographic Map, West Point, NY

2,000 0 2,000 Feet

URS

NYSDEC COLD SPRING FORMER MGP SITE
5 NEW STREET
COLD SPRING, NEW YORK

FIGURE 1

I:\19998446.00004\GIS\MAPS\TOPO.mxd 2/25/2010 MDL

N

WEST STREET

NEW STREET

GW-04

GW-05

GW-06

GW-01

GW-03
(Missing)

LIMITS OF
EXCAVATION

GW-07

PROPERTY LINE
(TYP.)

Legend

Monitoring Well

20 0 20 Feet

COLD SPRING FORMER MGP SITE
GROUNDWATER MONITORING WELL LOCATIONS

URS

FIGURE 2

J:\Projects\60429529\MISC\GIS\Maps\GW_Elevation_MW_Loc.mxd 12/20/2018

FIGURE 3

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

PAGE:

Project: Cold Spring MGP Site Site: 340026 Well I.D.: _____

Date: _____ Sampling Personnel: _____ Company: _____

Purging/ Sampling Device: _____ Tubing Type: _____ Tubing Inlet: _____

Measuring Point: _____ Initial Depth to Water: _____ Depth to Well Bottom: _____ Well Diameter: _____ Screen Length: _____

Casing Type: _____ Volume in 1 Well Casing (liters): _____ Estimated Purge Volume (liters): _____

Sample ID: _____ Sample Time _____ QA/QC: _____

Sample Parameters: _____

PURGE PARAMETERS

TIME	pH	TEMP (^{0}C)	COND. (mS/cm)	DISS. O_2 (mg/l)	TURB. (NTU)	Eh (mV)	FLOW RATE (ml/min.)	DEPTH TO WATER (btor)
Tolerance:	**0.1**	**---**	**0.03**	**0.1**	**0.1**	**+ or - 10**	**---**	

Information:

Remarks:

FIGURE 4 - CHAIN OF CUSTODY RECORD

PROJECT NO. | SITE NAME

SAMPLERS (PRINT/SIGNATURE)

LAB _____

COOLER _____ of _____

PAGE _____ of _____

DELIVERY SERVICE: _____ AIRBILL NO.: _____

LOCATION IDENTIFIER	DATE	TIME	COMP/ GRAB	SAMPLE ID	MATRIX	TOTAL NO.# OF CONTAINERS	TESTS								BOTTLE TYPE AND PRESERVATIVE								REMARKS	SAMPLE TYPE	BEGINNING DEPTH (IN FEET)	ENDING DEPTH (IN FEET)	FIELD LOT NO.# (IRPIMS ONLY)

MATRIX CODES

AA - AMBIENT AIR
SE - SEDIMENT
SH - HAZARDOUS SOLID WASTE
SL - SLUDGE
WP - DRINKING WATER
WW - WASTE WATER
WG - GROUND WATER
SO - SOIL
DC - DRILL CUTTINGS
WL - LEACHATE
GS - SOIL GAS
WC - DRILLING WATER
WO - OCEAN WATER
WS - SURFACE WATER
WQ - WATER FIELD QC
LH - HAZARDOUS LIQUID WASTE
LF - FLOATING/FREE PRODUCT ON GW TABLE

SAMPLE TYPE CODES

TB# - TRIP BLANK
SD# - MATRIX SPIKE DUPLICATE
RB# - RINSE BLANK
FR# - FIELD REPLICATE
N# - NORMAL ENVIRONMENTAL SAMPLE
MS# - MATRIX SPIKE
(# - SEQUENTIAL NUMBER (FROM 1 TO 9) TO ACCOMMODATE MULTIPLE SAMPLES IN A SINGLE DAY)

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED FOR LAB BY (SIGNATURE)	DATE	TIME

SPECIAL INSTRUCTIONS

Distribution: Original accompanies shipment, copy to coordinator field files

APPENDIX J – MONITORING WELL CONSTRUCTION LOGS

APPENDIX J
MONITORING WELL CONSTRUCTION SUMMARY
COLD SPRING MGP SITE

Well ID	Date Installed	Groundwater Zone	Boring Depth (ft bgs)	Well Depth (installed) (ft bsg)	Screen Length (feet)	Screen Interval (ft bgs)	Well Diameter (inches)	Northing	Easting	Ground Elevation (ft)	Casing Elevation (ft)	Meas.point (Riser) Elev. (ft)
GW-01	10/2/2008	Shallow	12	12	10	2-12	2	941153.50	640286.38	7.01	7.01	6.82
GW-03	10/2/2008	Shallow	12	12	10	2-12	2	--	--	--	--	5.04
GW-04	10/2/2008	Shallow	12	12	10	2-12	2	940999.87	640053.97	4.65	4.65	4.31
GW-05	10/2/2008	Shallow	12	12	10	2-12	2	941042.20	640116.40	5.36	5.36	4.96
GW-06	8/4/2016	Shallow	12.5	12	9	3-12	2	941047.50	640133.00	5.68	5.68	5.34
GW-07	8/4/2016	Shallow	12.25	12	9	3-12	2	940980.20	640173.70	5.82	5.82	5.31

Notes:

ft - feet

ft btgs - feet below ground surface

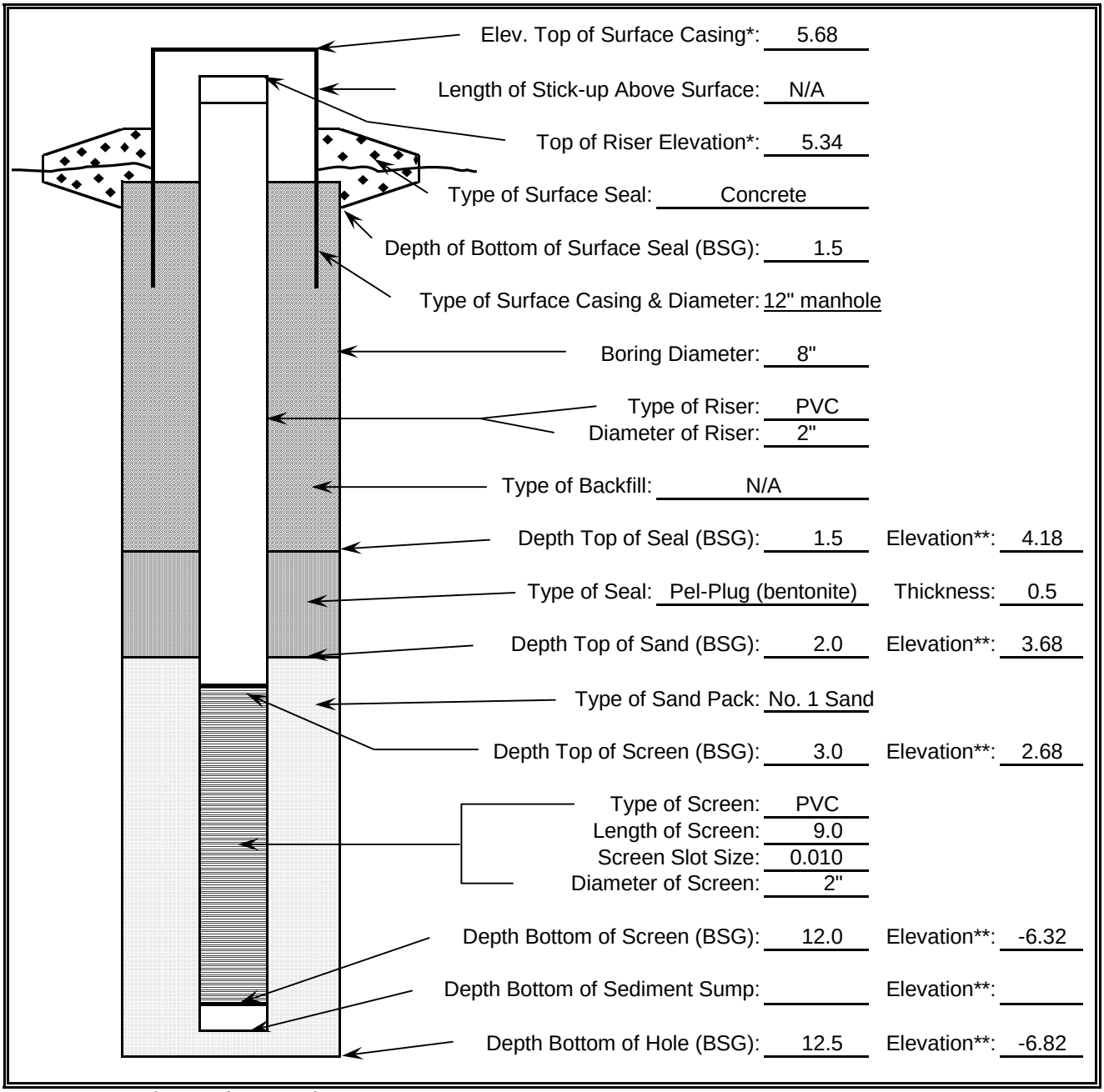
WELL ID: GW-06

Ground Surface Elevation*: 5.68

Watermark Environmental

As-Built Groundwater Monitoring Well Construction Diagram - Overburden

Project:	Cold Spring Former MGP Site	Location:	Cold Spring, NY
Project #:	15027-00	Drilling Company:	Summit Drilling, Inc.
Date Start:	8/4/2016	Drilling Method:	Hollow-Stem Auger
Date End:	8/4/2016	Drilling Foreman:	Jeremy Logel
Logged By:	Jeff Goudsward	Checked By:	
Boring ID:	N/A		



BSG = Feet Below Surface Grade

* = Surveyed elevation

** = Elevation calculated based on surveyed ground surface elevation

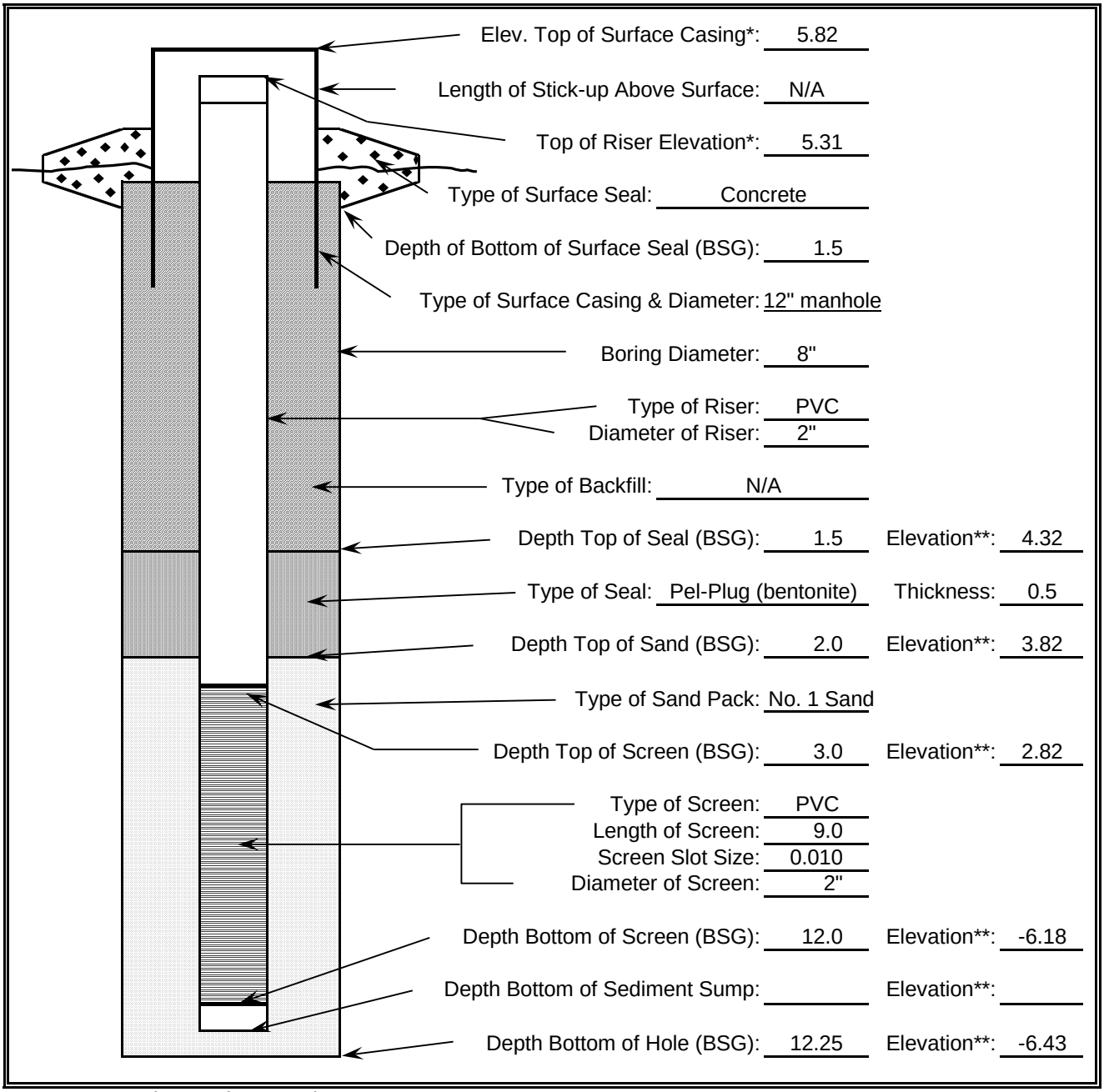
WELL ID: GW-07

Ground Surface Elevation*: 5.82

Watermark Environmental

As-Built Groundwater Monitoring Well Construction Diagram - Overburden

Project:	Cold Spring Former MGP Site	Location:	Cold Spring, NY
Project #:	15027-00	Drilling Company:	Summit Drilling, Inc.
Date Start:	8/4/2016	Drilling Method:	Hollow-Stem Auger
Date End:	8/4/2016	Drilling Foreman:	Jeremy Logel
Logged By:	Jeff Goudsward	Checked By:	
Boring ID:	N/A		



BSG = Feet Below Surface Grade

* = Surveyed elevation

** = Elevation calculated based on surveyed ground surface elevation

APPENDIX K – REMEDIAL SYSTEM OPTIMIZATION TABLE OF CONTENTS

REMEDIAL SYSTEM OPTIMIZATION FOR COLD SPRING MGP SITE

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4.3.4 Maintenance and Repairs

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APPENDIX L – REMEDIAL ACTION RECORD DRAWINGS

REMEDIAL ACTION

CONTRACT DRAWINGS

FOR THE

COLD SPRING FORMER MGP SITE REMEDIAL CONSTRUCTION

NYSDEC SITE 340026

COLD SPRING (V), PUTNAM COUNTY, NEW YORK

CONTRACT D009635

NEW YORK STATE OF OPPORTUNITY

Department of Environmental Conservation

Prepared for:

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
625 Broadway, Albany, New York

DIVISION OF ENVIRONMENTAL REMEDIATION

RECORD DRAWING ⚠

IN ACCORDANCE WITH SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW THE ALTERED ITEMS ON THIS DRAWING INDICATED BY 'REVISION CLOUD' HAVE BEEN ALTERED BY DAVID J. DICESARE, PE

MAY 2015

URS Corporation
New York

257 West Genesee Street, Suite 400
Buffalo, New York 14202
(716)856-5636 phone - (716)856-2545 fax

J:\01 Projects\15XXX\15027-00 NY Former MGP Site\12.0 Working File\12.4 AS-BUILTS\DRAWINGS\COVER.dwg, COVER, 1:1, 12/28/2016, 1--ELB

LEGEND

- BUILDING OUTLINE
- TO BE DEMOLISHED
- CONCRETE AREA
- GRAVEL AREA
- INITIAL EXCAVATION AREA
- INITIAL EXCAVATION AREA WITH STABILIZED BACKFILL
- ----592---- CONTOUR ELEVATION
- FENCE
- BURIED STRUCTURE
- PROPERTY LINE
- AREA OF ENVIRONMENTAL EASEMENT
- OVERHEAD ELECTRICAL, TELEPHONE & CABLE LINE
- UNDERGROUND ELECTRICAL LINE
- —SAN— SANITARY SEWER LINE
- —FM— FORCEMAIN
- —W— WATER LINE
- APPROXIMATE LIMITS OF EXCAVATION
- UP PP UTILITY/POWER POLE
- E ELECTRIC PULLBOX
- S SANITARY MANHOLE
- CB CATCH BASIN
- MONITORING WELL
- KIPS 1,000 lbs
- SHEETPILE
- FOOTPRINT TCS
- ITEM TO BE REMOVED/DEMOLISHED
- 1 DETAIL NUMBER
- C-005 | D-001 SHEET ON WHICH DETAIL IS CALLED OUT / SHEET ON WHICH DETAIL IS LOCATED
- A SECTION LETTER
- C-001 | C-008 SHEET ON WHICH SECTION IS LOCATED / SHEET ON WHICH SECTION IS CUT

ABBREVIATIONS

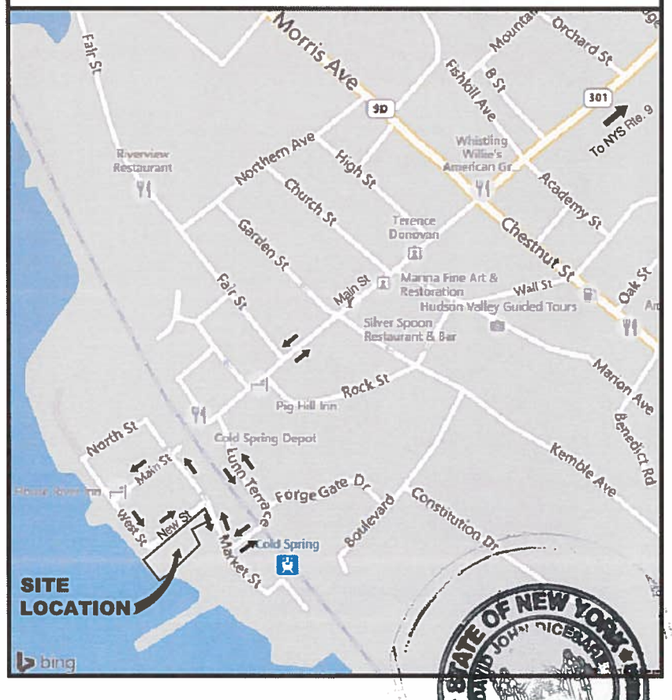
ASPH	ASPHALT
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
BGS	BELOW GROUND SURFACE
CB	CATCH BASIN
C/C	CENTER TO CENTER
CHG&E	CENTRAL HUDSON GAS AND ELECTRIC
℄	CENTERLINE
CONC.	CONCRETE
DL	DESIGN LOAD
EL., ELEV.	ELEVATION
EXIST.	EXISTING
MH	MANHOLE
msl	MEAN SEA LEVEL
NAD83	NORTH AMERICAN DATUM OF 1983
NAVD88	NORTH AMERICAN VERTICAL DATUM OF 1988
NTS	NOT TO SCALE
OHW	OVERHEAD WIRE (ELECTRIC AND OTHER UTILITIES)
PP	POWER POLE
RET.	RETAINING WALL
STA.	STATION
TCS	TEMPORARY CONTAINMENT STRUCTURE
TYP.	TYPICAL
UP	UTILITY POLE

GENERAL NOTES

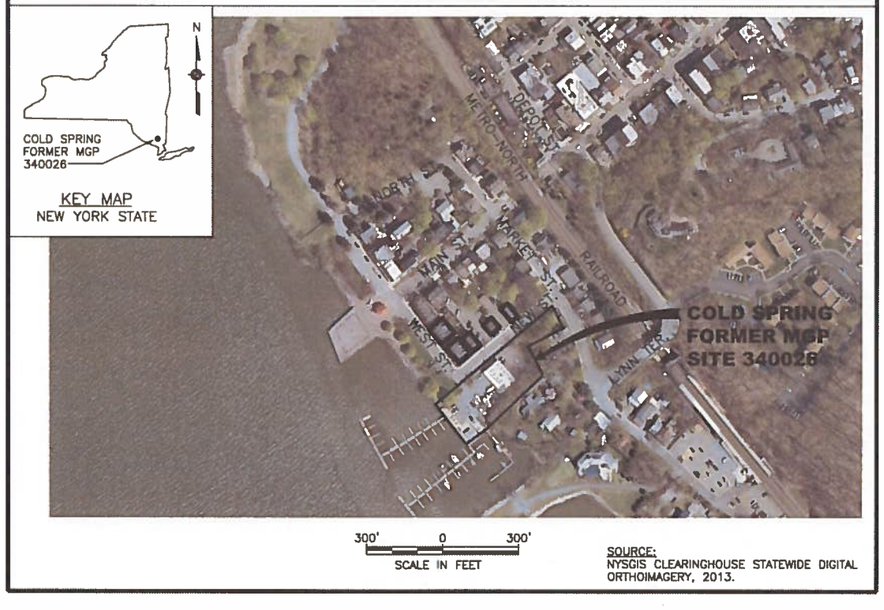
1. HORIZONTAL DATUM IS BASED UPON THE NEW YORK STATE PLANE COORDINATE SYSTEM, EAST ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83).
2. VERTICAL DATUM IS BASED UPON THE ELEVATIONS OF THE MONITORING WELLS ESTABLISHED BY WILLIAM D. YOUNGBLOOD LAND SURVEYING, P.C. AS SHOWN ON A DRAWING TITLED "SURVEY FOR VILLAGE OF COLD SPRING", FILE #P-1001, DATED 9/11/08, WHICH WAS BASED UPON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. TOPOGRAPHIC SURVEY INFORMATION, FROM DRAWING P-1001, DATED 9/11/08, PROVIDED BY WILLIAM D. YOUNGBLOOD, LAND SURVEYING, P.C.
4. CONTOUR ELEVATIONS FROM YEC, INC., DATED JUNE 2013.
5. THE LOCATION OF ANY UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE AND ALL UTILITIES MAY NOT BE SHOWN. CERTAIN PRIVATE UTILITIES ARE SHOWN CONCEPTUALLY. PRIOR TO ANY CONSTRUCTION ACTIVITIES, ALL UTILITY COMPANIES AND PROPERTY OWNERS SHALL BE NOTIFIED IN ORDER TO VERIFY OR AMEND THEIR LOCATIONS AND/OR EXISTENCE. FOR ASSISTANCE CALL UFPO AT 1-800-962-7962.

INDEX OF DRAWINGS

HAUL ROUTE MAP



SITE LOCATION MAP



SOURCE: NYSGIS CLEARINGHOUSE STATEWIDE DIGITAL ORTHOIMAGERY, 2013.

RECORD DRAWING ⚠

IN ACCORDANCE WITH SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW THE ALTERED ITEMS ON THIS DRAWING INDICATED BY "REVISION CLOUD & ⚠" HAVE BEEN ALTERED BY DAVID J. DICESARE, PE.

STATE OF NEW YORK — DAVID JOHN DICESARE — LICENSED PROFESSIONAL ENGINEER

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NO.	MADE BY	APPROVED BY	DATE	DESCRIPTION
1	LSP	DJD	02/22/17	RECORD DRAWING
0	ELB	RW	05/18/15	ISSUED FOR BID

REVISIONS

DESIGNED BY: RW
DRAWN BY: ELB
CHECKED BY: CWP
PROJ. ENGR. RW

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JOB NO. 11176853

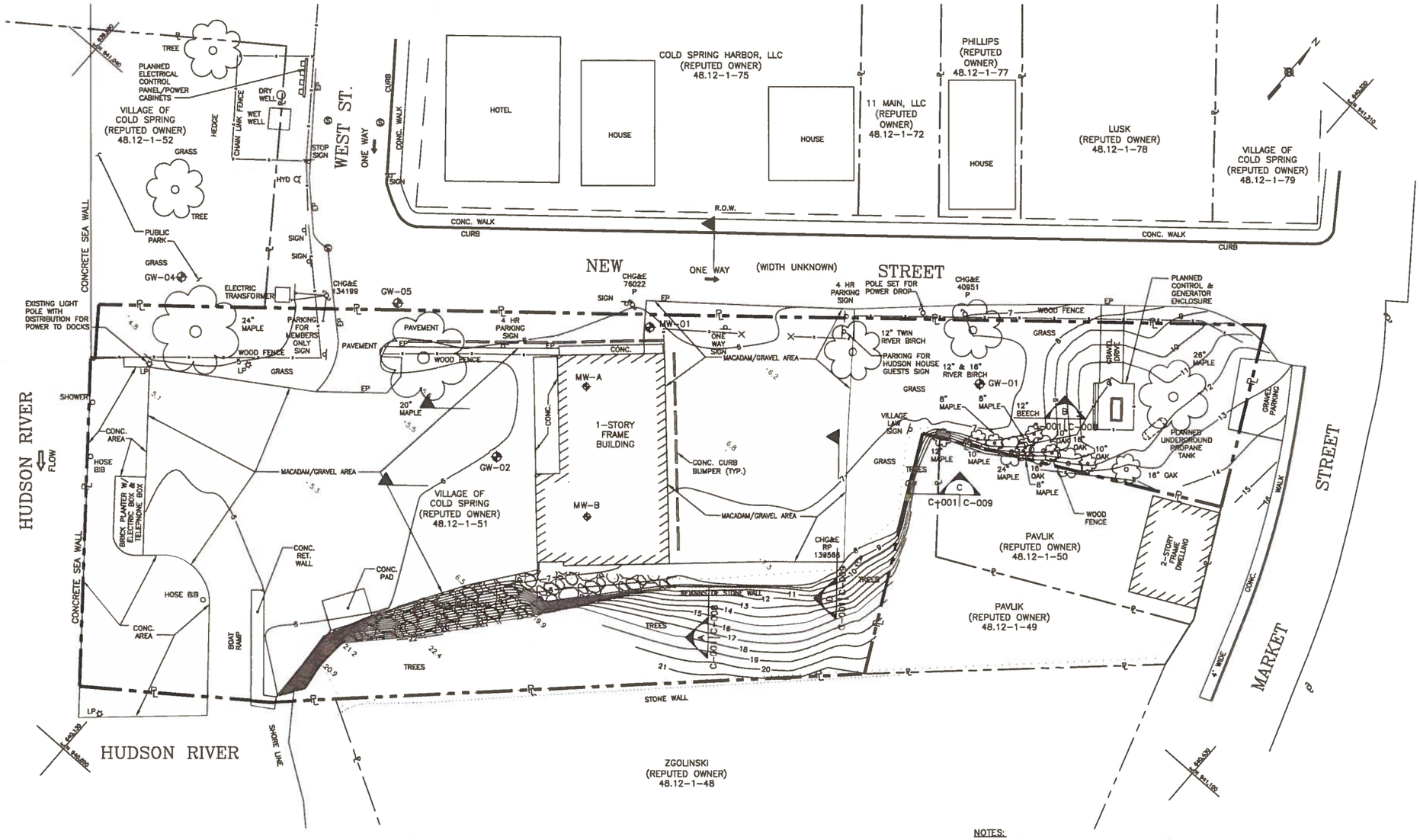
PUTNAM COUNTY
COLD SPRING FORMER MGP SITE
NYS REGISTRY NO: 340026
CONTRACT D009635
VILLAGE OF COLD SPRING STATE OF NEW YORK

REMEDIAL ACTION

ABBREVIATIONS, LEGEND, GENERAL NOTES, INDEX OF DRAWINGS, AND SITE LOCATION MAP

Scale: AS SHOWN | Date: MAY 2015 | **G-001**

J:\01 Projects\15XXX\15027-00 NY Former MGP Site\12.0 Working File\12.4 AS-BUILTS\DRAWINGS\G-001.dwg, G-001, 1:1, 1/5/2017, 1-ELB



SURVEY CONTROL TABLE
(SEE GENERAL NOTES 2 AND 3, DWG. G-001)

SURVEY CONTROL POINT ID	NORTHING (US SURVEY FOOT NAD83)	EASTING (US SURVEY FOOT NAD83)	ELEVATION (US SURVEY FOOT NAVD88)
GW-01	941153.50	640286.38	7.01
GW-02	941024.83	640176.65	6.24
GW-04	940999.87	640053.97	4.65
GW-05	941042.29	640116.32	5.57

NOTES:

1. LOCATIONS, SIZES, ETC. OF CERTAIN EXISTING FEATURES HAVE BEEN APPROXIMATED FROM PUBLICALLY AVAILABLE AERIAL PHOTOGRAPHY.
2. LOCATIONS OF CONTROL & GENERATOR ENCLOSURE AND RELATED STRUCTURES AND UTILITIES HAVE BEEN APPROXIMATED FROM A DRAWING PREPARED BY OAKWOOD ENVIRONMENTAL ASSOCIATES CONSULTING ENGINEERS, FOR THE VILLAGE OF COLD SPRING RELOCATION OF CONTROLS AND EMERGENCY GENERATOR WEST STREET PUMP STATION PROJECT, DRAWING TITLED "SITE PLAN" DATED 10/22/14. WORK IS SCHEDULED TO BE COMPLETED BY THE VILLAGE OF COLD SPRING IN SPRING 2015.
3. THE SITE IS CURRENTLY LEASED BY THE COLD SPRING BOAT CLUB FROM THE VILLAGE OF COLD SPRING. IT WILL BE VACATED BY BEFORE ISSUANCE OF NOTICE TO PROCEED.
4. THE 100-YEAR WATER SURFACE ELEVATION IN THE AREA OF THE SITE IS EL. 7 NAVD88.
5. LOCATION OF NEW STREET ROW APPROXIMATED FROM AN ALTA/ACSM LAND TITLE SURVEY PREPARED FOR THE VILLAGE OF COLD SPRING (FILE No. 79-102) BY BADEY & WATSON SURVEYING & ENGINEERING, P.C. DATED NOVEMBER 10, 2010 WITH A REVISION DATE OF MARCH 12, 2012.
6. FOR ADDITIONAL PRE-CONSTRUCTION INFORMATION, REFER TO SUPPLEMENTAL DRAWING "PRE-C-1." (1)

20' 0 20'
SCALE IN FEET

RECORD DRAWING (1)

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NO.	MADE BY	APPROVED BY	DATE	DESCRIPTION
1	LSP	DJD	02/22/17	RECORD DRAWING
0	ELB	RW	05/18/15	ISSUED FOR BID

REVISIONS

DESIGNED BY: RW
DRAWN BY: ELB
CHECKED BY: CWP
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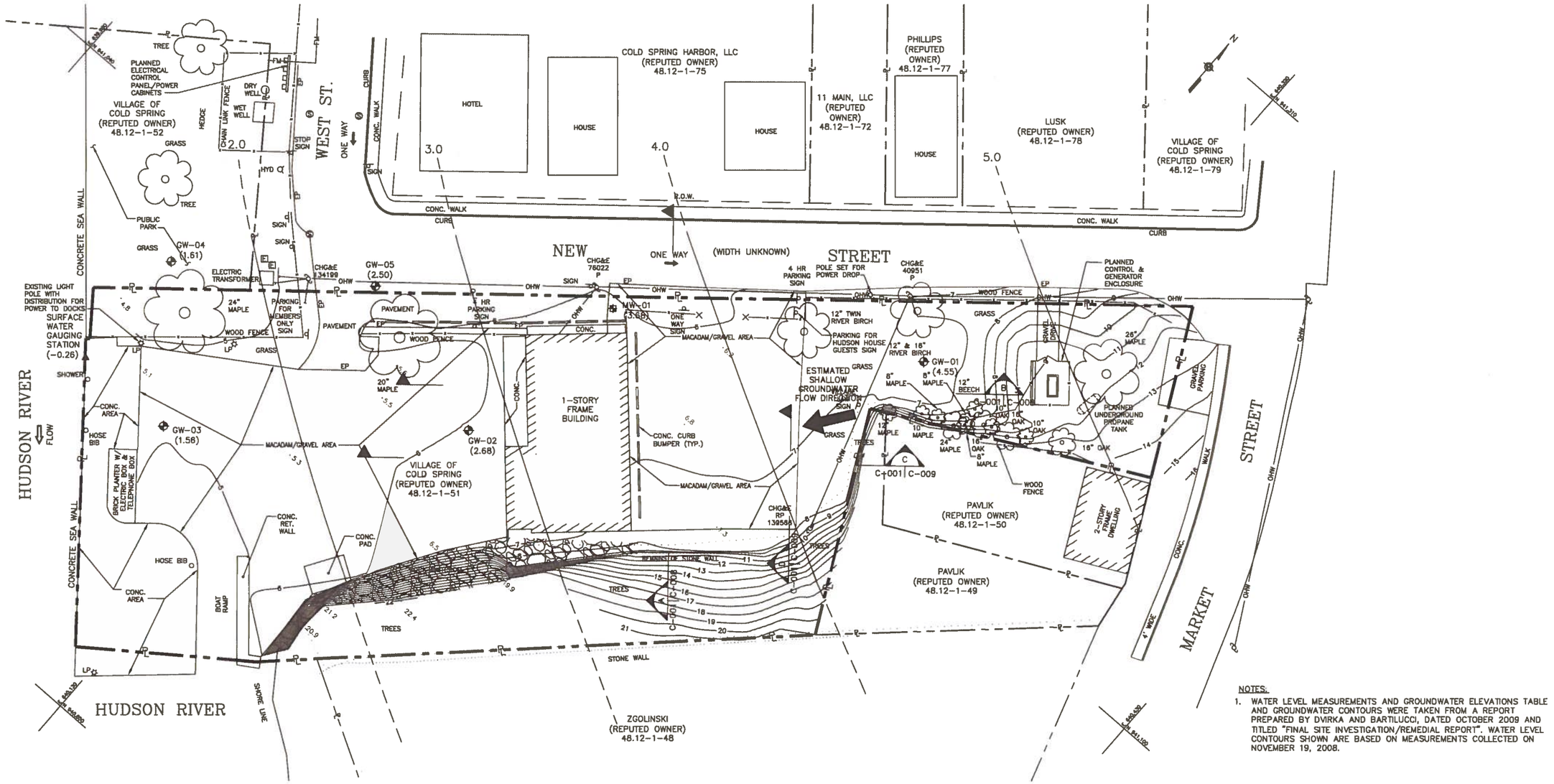
PUTNAM COUNTY
COLD SPRING
FORMER MGP SITE
NYS REGISTRY NO: 340026
CONTRACT D009635
VILLAGE OF COLD SPRING STATE OF NEW YORK

REMEDIAL ACTION

EXISTING SITE CONDITIONS

Scale: AS SHOWN | Date: MAY 2015 | **C-001**



NOTES:

1. WATER LEVEL MEASUREMENTS AND GROUNDWATER ELEVATIONS TABLE AND GROUNDWATER CONTOURS WERE TAKEN FROM A REPORT PREPARED BY DVIRKA AND BARTILUCCI, DATED OCTOBER 2009 AND TITLED "FINAL SITE INVESTIGATION/REMEDIAL REPORT". WATER LEVEL CONTOURS SHOWN ARE BASED ON MEASUREMENTS COLLECTED ON NOVEMBER 19, 2008.

WATER LEVEL MEASUREMENTS AND GROUNDWATER ELEVATIONS

	SEPTEMBER 22, 2008	OCTOBER 2, 2008	OCTOBER 20, 2008	NOVEMBER 19, 2008
MEASUREMENT LOCATION	WATER ELEVATION (ft msl)	WATER ELEVATION (ft msl)	WATER ELEVATION (ft msl)	WATER ELEVATION (ft msl)
GW-01	4.24	4.18	4.21	4.55
GW-02	2.50	2.91	2.88	2.68
GW-03	1.53	2.03	3.29	1.56
GW-04	1.54	2.06	3.19	1.61
GW-05	2.34	2.78	2.90	2.50
MW-01	N/A	3.67	3.56	3.68
SURFACE WATER GAGING STATION	-0.11	0.31	4.34	

LEGEND

MW-01 (3.68)	NYSDEC GROUNDWATER MONITORING WELL COMPLETED IN 2005 WITH GROUNDWATER ELEVATION IN FEET (NAVD88)
GW-02 (2.68)	GROUNDWATER MONITORING WELL WITH GROUNDWATER ELEVATION IN FEET (NAVD88)
2.0	GROUNDWATER ELEVATION CONTOUR LINE, DASHED WHERE INFERRED (NAVD88)

20' 0 20'
SCALE IN FEET

RECORD DRAWING

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NO.	MADE BY	APPROVED BY	DATE	DESCRIPTION
1	LSP	DJD	01/05/16	RECORD DRAWING
0	ELB	RW	05/18/15	ISSUED FOR BID

REVISIONS

DESIGNED BY: RW
DRAWN BY: ELB
CHECKED BY: CWP
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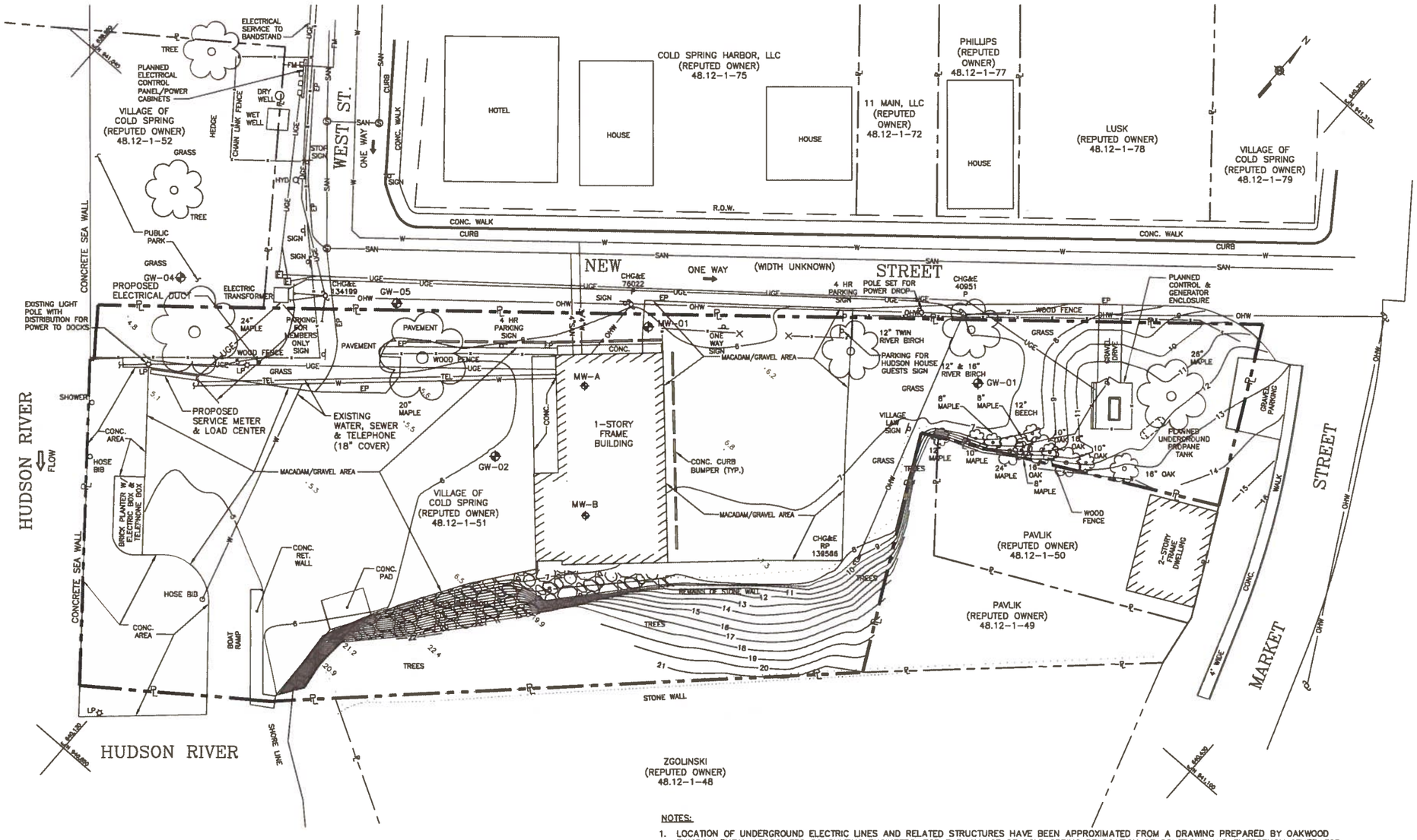
PUTNAM COUNTY
COLD SPRING
FORMER MGP SITE
NYS REGISTRY NO: 340026
CONTRACT D009635
VILLAGE OF COLD SPRING STATE OF NEW YORK

REMEDIAL ACTION

EXISTING SITE CONDITIONS GROUNDWATER CONTOUR MAP

Scale: AS SHOWN | Date: MAY 2015 | **C-002**

J:\01 Projects\150027-00 NY Former MGP Site\12.0 Working File\12.4 AS-BUILTS\DRAWINGS\C-002 -GROUNDWATER MAP.dwg, C-002, 1:1, 12/28/2015, 1:=ELB



NOTES:

1. LOCATION OF UNDERGROUND ELECTRIC LINES AND RELATED STRUCTURES HAVE BEEN APPROXIMATED FROM A DRAWING PREPARED BY OAKWOOD ENVIRONMENTAL ASSOCIATES CONSULTING ENGINEERS, FOR THE VILLAGE OF COLD SPRING RELOCATION OF CONTROLS AND EMERGENCY GENERATOR WEST STREET PUMP STATION PROJECT, DRAWING TITLED "SITE PLAN" DATED 10/22/14. WORK IS SCHEDULED TO BE COMPLETED BY THE VILLAGE OF COLD SPRING IN SPRING 2015.
2. THE CONTRACTOR SHALL INSTALL NEW DUCT AND CABLING FROM THE PAD-MOUNTED TRANSFORMER TO THE SERVICE METER AND LOAD CENTER, AND TIE INTO EXISTING LIGHT POLE NEAR SEAWALL.
3. CONTRACTOR SHALL FURNISH AND INSTALL CONDUIT, WIRING SERVICE, LOAD CENTER, ENCLOSURE, AND SUPPORTING STRUCTURES SIZED TO MEET THE LOAD REQUIREMENTS OF THE DOCK AREA (CURRENTLY SUPPLIED BY BOAT CLUB BUILDING).
4. THE CONTRACTOR SHALL COORDINATE ALL ELECTRICAL SERVICE INSTALLATION REQUIREMENTS WITH CENTRAL HUDSON.
5. CONTRACTOR SHALL PROVIDE GFI PROTECTION FOR LOADS AS REQUIRED BY NEC.
6. CABINET SHALL BE A MINIMUM 48-INCH WIDE, FREE STAND DISCONNECT WITH QUICK-RELEASE CONTINUOUS HINGE, TYPE 4, BY PENTAIR, OR APPROVED EQUAL, MOUNTED ON A MINIMUM 24-INCH THICK CONCRETE PAD.
7. ENCLOSURE AND METER SHALL BE MOUNTED ON STEEL FRAMED STRUCTURE ATTACHED TO GALVANIZED STEEL PIPES SECURELY ANCHORED IN CONCRETE.
8. MATERIALS AND SIZE OF CONDUIT TO BE CONSISTENT WITH EXISTING CONDUIT; MINIMUM SCHEDULE 80. STUB-UP TRANSITIONS TO ABOVE-GRADE SHALL BE RIGID GALVANIZED STEEL.
9. CONTRACTOR SHALL RELOCATE VERIZON PHONE LINE BETWEEN POLES 76022 AND 134199 TO EXISTING CONDUIT WITHIN NEW STREET.

20' 0 20'
SCALE IN FEET

RECORD DRAWING

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NO.	MADE BY	APPROVED BY	DATE	DESCRIPTION
1	LSP	DJD	01/05/16	RECORD DRAWING
0	ELB	RW	05/18/15	ISSUED FOR BID

REVISIONS

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DRAWN BY: ELB
CHECKED BY: CWP
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PUTNAM COUNTY
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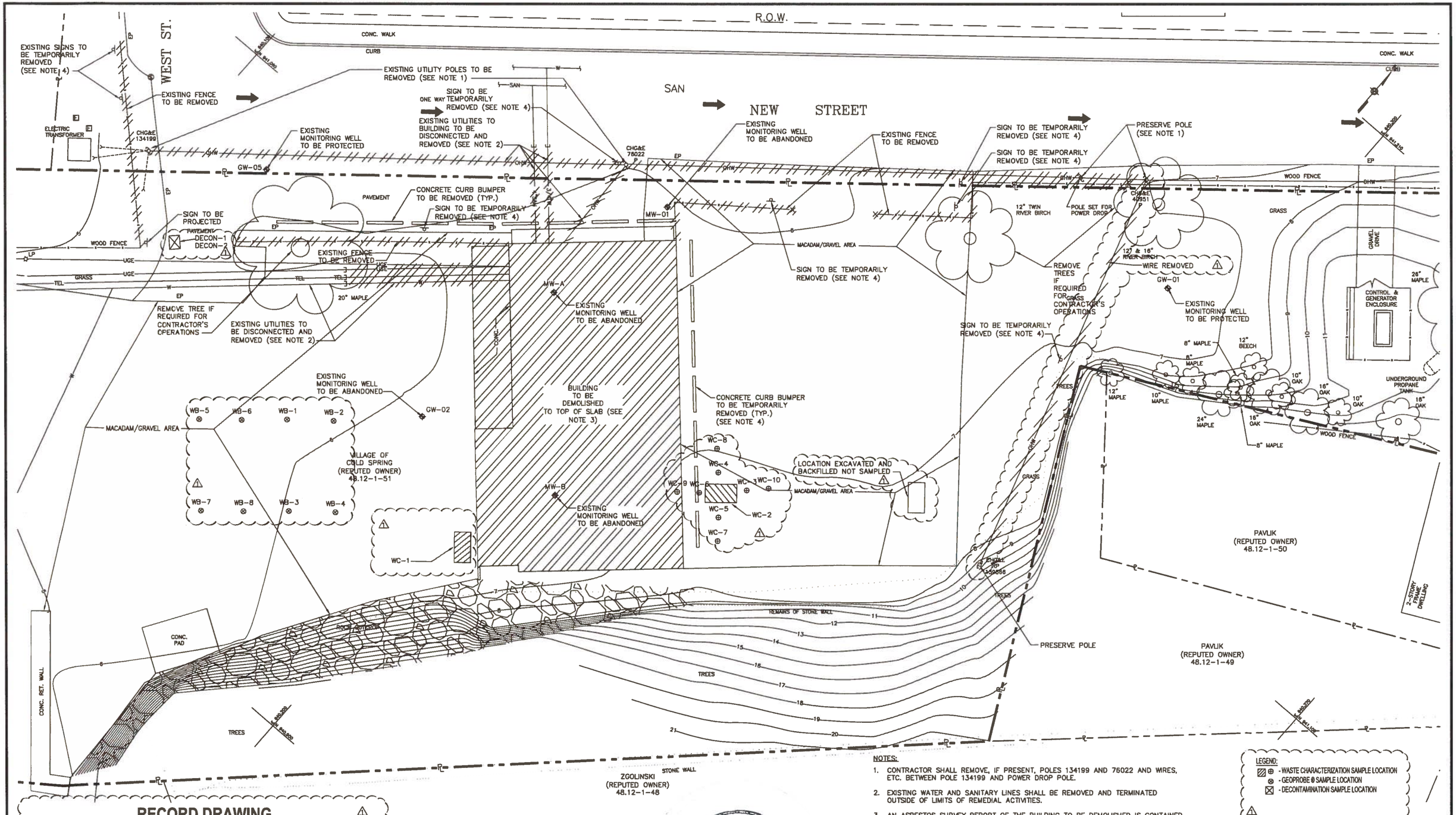
NYS REGISTRY NO: 340026
CONTRACT D009635
VILLAGE OF COLD SPRING STATE OF NEW YORK

REMEDIAL ACTION

UTILITY PLAN

Scale: AS SHOWN | Date: MAY 2015 | **C-003**

J:\01 Projects\15000\15027-00 NY Former MGP Site\12.0 Working File\12.4 AS-BUILTS\DRAWINGS\C-003 -EXIST UTILITIES.dwg, C-003, 1:1, 12/9/2016, 1-ELB



RECORD DRAWING ⚠

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NOTES:

1. CONTRACTOR SHALL REMOVE, IF PRESENT, POLES 134199 AND 76022 AND WIRES, ETC. BETWEEN POLE 134199 AND POWER DROP POLE.
2. EXISTING WATER AND SANITARY LINES SHALL BE REMOVED AND TERMINATED OUTSIDE OF LIMITS OF REMEDIAL ACTIVITIES.
3. AN ASBESTOS SURVEY REPORT OF THE BUILDING TO BE DEMOLISHED IS CONTAINED IN THE LIMITED SITE DATA DOCUMENT. NO ACM WAS DETECTED.
4. THE CONTRACTOR SHALL ASSUME THAT ALL SIGNS AND CURB BUMPERS REMOVED, WILL BE REINSTALLED AT THE END OF THE PROJECT. THE NEW LOCATION WILL BE DETERMINED DURING RESTORATION.

LEGEND:
- ⊕ - WASTE CHARACTERIZATION SAMPLE LOCATION
- ⊗ - GEOPROBE ® SAMPLE LOCATION
- ⊠ - DECONTAMINATION SAMPLE LOCATION
- ⚠

SCALE IN FEET: 10' 0 10'

NO.	MADE BY	APPROVED BY	DATE	DESCRIPTION
1	LSP	DJD	01/05/16	RECORD DRAWING
0	ELB	RW	05/18/15	ISSUED FOR BID

REVISIONS

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DRAWN BY: ELB
CHECKED BY: CWP
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STATE OF NEW YORK — DAVID JOHN DICESARE — 072847 — LICENSED PROFESSIONAL ENGINEER

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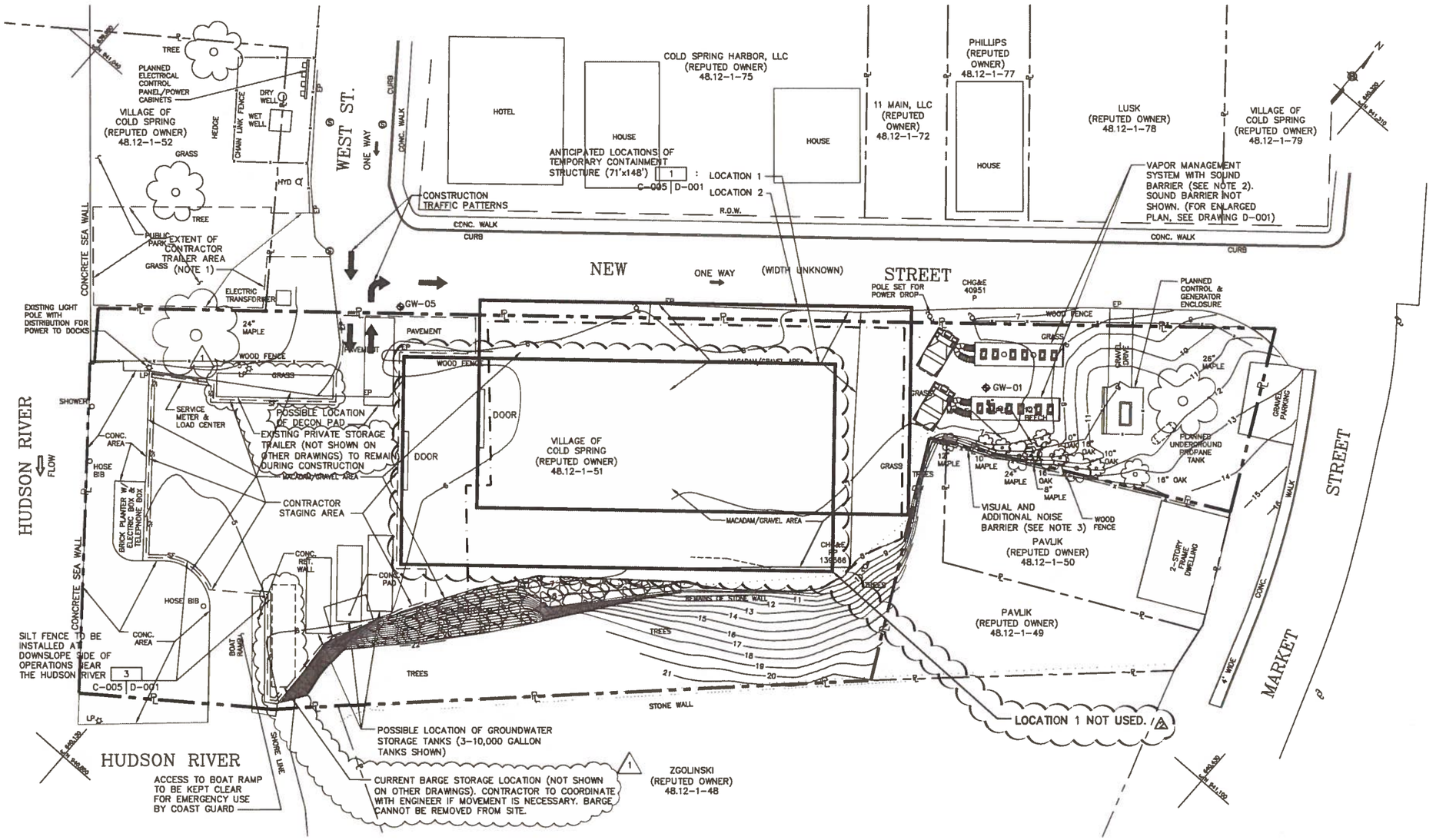
NYS REGISTRY NO: 340026
CONTRACT D009635
VILLAGE OF COLD SPRING STATE OF NEW YORK

REMEDIAL ACTION

DEMOLITION PLAN

Scale: AS SHOWN | Date: MAY 2015 | **C-004**



NOTES:

1. THE CONTRACTOR SHALL PROTECT ALL TREES AND UTILITIES WITHIN THE CONTRACTOR TRAILER AREA. SOME ITEMS NOT SHOWN.
2. ALL ASPECTS OF THE CONTRACTOR'S OPERATIONS SHALL MEET THE REQUIREMENTS OF THE NOISE ORDINANCE (CHAPTER 76) OF THE CODES OF THE VILLAGE OF COLD SPRING, NEW YORK.
3. THE CONTRACTOR SHALL COORDINATE INSTALLATION OF A TEMPORARY VISUAL BARRIER, AND A SUPPLEMENTAL NOISE BARRIER (AS NECESSARY TO MEET VILLAGE NOISE ORDINANCE), WITH THE OWNER OF THE ADJACENT UPSLOPE PROPERTY.

LEGEND

- REQUIRED LIMITS OF EXCAVATION (SEE DRAWING C-006)
- VISUAL BARRIER (SEE NOTE 3)
- SILT FENCE
- FOOTPRINT OF TCS

RECORD DRAWING ⚠

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STATE OF NEW YORK — DAVID JOHN DICESARE — LICENSED PROFESSIONAL ENGINEER — 12/8/16

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NO.	MADE BY	APPROVED BY	DATE	DESCRIPTION
2	LSP	DJD	11/02/16	RECORD DRAWING MODIFICATIONS
1	ELB	RW	06/19/15	ADDED STORAGE TRAILER AND BARGE
0	ELB	RW	05/18/15	ISSUED FOR BID

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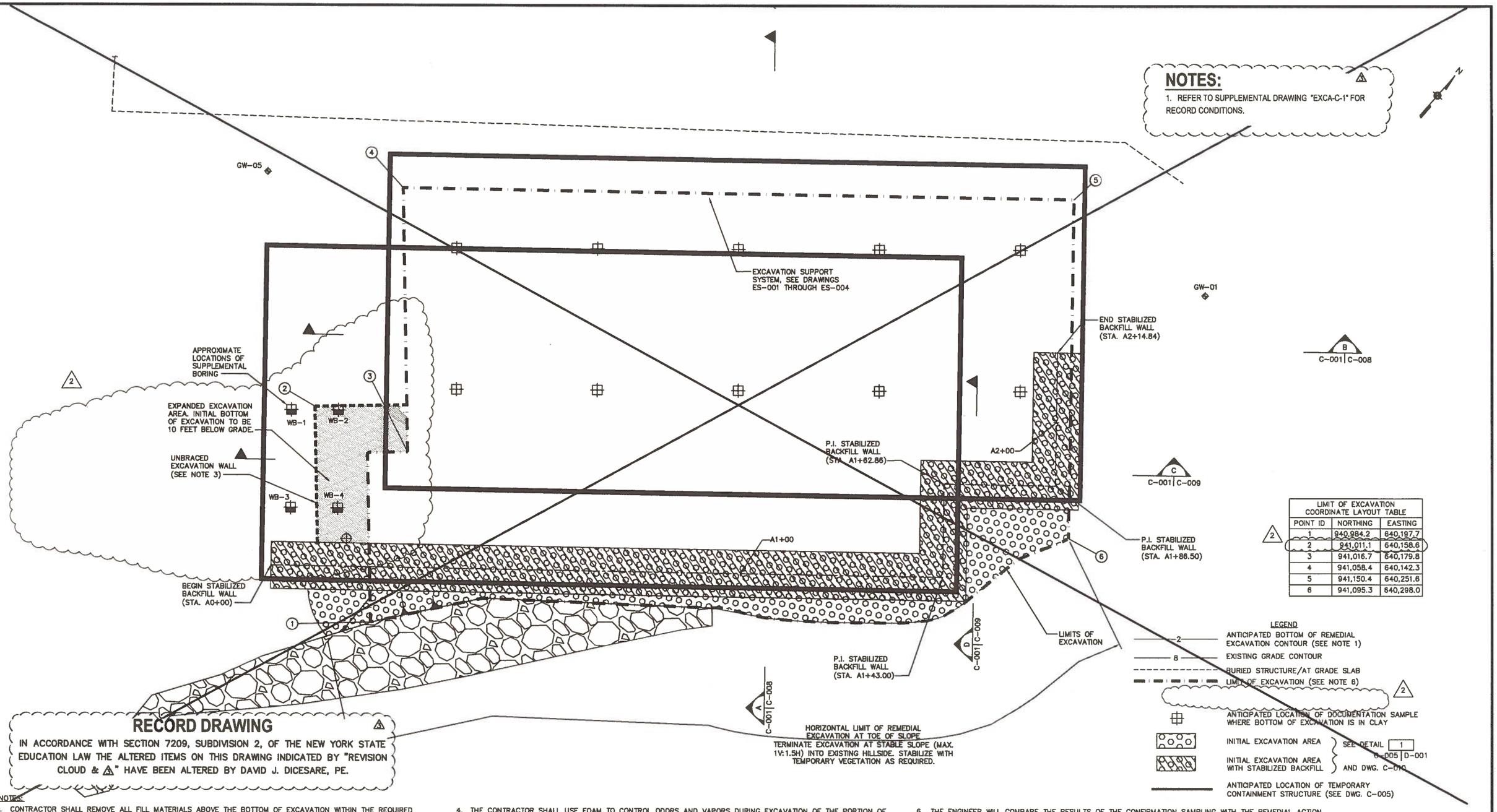
NYS REGISTRY NO: 340026
CONTRACT D009635
VILLAGE OF COLD SPRING STATE OF NEW YORK

REMEDIAL ACTION

EXCAVATION ACTIVITIES PLAN SITE LAYOUT

Scale: AS SHOWN | Date: MAY 2015 | **C-005**

J:\01 Projects\15027-00 NY Former MGP Site\12.0 Working File\12.4 AS-BUILTS\DRAWINGS\C-005 - REMEDIAL REV-1.dwg, C-005, 1:1, 12/9/2016, 1-ELB



LIMIT OF EXCAVATION COORDINATE LAYOUT TABLE		
POINT ID	NORTHING	EASTING
1	940,984.2	640,197.7
2	941,011.1	640,158.6
3	941,016.7	640,179.8
4	941,058.4	640,142.3
5	941,150.4	640,251.6
6	941,095.3	640,298.0

RECORD DRAWING

IN ACCORDANCE WITH SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW THE ALTERED ITEMS ON THIS DRAWING INDICATED BY "REVISION CLOUD & △" HAVE BEEN ALTERED BY DAVID J. DICESARE, PE.

NOTES:

1. CONTRACTOR SHALL REMOVE ALL FILL MATERIALS ABOVE THE BOTTOM OF EXCAVATION WITHIN THE REQUIRED LIMITS OF EXCAVATION. THE BOTTOM OF EXCAVATION SHALL BE THE TOP OF BEDROCK OR THE TOP OF CLAY, WHICHEVER IS HIGHER, AND AS APPROVED BY THE ENGINEER. THE CONTRACTOR SHALL NOT EXCAVATE MORE THAN 1 FOOT BELOW THE ELEVATIONS SHOWN ON THIS DRAWING WITHOUT THE PRIOR APPROVAL OF THE ENGINEER.
2. THE CONTRACTOR SHALL REMOVE ALL BURIED FOUNDATIONS, PIPES, STRUCTURES, ETC. THE CONTRACTOR SHALL REMOVE ALL VISIBLE COAL TAR.
3. PORTIONS OF THE EXCAVATION PERIMETER NOT SHOWN TO BE BRACED SHALL BE LAID BACK TO THE STEEPEST STABLE NATURAL SLOPE. △2
4. THE CONTRACTOR SHALL USE FOAM TO CONTROL ODORS AND VAPORS DURING EXCAVATION OF THE PORTION OF THE REQUIRED EXCAVATION AREA THAT CANNOT BE COVERED BY A TEMPORARY CONTAINMENT STRUCTURE. THIS IS REFERRED TO AS THE "INITIAL EXCAVATION AREA". ALL OTHER EXCAVATION SHALL BE PERFORMED BENEATH A TEMPORARY CONTAINMENT STRUCTURE (IN GENERAL LOCATION SHOWN ON DRAWINGS C-005 AND C-006) WITH A VAPOR MANAGEMENT SYSTEM.
5. THE LOCATION AND EXTENT OF THE INITIAL EXCAVATION AREA AND THE TEMPORARY CONTAINMENT STRUCTURE ARE SHOWN FOR BIDDING PURPOSES. THE CONTRACTOR MAY PROPOSE ALTERNATIVE LAYOUT AND EQUIPMENT SUBJECT TO THE REVIEW AND APPROVAL OF THE ENGINEER. THE EXTENT AND VOLUME OF THE INITIAL EXCAVATION AREA SHALL BE MINIMIZED.
6. THE ENGINEER WILL COMPARE THE RESULTS OF THE CONFIRMATION SAMPLING WITH THE REMEDIAL ACTION OBJECTIVES FOR THE PROJECT (NO VISUAL EVIDENCE OF COAL TAR, LESS THAN 500 ppm TOTAL PETROLEUM HYDROCARBONS) TO DETERMINE IF ADDITIONAL EXCAVATION AND CONFIRMATION SAMPLING IS REQUIRED. THE CONTRACTOR SHALL PERFORM SUCH ADDITIONAL EXCAVATION, SAMPLING, AND ANALYSIS AS DIRECTED BY THE ENGINEER.
7. THE CONTRACTOR SHALL PLACE A GEOTEXTILE DEMARCATION BARRIER OVER ANY SOILS, AS DETERMINED BY THE ENGINEER, WHOSE CONFIRMATION/DOCUMENTATION SAMPLES DO NOT MEET 6 NYCRR PART 375 RESTRICTED RESIDENTIAL STANDARDS. △2

NO.	MADE BY	APPROVED BY	DATE	DESCRIPTION
3	LSP	DJD	01/05/16	RECORD DRAWINGS
2	ELB	RW	01/23/18	??
1	ELB	RW	10/09/15	REVISED IN ACCORDANCE WITH RFI 12
0	ELB	RW	05/18/15	ISSUED FOR BID

REVISIONS

DESIGNED BY: RW
DRAWN BY: ELB
CHECKED BY: CWP
PROJ. ENGR. RW

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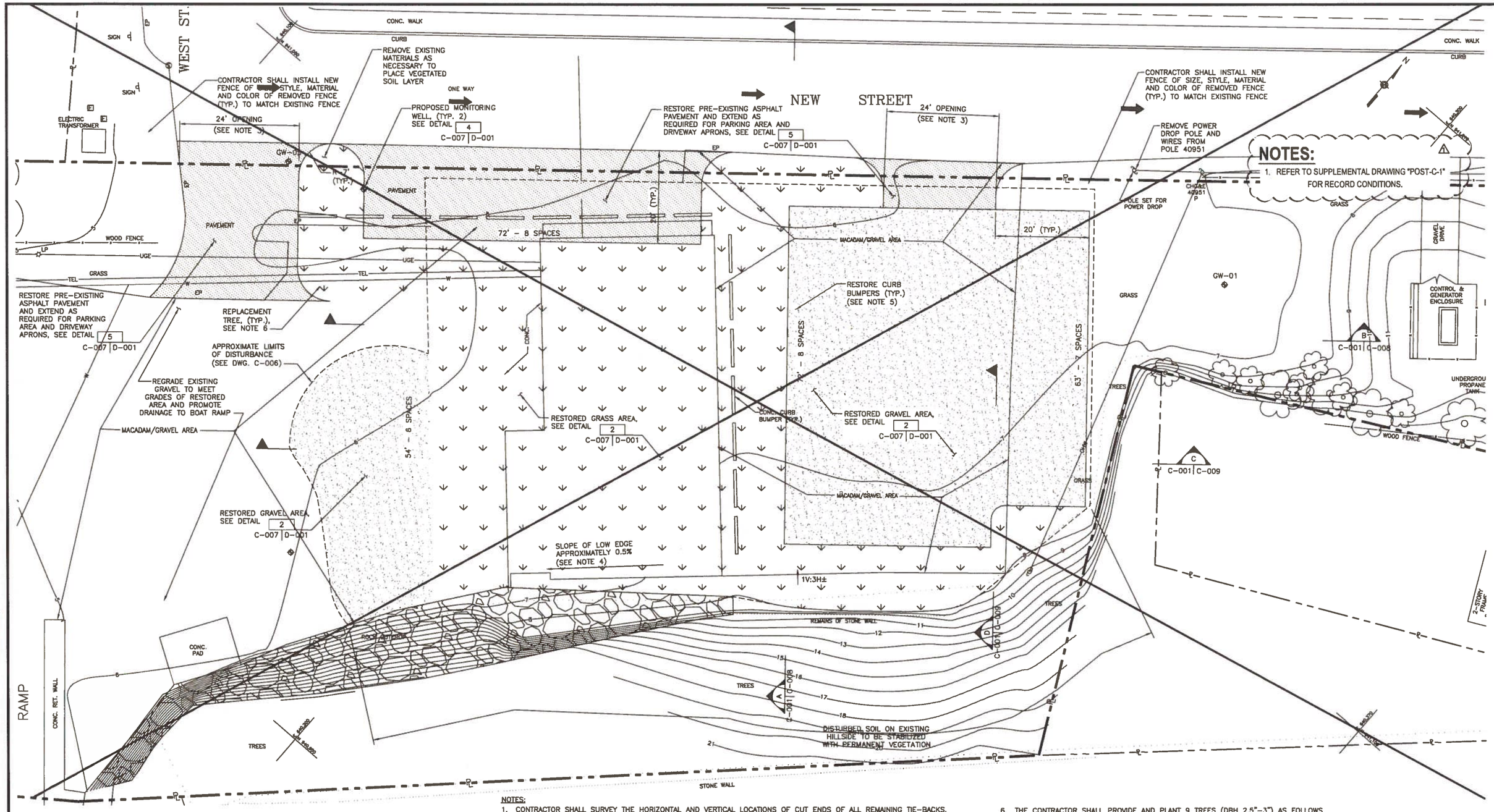
NYS REGISTRY NO: 340026
CONTRACT D009635
VILLAGE OF COLD SPRING STATE OF NEW YORK

REMEDIAL ACTION

EXCAVATION PLAN

Scale: AS SHOWN | Date: MAY 2015 | **C-006**



NOTES:

1. REFER TO SUPPLEMENTAL DRAWING "POST-C-1" FOR RECORD CONDITIONS.

RECORD DRAWING ⚠

IN ACCORDANCE WITH SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW THE ALTERED ITEMS ON THIS DRAWING INDICATED BY "REVISION CLOUD & ⚠" HAVE BEEN ALTERED BY DAVID J. DICESARE, PE.

NOTES:

1. CONTRACTOR SHALL SURVEY THE HORIZONTAL AND VERTICAL LOCATIONS OF CUT ENDS OF ALL REMAINING TIE-BACKS.
2. APPROXIMATE RESTORATION GRADES SHOWN. CONTRACTOR SHALL GRADE TOP OF RESTORED AREA UNIFORMLY TO DRAIN, AND MATCH SURROUNDING GRADES AT THE PERIMETER OF THE RESTORED AREA.
3. CONTRACTOR SHALL LOCATE OPENINGS IN THE SAME LOCATION OF THOSE OF THE REMOVED FENCE SO AS TO RESTORE PRE-CONSTRUCTION TRAFFIC PATTERNS.
4. CONTRACTOR SHALL GRADE RESTORED AREA AND EXISTING GRAVEL SURFACE UNIFORMLY TO LOW EDGE, TO PROMOTE DRAINAGE ALONG SOUTHERLY BOUNDARY TO THE BOAT RAMP AS PRACTICABLE.
5. SIGNS AND CURB BUMPERS REMOVED DURING DEMOLITION SHALL BE RESTORED AS DIRECTED.
6. THE CONTRACTOR SHALL PROVIDE AND PLANT 9 TREES (DBH 2.5"-3") AS FOLLOWS
   - TWO (2) BALD CYPRESS (TAXODIUM DISTICHUM)
   - ONE (1) SWAMP WHITE OAK (QUERCUS BICOLOR)
   - SIX (6) SERVICEBERRY (AMELANCHIER) 'AUTUMN BRILLIANCE'

   LOCATIONS SHOWN ON THIS DRAWING CONCEPTUALLY - TO BE FINALIZED DURING RESTORATION.

10' 0 10'
SCALE IN FEET

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NO.	MADE BY	APPROVED BY	DATE	DESCRIPTION
1	LSP	DJD	01/05/16	RECORD DRAWING
0	ELB	RW	05/18/15	ISSUED FOR BID

REVISIONS

DESIGNED BY: RW
DRAWN BY: ELB
CHECKED BY: CWP
PROJ. ENGR. RW

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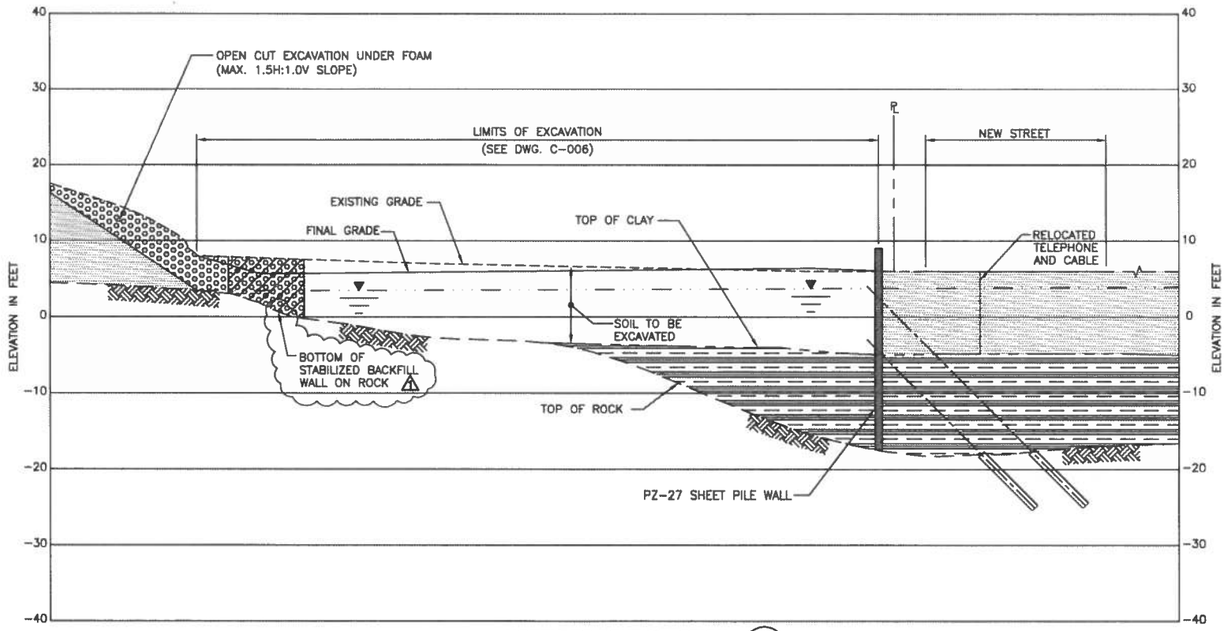
JOB NO. 11176853

PUTNAM COUNTY
COLD SPRING FORMER MGP SITE
NYS REGISTRY NO: 340026
CONTRACT D009635
VILLAGE OF COLD SPRING STATE OF NEW YORK

REMEDIAL ACTION

RESTORATION PLAN

Scale: AS SHOWN | Date: MAY 2015 | **C-007**



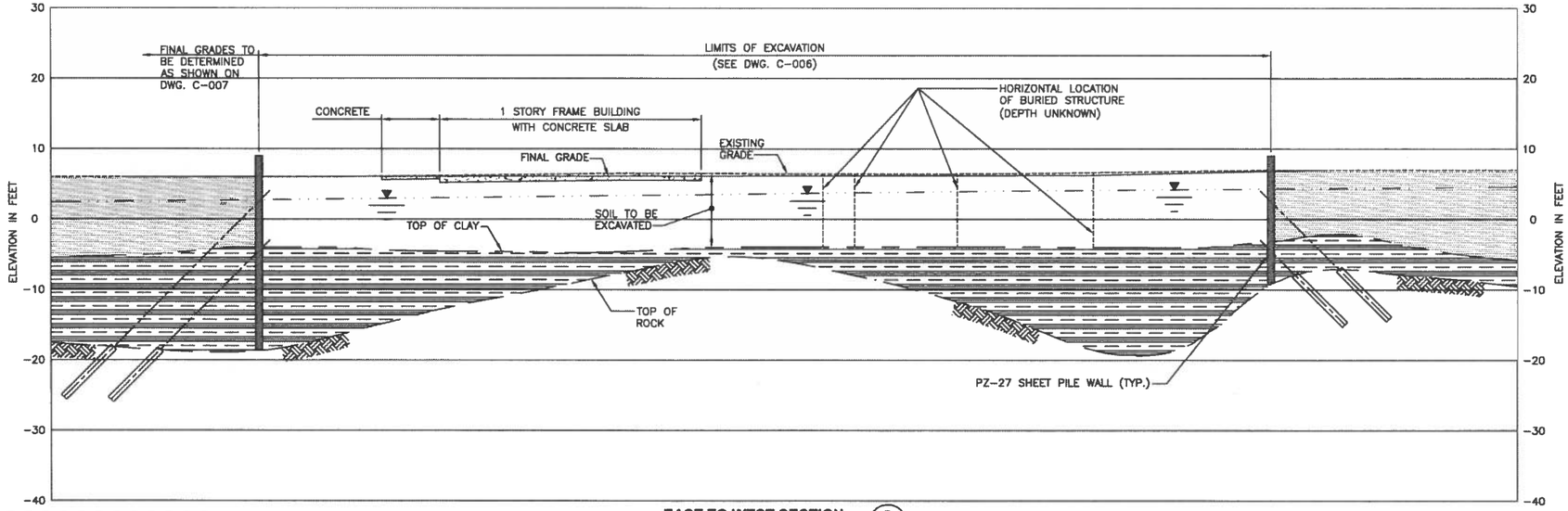
NORTH TO SOUTH SECTION (A) C-001 | C-008

10' 0 10'

SCALE IN FEET
HORIZ. & VERT.

NOTES:

1. DRAWING HAS NOT BEEN MODIFIED TO REFLECT RECORD CONDITIONS. REFER TO SUPPLEMENTAL DRAWINGS "EXCA-C-1" AND "POST-C-1" FOR RECORD CONDITIONS.



EAST TO WEST SECTION (B) C-001 | C-008

10' 0 10'

SCALE IN FEET
HORIZ. & VERT.

RECORD DRAWING

IN ACCORDANCE WITH SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW THE ALTERED ITEMS ON THIS DRAWING INDICATED BY "REVISION CLOUD & ⚠" HAVE BEEN ALTERED BY DAVID J. DICESARE, PE.

NO.	MADE BY	APPROVED BY	DATE	DESCRIPTION
2	LSP	DJD	10/16	RECORD DRAWING MODIFICATION
1	ELB	RW	09/23/15	ADDED BOTTOM OF STABILIZED BACKFILL WALL LABEL
0	ELB	RW	05/18/15	ISSUED FOR BID

REVISIONS

DESIGNED BY: RW
DRAWN BY: ELB
CHECKED BY: CWP
PROJ. ENGR. RW

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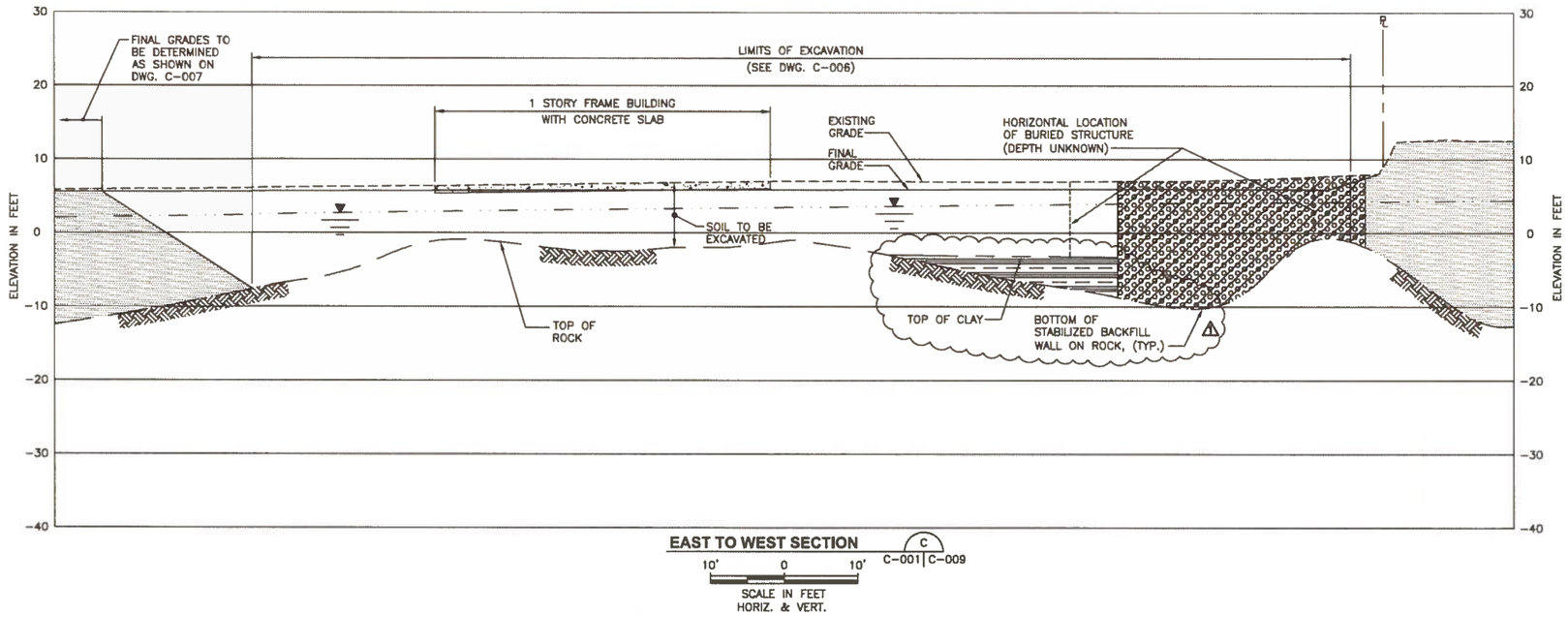
JOB NO. 11176853

PUTNAM COUNTY
COLD SPRING
FORMER MGP SITE
NYS REGISTRY NO: 340026
CONTRACT D009635
VILLAGE OF COLD SPRING STATE OF NEW YORK

REMEDIAL ACTION

SECTIONS

Scale: AS SHOWN | Date: MAY 2015 | **C-008**

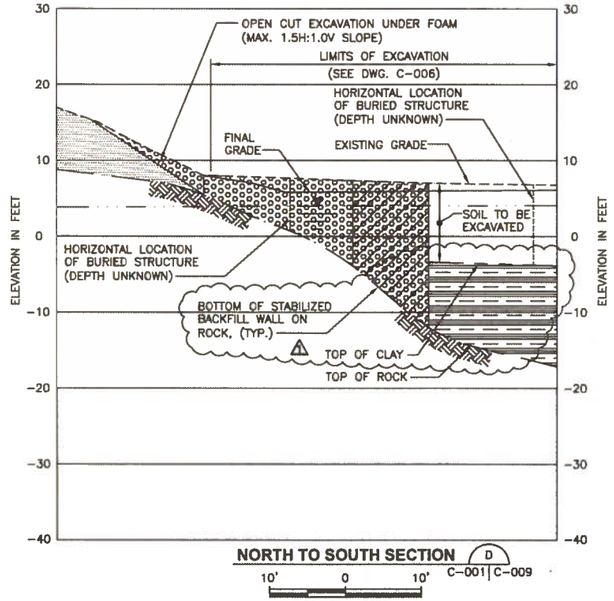


EAST TO WEST SECTION C

C-001 | C-009

10' 0 10'

SCALE IN FEET
HORIZ. & VERT.



NORTH TO SOUTH SECTION D

C-001 | C-009

10' 0 10'

SCALE IN FEET
HORIZ. & VERT.

NOTES:

1. DRAWING HAS NOT BEEN MODIFIED TO REFLECT RECORD CONDITIONS. REFER TO SUPPLEMENTAL DRAWINGS "EXCA-C-1" AND "POST-C-1" FOR RECORD CONDITIONS.

LEGEND

- EXISTING SOILS
- CLAY
- TOP OF BEDROCK
- GROUNDWATER SURFACE ELEVATION (11/19/08)
- INITIAL EXCAVATION AREA
- INITIAL EXCAVATION AREA WITH STABILIZED BACKFILL

RECORD DRAWING

IN ACCORDANCE WITH SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW THE ALTERED ITEMS ON THIS DRAWING INDICATED BY "REVISION CLOUD & ⚠" HAVE BEEN ALTERED BY DAVID J. DICESARE, PE.

NO.	MADE BY	APPROVED BY	DATE	DESCRIPTION
2	LSP	DJD	10/16	RECORD DRAWING MODIFICATION
1	ELB	RW	09/23/15	REVISED BOTTOM OF EXCAVATION SHOWN
0	ELB	RW	05/18/15	ISSUED FOR BID

REVISIONS

DESIGNED BY: RW
DRAWN BY: ELB
CHECKED BY: CWP
PROJ. ENGR. RW

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STATE OF NEW YORK — DAVID JOHN DICESARE — LICENSED PROFESSIONAL ENGINEER

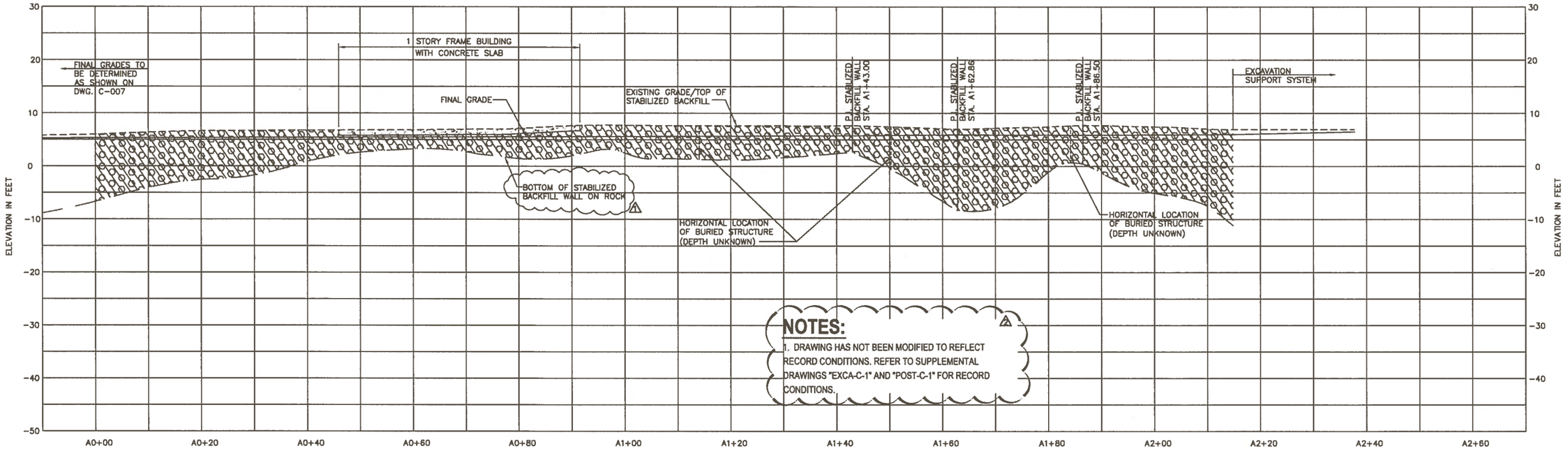
PUTNAM COUNTY
COLD SPRING
FORMER MGP SITE
NYS REGISTRY NO: 340026
CONTRACT D009635
VILLAGE OF COLD SPRING STATE OF NEW YORK

REMEDIAL ACTION

SECTIONS

Scale: AS SHOWN | Date: MAY 2015 | **C-009**

J:\01 Projects\150000\150027-00 NY Former MGP Site\12.0 Working File\12.4 AS-BUILTS\DRAWINGS\C-009 - SECTIONS REV-1.dwg, C-009, 11:, 1/9/2017, 1:-ELB



NOTES:

1. DRAWING HAS NOT BEEN MODIFIED TO REFLECT RECORD CONDITIONS. REFER TO SUPPLEMENTAL DRAWINGS "EXCA-C-1" AND "POST-C-1" FOR RECORD CONDITIONS.

LEGEND

INITIAL EXCAVATION AREA WITH STABILIZED BACKFILL

10' 0 10'
SCALE IN FEET
HORIZ. & VERT.

RECORD DRAWING ⚠

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NO.	MADE BY	APPROVED BY	DATE	DESCRIPTION
2	LSP	DJD	01/05/16	RECORD DRAWING MODIFICATION
1	ELB	RW	09/23/15	REVISED BOTTOM OF STABILIZED BACKFILL WALL LABEL
0	ELB	RW	05/18/15	ISSUED FOR BID

REVISIONS

DESIGNED BY: ___
DRAWN BY: ELB
CHECKED BY: ___
PROJ. ENGR. RW

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STATE OF NEW YORK · DAVID JOHN DICESARE · PROFESSIONAL ENGINEER

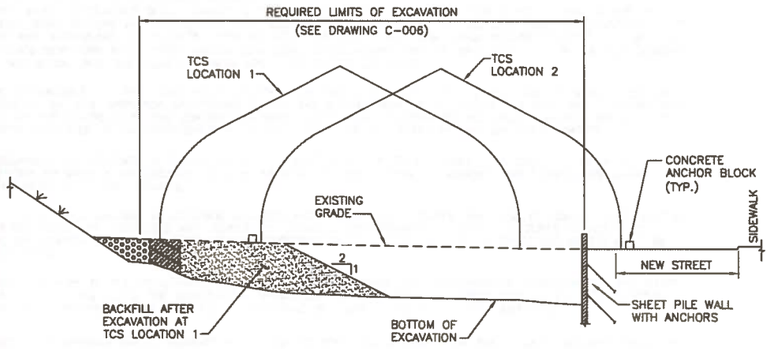
PUTNAM COUNTY
COLD SPRING
FORMER MGP SITE
NYS REGISTRY NO: 340026
CONTRACT D009635
VILLAGE OF COLD SPRING STATE OF NEW YORK

REMEDIAL ACTION

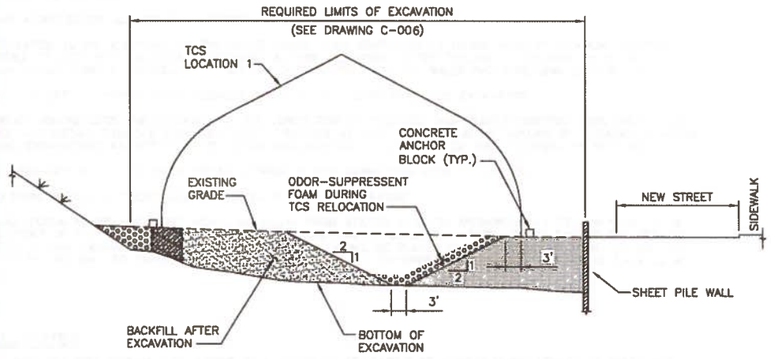
STABILIZED BACKFILL WALL PROFILE ALONG CENTERLINE

Scale: AS SHOWN | Date: MAY 2015 | **C-010**

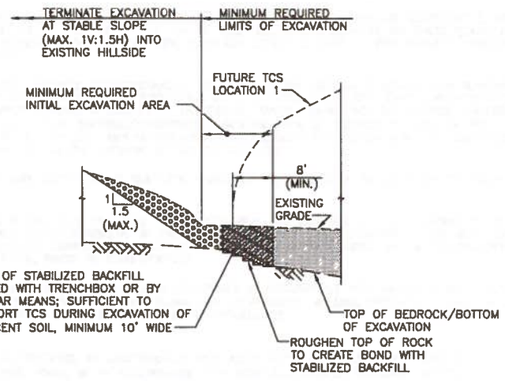
J:\01 Projects\15000\15027-00 NY Former MGP Site\12.0 Working File\12.4 AS-BUILTS\DRAWINGS\C-010 - STABILIZED BACKFILL PROFILE C-010 REV-1.dwg, C-010, 1:1, 12/28/2016, 1-ELB



TEMPORARY CONTAINMENT SYSTEM LOCATION 2

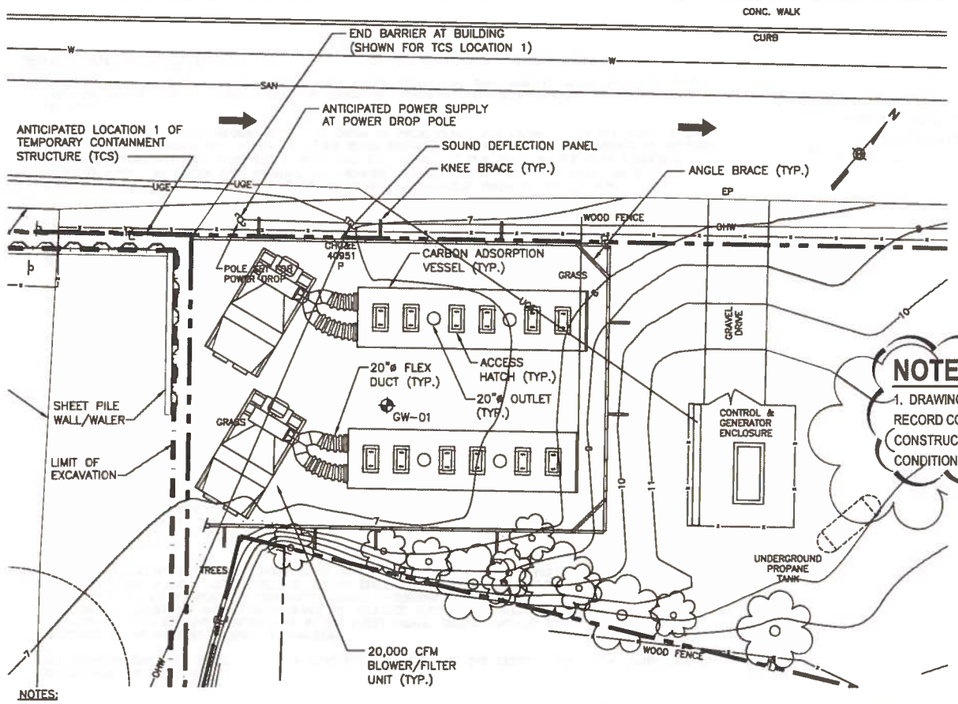


TEMPORARY CONTAINMENT SYSTEM LOCATION 1



INITIAL EXCAVATION

CONCEPTUAL TEMPORARY CONTAINMENT SYSTEM LAYOUT DETAIL 1
NOT TO SCALE C-005 | D-001



NOTES:
1. VAPOR MANAGEMENT SYSTEM SHOWN IS BASED UPON USE OF TWO 20,000 CFM UNITS PROVIDED BY TIGG CORPORATION. OTHER SYSTEMS THAT MEET THE PROJECT SPECIFICATIONS WILL BE ACCEPTABLE.
2. NOISE BARRIER SYSTEM IS SHOWN CONCEPTUALLY FOR TCS IN LOCATION 1 AS SHOWN ON C-005. THE LAYOUT AND DESIGN SHALL BE MODIFIED AS NECESSARY FOR ALL TCS LOCATIONS TO MEET THE REQUIREMENTS OF CHAPTER 76 OF THE VILLAGE OF COLD SPRING, NEW YORK, AND AS APPROVED BY ENGINEER.
3. OFFSITE CLEAN FILL IS NOT SHOWN, BUT MAY BE REQUIRED BENEATH THE VMS COMPONENTS TO PROVIDE A LEVEL SURFACE. THE CONTRACTOR SHALL NOT CUT INTO EXISTING GRADE IN THIS AREA.
4. SEE DRAWING C-005 FOR GENERAL LOCATION.

VAPOR MANAGEMENT SYSTEM ENLARGED PLAN
10' 0 10'
SCALE IN FEET

RECORD DRAWING ⚠
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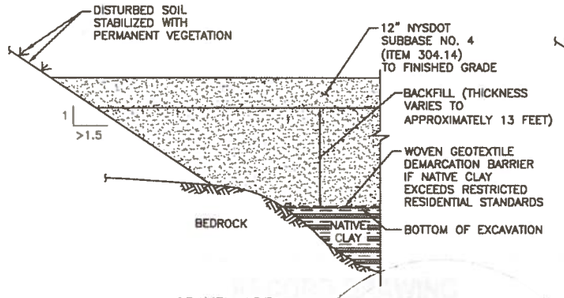
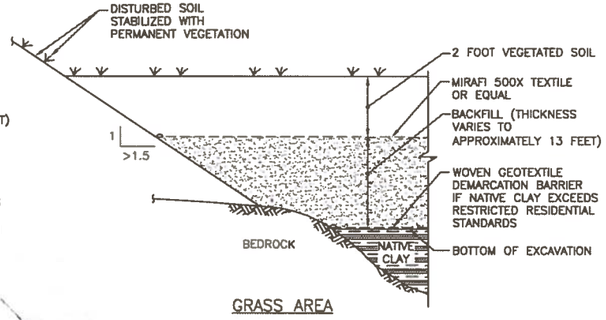
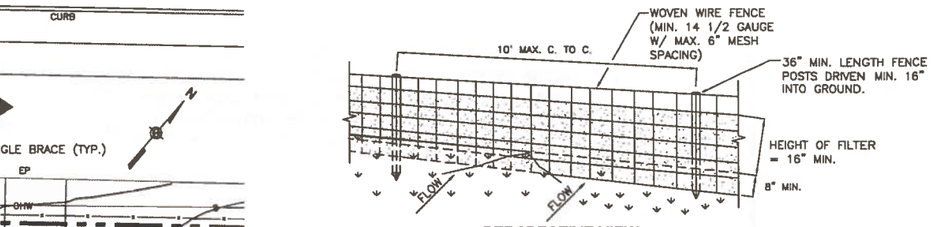


GRAVEL AREA

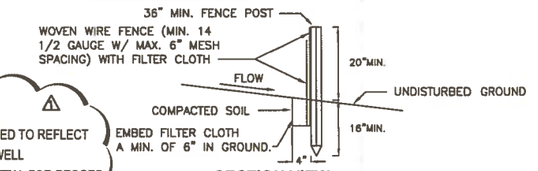


GRASS AREA

TYPICAL RESTORATION PROFILE 2
NOT TO SCALE C-007 | D-001



PERSPECTIVE VIEW



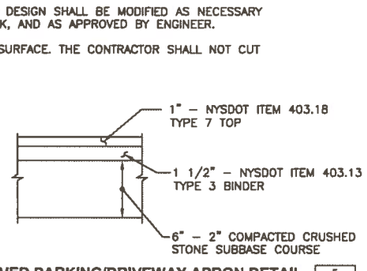
SECTION VIEW

NOTES: ⚠
1. DRAWING HAS NOT BEEN MODIFIED TO REFLECT RECORD CONDITIONS. REFER TO "WELL CONSTRUCTION DIAGRAMS" SUBMITTAL FOR RECORD CONDITIONS OF MONITORING WELLS.

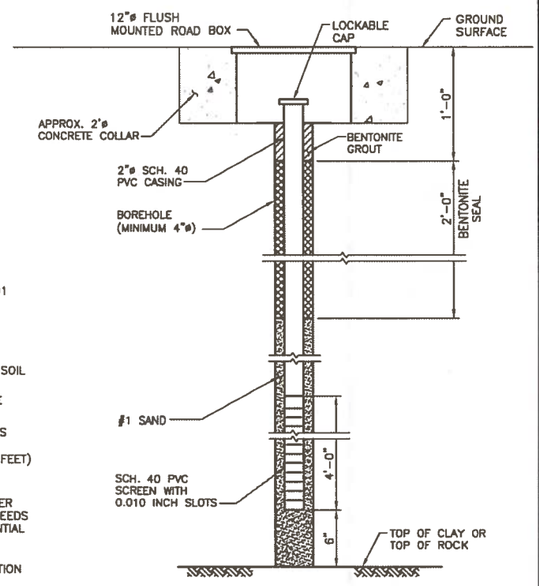
CONSTRUCTION SPECIFICATIONS

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.
2. FILTER CLOTH TO BE TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION. FENCE SHALL BE WOVEN WIRE, 12 1/2 GAUGE, 6" MAXIMUM MESH OPENING.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.
4. PREFABRICATED UNITS SHALL BE GEOFAB, ENVIROFENCE, OR APPROVED EQUIVALENT.
5. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

SILT FENCE DETAIL 3
NOT TO SCALE C-005 | D-001



PAVED PARKING/DRIVEWAY APRON DETAIL 5
NOT TO SCALE C-007 | D-001



MONITORING WELL DETAIL 4
NOT TO SCALE C-007 | D-001

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1	LSP	DJD	01/05/16	RECORD DRAWING
0	ELB	RW	05/18/15	ISSUED FOR BID

REVISIONS

DESIGNED BY: RW
DRAWN BY: ELB
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PUTNAM COUNTY
COLD SPRING
FORMER MGP SITE
NYS REGISTRY NO: 340026
CONTRACT D009635
VILLAGE OF COLD SPRING STATE OF NEW YORK

REMEDIAL ACTION

DETAILS

Scale: AS SHOWN | Date: MAY 2015 | **D-001**

EXCAVATION SUPPORT SYSTEM GENERAL NOTES

1. PRIOR TO COMMENCING WORK CONTRACTOR SHALL SUBMIT TO ENGINEER A DETAILED WORK PLAN FOR CONSTRUCTION OF THE SHEET PILING WALL. THE PLAN SHALL OUTLINE ALL PROCEDURES AND SEQUENCES TO BE USED TO INSTALL SHEETING, AND CONSTRUCT, TEST, AND FINISH TIEBACKS AND ANCHORAGE COMPONENTS. PER SPECIFICATION 02226, THE PLAN SHALL INCLUDE STAMPED AND SEALED (BY CURRENTLY LICENSED NEW YORK STATE PROFESSIONAL ENGINEER) CALCULATIONS AND DRAWINGS FOR ALL CONTRACTOR-DESIGNED ITEMS. WORK SHALL NOT BEGIN UNTIL THE PLAN HAS BEEN APPROVED BY THE ENGINEER.

2. THE CONTRACTOR IS RESPONSIBLE FOR PRE- AND POST-CONSTRUCTION PHOTO DOCUMENTATION OF ALL EXISTING STRUCTURES ON PROPERTIES ADJACENT TO THE SITE. VIBRATION MONITORING DURING THE INSTALLATION OF THE SHEET PILE WALL AND ANCHORS SHALL ALSO BE PERFORMED BY THE CONTRACTOR. THE CONTRACTOR SHALL SELECT THE LOCATION OF VIBRATION MONITORS AND INDICATE THEM ON A PLAN VIEW, SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO THE START OF PILE DRIVING ACTIVITIES.

3. LOCATE, PROTECT/BULKHEAD ALL UTILITIES TO REMAIN PRIOR TO CONSTRUCTION OF SHEET PILING. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO MINIMIZE DISTURBANCE TO SURROUNDING UTILITIES, ASPHALT PAVEMENT, AND STRUCTURES DURING THE INSTALLATION OF THE SHEET PILES AND TIEBACKS.

4. CONTRACTOR SHALL PROTECT ALL EXISTING STRUCTURES, UTILITIES, AND OTHER SITE FEATURES THAT ARE TO REMAIN. CONTRACTOR IS RESPONSIBLE FOR DESIGNING AND INSTALLING ANY TEMPORARY SHORING, UNDERPINNING, OR OTHER FEATURES TO MEET THIS PURPOSE. REMOVAL OR MODIFICATION OF SITE FEATURES NOT SPECIFICALLY CALLED OUT IN THE CONTRACT DOCUMENTS MUST BE APPROVED BY THE ENGINEER.

5. THE CONTRACTOR SHALL ADHERE TO ALL APPLICABLE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION AND STATE OF NEW YORK REGULATIONS AT ALL TIMES. THE CONTRACTOR SHALL COMPLY WITH APPLICABLE PREVISIONS OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) REGULATIONS, INCLUDING BUT NOT LIMITED TO 29 CFR PART 1926.

6. SITE-SPECIFIC GEOTECHNICAL INFORMATION IS PROVIDED IN THE LIMITED SITE DATA DOCUMENT OF THE PROJECT SPECIFICATIONS. THE CONTRACTOR SHALL USE ALL PROVIDED GEOTECHNICAL INFORMATION AT HIS OWN RISK AND SHALL VERIFY ALL INFORMATION THAT IS PERTINENT TO EARTHWORK, DEWATERING, AND CONSTRUCTION OF THE SHEET PILING WALL AND ANCHORS.

7. BIDDERS MAY ELECT TO MAKE THEIR OWN SITE VISIT FOLLOWING THE PRE-BID MEETING AND PRIOR TO BIDDING TO CONFIRM EXISTING CONDITIONS. THE BIDDER SHALL NOTIFY THE DEPARTMENT IN WRITING OF ANY CONDITIONS THAT DIFFER FROM THE PLANS.

EXCAVATION SUPPORT SYSTEM - CONSTRUCTION SEQUENCE

CONSTRUCTION OF EXCAVATION SUPPORT SYSTEM AND MASS EXCAVATION WITHIN THE BOUNDARIES OF THE SYSTEM SHALL BE PERFORMED IN A CONTROLLED SEQUENCE, AS FOLLOWS:

1. INSTALL SHEET PILING ALONG ENTIRE ALIGNMENT OF SUPPORT SYSTEM.

2. ADVANCE MASS EXCAVATION TO THE ELEVATION OF THE UPPER WALER. THEN TEMPORARILY SUSPEND MASS EXCAVATION ACTIVITIES AND DRILL AND INSTALL TIEBACKS WITH EQUIPMENT POSITIONED AT THIS ELEVATION. AFTER DRILLING OF TIEBACKS, PERFORM LOCALIZED, INDIVIDUAL EXCAVATIONS AS NECESSARY TO ALLOW CONSTRUCTION OF UPPER WALER AND STRESSING OF TIEBACKS.

3. INSTALL, TEST, AND LOCK-OFF ALL UPPER WALER TIEBACKS PRIOR TO CONTINUING WITH MASS EXCAVATION.

4. WHEN THE MASS EXCAVATION REACHES THE ELEVATION OF THE LOWER ROW OF TIEBACKS, TEMPORARILY SUSPEND MASS EXCAVATION ACTIVITIES AND DRILL AND INSTALL TIEBACKS WITH EQUIPMENT POSITIONED AT THIS ELEVATION. AFTER DRILLING OF TIEBACKS, PERFORM LOCALIZED, INDIVIDUAL EXCAVATIONS AS NECESSARY TO ALLOW CONSTRUCTION OF LOWER WALER AND STRESSING OF TIEBACKS.

5. INSTALL, TEST, AND LOCK-OFF ALL UPPER WALER TIEBACKS PRIOR TO CONTINUING WITH MASS EXCAVATION.

6. MASS EXCAVATE TO FINAL DEPTHS AS PRESCRIBED IN THE PLANS AND SPECIFICATIONS.

7. NO EXCAVATION SHALL OCCUR BEHIND THE SHEET PILING, AS SHOWN FROM STATION 0+00 TO APPROXIMATELY STATION 0+20, UNTIL ALL EXCAVATION IN FRONT OF THE SHEET PILING IS COMPLETED. THE CONTRACTOR SHALL TAKE CARE NOT TO DAMAGE THE TIEBACKS THAT WILL BE EXPOSED DURING EXCAVATION BEHIND THE WALL. BACKFILL SHALL BE PLACED SIMULTANEOUSLY IN FRONT OF AND BEHIND ANY PORTIONS OF THE WALL SO EXPOSED WITH NO GREATER THAN 1 FT. DIFFERENCE BETWEEN THE HEIGHTS OF BACKFILL AT ANY TIME.

SHEET PILING WALL NOTES

1. CONTRACTOR SHALL PERFORM TEST TRENCH EXCAVATIONS TO A DEPTH OF AT LEAST 6 FT ACROSS ENTIRE LENGTH OF SHEET PILE ALIGNMENT AHEAD OF PILE DRIVING. THIS IS TO IDENTIFY ANY SHALLOW OBSTRUCTIONS. IDENTIFIED OBSTRUCTIONS SHALL BE REMOVED PRIOR TO MOBILIZING PILE DRIVING EQUIPMENT. SPOILS SHALL BE CONTAINERIZED AND COVERED WITH TARPS AND/OR FOAMS TO PREVENT ESCAPE OF SEDIMENTS OR ODORS, AND SHALL BE DISPOSED OF WITH OTHER EXCAVATED SOILS.

2. ALL SHEET PILING SHALL BE DRIVEN TO ABSOLUTE REFUSAL ON BEDROCK. THE CONTRACTOR SHALL MOBILIZE SUFFICIENT EQUIPMENT AND MATERIALS TO MEET THIS REQUIREMENT AT ALL LOCATIONS. THE TOP OF ROCK ELEVATIONS DEPICTED ON THESE PLANS ARE APPROXIMATE AND HAVE BEEN ESTIMATED BASED ON THE SITE-SPECIFIC DATA COLLECTED AS PART OF THIS PROJECT. VARIATIONS IN THE SOIL-BEDROCK INTERFACE ARE POSSIBLE.

3. THE EXCAVATION SUPPORT SYSTEM HAS BEEN DESIGNED TO WITHSTAND A 500 PSF UNIFORM VERTICAL CONSTRUCTION SURCHARGE ACTING NO CLOSER THAN 10 FT FROM THE FRONT FACE OF THE SHEET PILE WALL, IN CONJUNCTION WITH EARTH, HYDROSTATIC, AND CONTAINMENT STRUCTURE LOADS. SURCHARGE LOADING IN EXCESS OF THE DESIGN LOADING SHALL NOT BE ALLOWED, UNLESS OTHERWISE APPROVED BY THE ENGINEER. ADDITIONAL SHORING/STRENTHENING/MODIFICATION OF SUPPORT SYSTEM MAY BE NECESSARY IF LARGER SURCHARGES ARE TO BE APPLIED. ANY MODIFICATIONS TO THE SUPPORT SYSTEM SHALL BE SUBMITTED FOR THE APPROVAL OF THE ENGINEER AND SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

4. SOIL STOCKPILES, CONTRACTOR EQUIPMENT AND CONSTRUCTION SUPPLIES, SHALL NOT BE STORED WITHIN 20 FT OF THE FACE OF THE SHEET PILE WALL.

5. IF SPLICES IN SHEET PILING ARE REQUIRED DURING CONSTRUCTION, THE SPLICES SHALL BE DESIGNED BY THE CONTRACTOR TO TRANSFER THE ENTIRE AXIAL, FLEXURAL, AND SHEAR STRENGTH OF THE SECTION FROM ONE SHEET SEGMENT TO THE NEXT. DESIGN OF SPLICES SHALL BE BY A PROFESSIONAL ENGINEER CURRENTLY REGISTERED IN THE STATE OF NEW YORK. DESIGN CALCULATIONS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTING.

6. WELDING: PREPARATION OF BASE METAL PRIOR TO WELDING SHALL BE PERFORMED IN ACCORDANCE WITH AMERICAN WELDING SOCIETY D1.1. ALL WELDING SHALL BE DONE BY THE SHEILDED METAL ARC WELDING (SMAW) PROCESS. WELDING OPERATORS SHALL BE QUALIFIED IN ACCORDANCE WITH AMERICAN WELDING SOCIETY STANDARD QUALIFICATION PROCEDURES.

7. STRUCTURAL STEEL
   - 7.1. ALL SHEET PILES SHALL BE HOT-ROLLED SECTIONS, IN CONFORMANCE WITH ASTM A572 GRADE 50 - YIELD STRENGTH 50,000 PSI
   - 7.2. WALER SHAPES, BARS, AND PLATES: STEEL SHALL BE IN ACCORDANCE WITH ASTM A36, UNLESS OTHERWISE NOTED.

TIEBACK ANCHOR NOTES

1. TIEBACKS SHALL BE BAR ANCHORS, MEETING ASTM A 722, GRADE 150. BAR DIAMETER SHALL BE SELECTED BY THE CONTRACTOR, BUT SHALL BE AT LEAST AS LARGE AS SHOWN IN THE PLANS TO MEET THE DESIGN LOADS PROVIDED.

2. TIEBACK UNBONDED LENGTH REQUIREMENTS ARE GIVEN IN THESE PLANS. ALL TIEBACKS FOR THE SHEET PILING WALL SHALL BE PROVIDED WITH A PVC OR OTHER BOND BREAKING SHEATHING FILLED WITH GREASE AS DEFINED IN "RECOMMENDATIONS FOR PRESTRESSED ROCK AND SOIL ANCHORS," PUBLISHED BY THE POST TENSIONING INSTITUTE (PTI). SELECTION AND DETAILING OF ANCHORS AND CORROSION PROTECTION SHALL BE BY CONTRACTOR. TIEBACK DETAILS SHALL BE APPROVED BY THE ENGINEER PRIOR TO USE ON SITE.

3. SPOILS FROM THE TIEBACK INSTALLATION SHALL BE HANDLED IN THE SAME WAY AS ARE SOILS FROM THE EXCAVATIONS.

4. TIEBACK DESIGN LOADS (DL) VARY ALONG THE ALIGNMENT OF THE WALL. DESIGN LOADS ARE INDICATED ON DRAWING ES-003.

5. THE TIEBACK BONDED LENGTH SHALL BE DESIGNED BY THE CONTRACTOR TO ACHIEVE THE DESIGN LOADS, TESTING AND OTHER REQUIREMENTS GIVEN IN THESE PLANS AND SPECIFICATIONS. THE ANCHOR BOND ZONE SHALL EXTEND A MINIMUM OF 10 FEET INTO ROCK. ALL ANCHOR BOND ZONES SHALL REMAIN WITHIN THE NEW STREET RIGHT-OF-WAY AND NOT ENCROACH ONTO PRIVATE PROPERTY BEYOND. ALL CONTRACTOR-DESIGNED ANCHORAGE FEATURES SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.

6. TIEBACK LOCATIONS (VERTICALLY) AND TIEBACK INCLINATION SHALL BE AS PRESCRIBED IN THESE PLANS. THE NUMBER OF TIEBACKS (LATERALLY) OVER A GIVEN LENGTH OF THE WALL SYSTEM SHALL ALSO BE AS PRESCRIBED IN THESE PLANS. THE SPECIFIC LOCATION OF TIEBACKS MAY BE SELECTED BY THE CONTRACTOR TO SUIT HIS/HER MEANS AND METHODS. HOWEVER, TIEBACKS SHALL BE POSITIONED SUCH THAT THE LENGTH OF WALER CANTILEVERING BEYOND LAST TIEBACK DOES NOT EXCEED 6 FT. TIEBACK SPACING ALONG THE ALIGNMENT OF THE WALL SHALL NOT BE GREATER THAN 12 FT. ON CENTER.

7. THE CONTRACTOR SHALL IMPLEMENT PROOF TESTING, PERFORMANCE TESTING, AND CREEP TESTING OF FINISHED TIEBACKS. SEE SPECIFICATIONS FOR THE TEST REQUIREMENTS.

8. OBSTRUCTIONS MAY BE ENCOUNTERED DURING TIEBACK DRILLING - FOR EXAMPLE, EXISTING BURIED STRUCTURE FOUNDATIONS FROM PREVIOUSLY DEMOLISHED BUILDINGS. WHEN OBSTRUCTIONS ARE ENCOUNTERED, CONTRACTOR SHALL STOP DRILLING AT THAT PARTICULAR LOCATION, AND CONSULT WITH THE ENGINEER. IF A HOLE IS TO BE ABANDONED, CONTRACTOR SHALL RELOCATE AND REPLACE THE ABANDONED TIEBACK WITH AN ANCHOR OF EQUAL OR GREATER CAPACITY.

9. DIRECTIONAL DRILLING FOR TIEBACK INSTALLATION SHALL BE PERFORMED TO THE ANGLES AND ORIENTATIONS SHOWN IN THESE PLANS. AUGER DRILLING, ROTARY DRILLING, OR PERCUSSION DRIVEN CASING MAY BE USED TO INSTALL THE TIEBACK SYSTEM. THE CONTRACTOR SHALL DETERMINE THE APPROPRIATE INSTALLATION METHODS. ADDITIONALLY, EQUIPMENT AND METHODS SHALL BE SELECTED SUCH THAT DRILLING CAN OCCUR THROUGH THE PRE-CONSTRUCTED ANCHOR PENETRATIONS IN THE SHEET PILING. TIEBACK ANCHOR ASSEMBLIES SHALL BE CENTERED IN THE BOREHOLE USING CENTRALIZERS.

10. ALL TIEBACKS SHALL BE LOCKED OFF AT A LOAD EQUAL TO 100% OF THE DESIGN LOAD, UPON COMPLETION OF SUCCESSFUL PROOF TESTING.

STABILIZED BACKFILL/FLOWABLE FILL NOTES

1. STABILIZED BACKFILL SHALL BE FLOWABLE FILL AND SHALL CONSIST OF CONTROLLED LOW STRENGTH MATERIAL (CLSM) OR LIGHTWEIGHT CONCRETE FILL, CONFORMING TO THE REQUIREMENTS SPECIFIED BY NYSDOT STANDARD SPECIFICATIONS SECTION 733-01. FURTHERMORE, FLOWABLE FILL SHALL HAVE A MINIMUM UNCONFINED COMPRESSIVE STRENGTH OF 150 PSI AT A 28-DAY CURING PERIOD. THE STRENGTH SHALL BE DOCUMENTED AND DEMONSTRATED BY THE SUPPLIER.

2. FLOWABLE FILL SHALL BE PLACED FROM THE TOP OF BEDROCK SURFACE TO EXISTING GRADE, AT ALL LOCATIONS WHERE STABILIZED BACKFILL IS INDICATED ON THE PLANS. THE BEDROCK SURFACE SHALL BE MECHANICALLY ROUGHENED OR BENCHED TO PROMOTE BONDING WITH THE FLOWABLE FILL.

3. A MINIMUM OF 28-DAYS SHALL HAVE ELAPSED FROM THE TIME THAT THE FLOWABLE FILL IS PLACED AND THE TIME THAT EXCAVATIONS IN FRONT OF THE STABILIZED BACKFILL ARE INITATED, AND A MINIMUM OF 14 DAYS SHALL HAVE ELAPSED SINCE THE TIME THAT FLOWABLE FILL IS PLACED AND THE TIME THAT THE VAPOR CONTAINMENT STRUCTURE IS CONSTRUCTED.

THIS DRAWING HAS NOT BEEN MODIFIED TO REFLECT RECORD PROCEDURES. REFER TO "REVISED TIEBACK INSTALLATION DOCUMENTATION REPORT" FOR RECORD PROCEDURES. ⚠

RECORD DRAWING ⚠

IN ACCORDANCE WITH SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW THE ALTERED ITEMS ON THIS DRAWING INDICATED BY "REVISION CLOUD & Δ" HAVE BEEN ALTERED BY DAVID J. DICESARE, PE.

NO.	MADE BY	APPROVED BY	DATE	DESCRIPTION
1	LSP	DJD	01/05/16	RECORD DRAWING
0	ELB	RW	05/18/15	ISSUED FOR BID

REVISIONS

DESIGNED BY: KS
DRAWN BY: ELB
CHECKED BY: VG
PROJ. ENGR. RW

URS Corporation
New York
257 West Genesee Street, Suite 400, Buffalo, New York 14202
(716)856-5636 - (716)856-2545 fax

JOB NO. 11176853

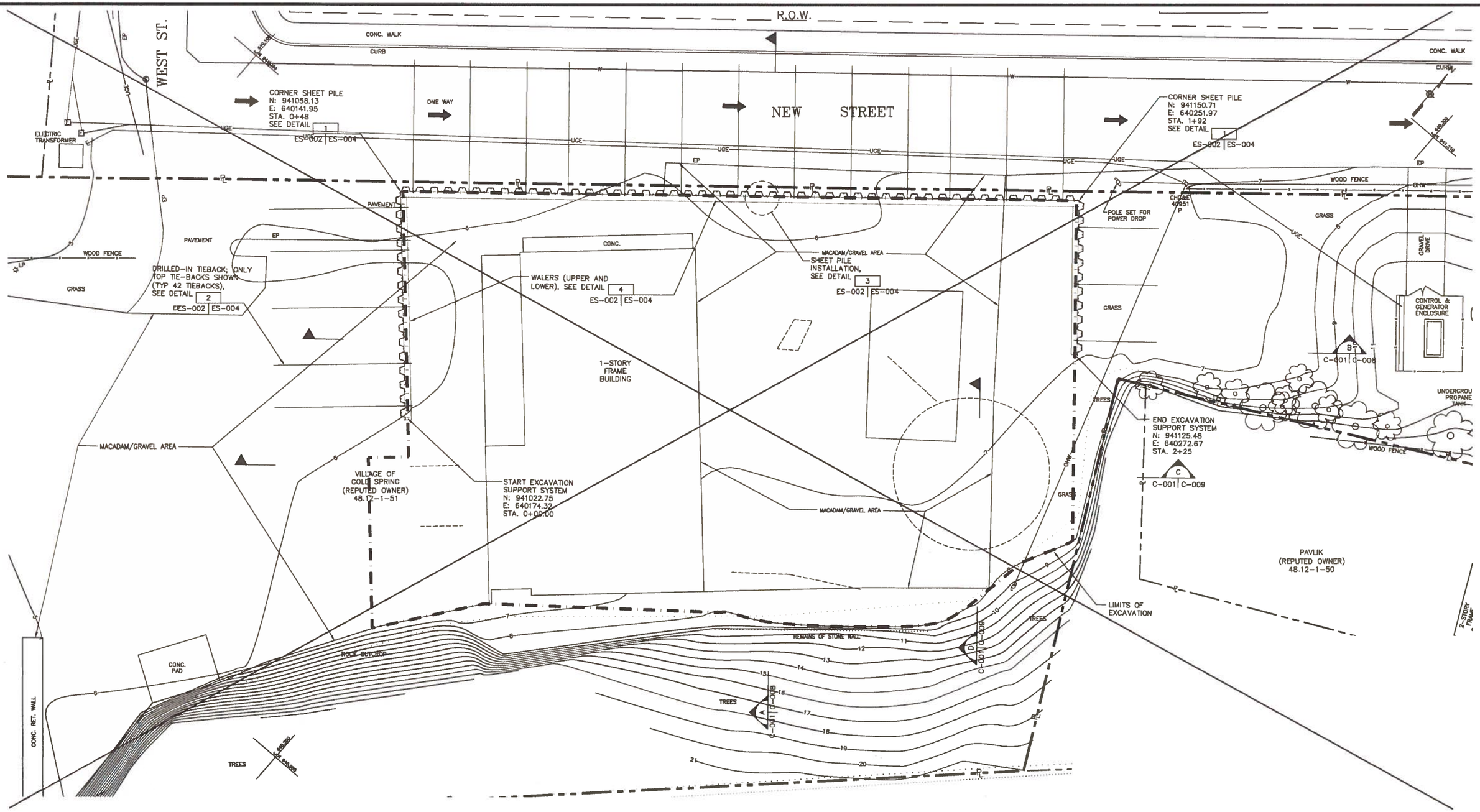
PUTNAM COUNTY
COLD SPRING
FORMER MGP SITE
NYS REGISTRY NO: 340026
CONTRACT D009635
VILLAGE OF COLD SPRING STATE OF NEW YORK

REMEDIAL ACTION

EXCAVATION SUPPORT SYSTEM NOTES

Scale: AS SHOWN | Date: MAY 2015 | **ES-001**

J:\01 Projects\15000\15027-00 NY Former MGP Site\12.4 AS-BUILTS\DRAWINGS\ES-001 - EXCAVATION SUPPORT NOTES.dwg 1=1 12/28/2016-1 ELB



RECORD DRAWING ⚠

IN ACCORDANCE WITH SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW THE ALTERED ITEMS ON THIS DRAWING INDICATED BY "REVISION CLOUD & ⚠" HAVE BEEN ALTERED BY DAVID J. DICESARE, PE.

NOTES: ⚠

1. DRAWING HAS NOT BEEN MODIFIED TO REFLECT RECORD CONDITIONS. REFER TO SUPPLEMENTAL DRAWING "SHEET ES-003" FOR RECORD CONDITIONS.

WARNING
IT IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON OTHER THAN WHOSE SEAL APPEARS ON THIS DRAWING, TO ALTER IN ANY WAY AN ITEM ON THIS DRAWING. IF AN ITEM IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

NO.	MADE BY	APPROVED BY	DATE	DESCRIPTION
1	LSP	DJD	02/22/17	RECORD DRAWING
0	ELB	RW	05/18/15	ISSUED FOR BID

REVISIONS

DESIGNED BY: KS
DRAWN BY: ELB
CHECKED BY: VG
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JOB NO. 11176853

STATE OF NEW YORK
DAVID J. DICESARE
PROFESSIONAL ENGINEER

PUTNAM COUNTY
COLD SPRING
FORMER MGP SITE
NYS REGISTRY NO: 340026
CONTRACT D009635
VILLAGE OF COLD SPRING STATE OF NEW YORK

REMEDIAL ACTION

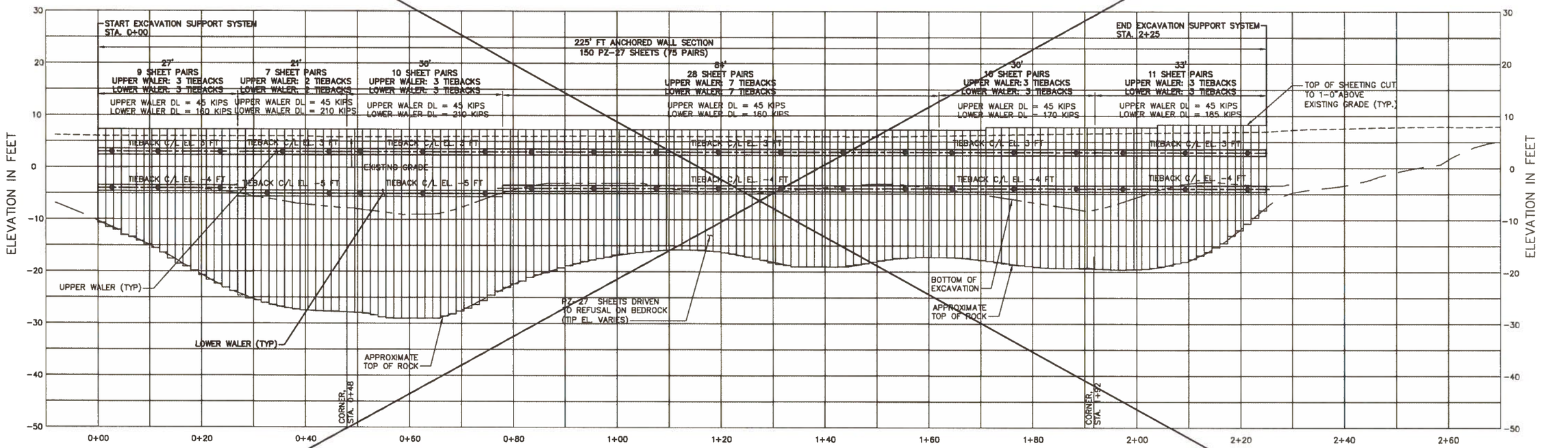
EXCAVATION SUPPORT SYSTEM PLAN

Scale: AS SHOWN | Date: MAY 2015 | **ES-002**

J:\01 Projects\15000\150027-00 NY Former MGP Site\12.0 Working File\12.4 AS-BUILTS\DRAWINGS\ES-002 - EXCAVATION SUPPORT PLAN.dwg, ES-002, 1:1, 12/9/2016, 1-RAL

NOTES:

1. DRAWING HAS NOT BEEN MODIFIED TO REFLECT RECORD CONDITIONS. REFER TO SUPPLEMENTAL DRAWING "SHEET-AB" FOR RECORD CONDITIONS.



SHEETING LENGTHS (SEE NOTE 3)																			
LENGTH OF SHEETING PAIRS (FT.)	18	19	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
No. OF PAIRS	1	2	1	1	3	6	10	8	11	10	1	2	1	2	1	2	5	4	4

RECORD DRAWING

IN ACCORDANCE WITH SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW THE ALTERED ITEMS ON THIS DRAWING INDICATED BY "REVISION CLOUD & ⚠" HAVE BEEN ALTERED BY DAVID J. DICESARE, PE.

NOTES:

1. LOCATION OF TIEBACKS SHOWN APPROXIMATELY. SEE DWG. ES-001 FOR CRITERIA FOR DETERMINING THE LOCATION OF TIEBACKS IN THE FIELD.
2. DETAILS OF CONSTRUCTION SHOWN ON DWG. ES-004.
3. THE QUANTITIES AND LENGTHS OF SHEETING HAVE BEEN APPROXIMATED FROM THIS DRAWING, AND INCLUDE A MINIMUM 1' STICKUP ABOVE EXISTING GRADE. LENGTHS OF PAIRS SHOWN HAVE BEEN ROUNDED UP TO THE NEXT WHOLE FOOT. THE CONTRACTOR SHALL MAKE HIS/HER OWN DETERMINATION OF THE LENGTHS OF SHEETING REQUIRED FOR THE PROJECT.

10' 0 10'
SCALE IN FEET
HORIZ. & VERT.

NO.	MADE BY	APPROVED BY	DATE	DESCRIPTION
1	LSP	DJD	02/22/17	RECORD DRAWING
0	ELB	RW	05/18/15	ISSUED FOR BID

REVISIONS

DESIGNED BY: KS
DRAWN BY: ELB
CHECKED BY: VG
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STATE OF NEW YORK · DAVID JOHN DICESARE · LICENSED PROFESSIONAL ENGINEER

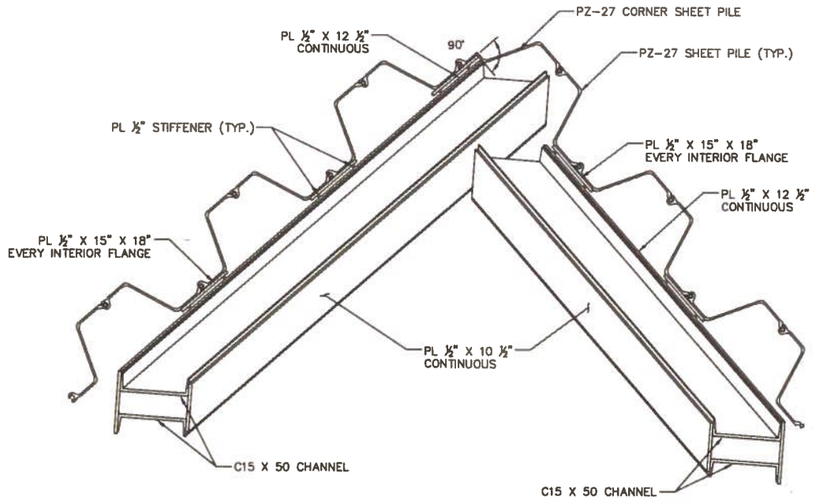
PUTNAM COUNTY
COLD SPRING
FORMER MGP SITE
NYS REGISTRY NO: 340026
CONTRACT D009635
VILLAGE OF COLD SPRING STATE OF NEW YORK

REMEDIAL ACTION

EXCAVATION SUPPORT SYSTEM PROFILE

Scale: AS SHOWN | Date: MAY 2015 | **ES-003**

J:\01 Projects\15000\15027-00 NY Former MGP Site\12.0 Working File\12.4 AS-BUILTS\DRAWINGS\ES-003 - EXCAVATION SUPPORT PROFILE-100.dwg, ES-003, 1:1, 12/9/2016, 1-ELB

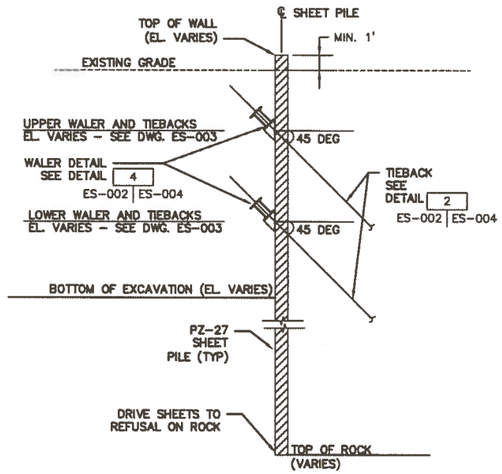


CORNER SHEETPILE DETAIL 1

NOT TO SCALE — ES-002 | ES-004

NOTE:

1. DETAIL APPLIES TO BOTH UPPER AND LOWER WALERS.

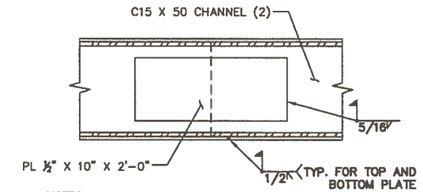


TYPICAL SHEETPILE INSTALLATION 3

5' 0' 5'

SCALE: 1"= 5'-0"

ES-002 | ES-004



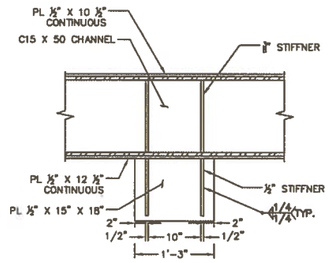
NOTES:

1. SPLICE TO OCCUR MID-SPAN BETWEEN TIEBACKS.

TYPICAL CHANNEL SPLICE DETAIL

1' 0 1'

SCALE IN FEET HORIZ. & VERT.



SECTION A

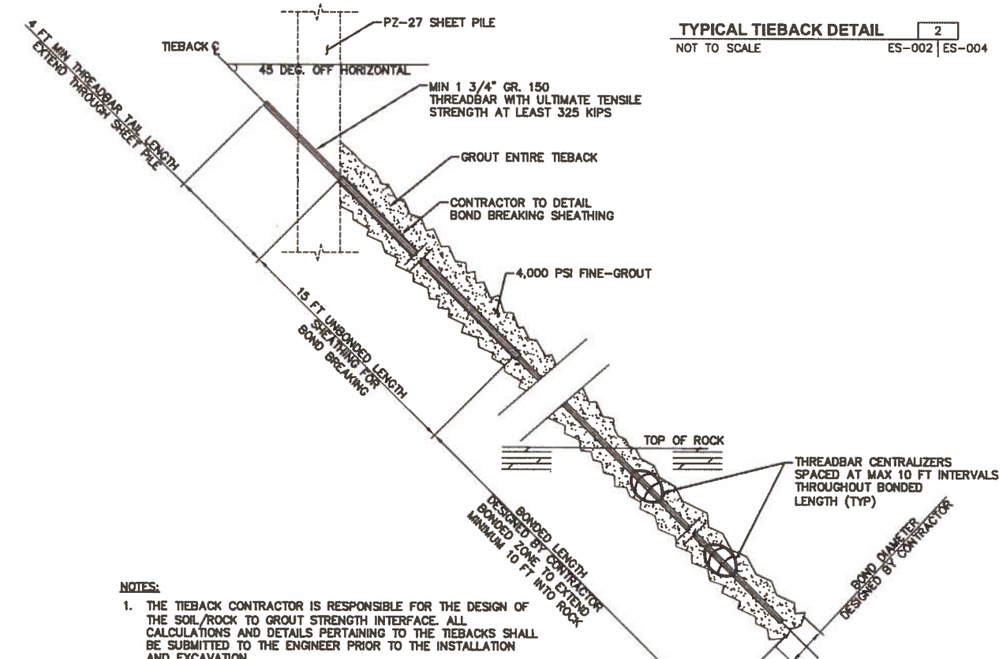
1' 0 1'

SCALE IN FEET HORIZ. & VERT.

ES-004 | ES-004

NOTE:

1. BEARING PLATE, NUT AND WASHER NOT SHOWN.

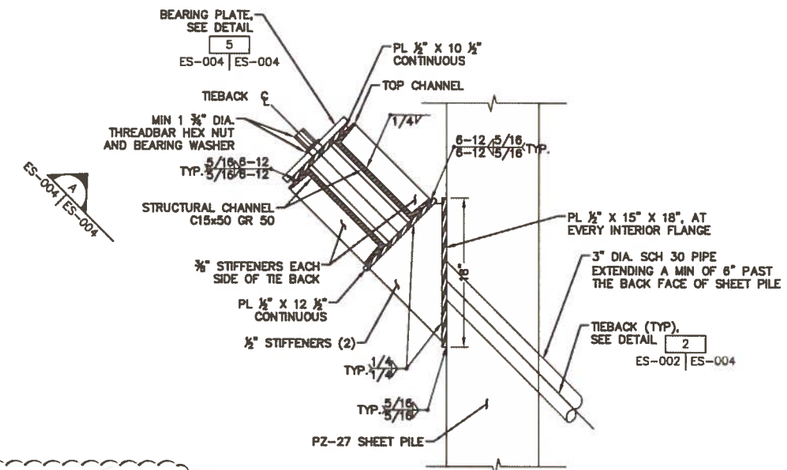


TYPICAL TIEBACK DETAIL 2

NOT TO SCALE — ES-002 | ES-004

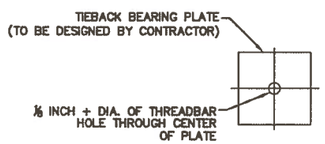
NOTES:

1. THE TIEBACK CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF THE SOIL/ROCK TO GROUT STRENGTH INTERFACE. ALL CALCULATIONS AND DETAILS PERTAINING TO THE TIEBACKS SHALL BE SUBMITTED TO THE ENGINEER PRIOR TO THE INSTALLATION AND EXCAVATION.
2. TIEBACKS DESIGN LOADS (DL) VARY ALONG THE ALIGNMENT OF THE WALL. DESIGN LOADS ARE INDICATED ON DRAWING ES-003.
3. DRAWING HAS NOT BEEN MODIFIED TO REFLECT RECORD CONDITION, REFER TO "REVISED TIEBACK INSTALLATION DOCUMENTATION REPORT" SUBMITTAL FOR RECORD CONDITIONS OF TYPICAL TIEBACK DETAIL. ⚠



TYPICAL WALER DETAIL 4

NOT TO SCALE — ES-002 | ES-004



TYPICAL BEARING PLATE DETAIL 5

NOT TO SCALE — ES-004 | ES-004

RECORD DRAWING ⚠

IN ACCORDANCE WITH SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW THE ALTERED ITEMS ON THIS DRAWING INDICATED BY "REVISION" CLOUD & ⚠" HAVE BEEN ALTERED BY DAVID J. DICESARE, PE.

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NO.	MADE BY	APPROVED BY	DATE	DESCRIPTION
1	LSP	DJD	01/05/16	RECORD DRAWING
0	ELB	RW	05/18/15	ISSUED FOR BID

REVISIONS

DESIGNED BY: KS
DRAWN BY: ELB
CHECKED BY: VG
PROJ. ENGR. RW

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JOB NO. 11176853

PUTNAM COUNTY
COLD SPRING
FORMER MGP SITE
NYS REGISTRY NO: 340026
CONTRACT D009635
VILLAGE OF COLD SPRING STATE OF NEW YORK

REMEDIAL ACTION

EXCAVATION SUPPORT SYSTEM DETAILS

Scale: AS SHOWN | Date: MAY 2015 | **ES-004**

J:\01 Projects\15300\15027-00 NY Former MGP Site\12.0 Working File\12.4 AS-BUILTS\DRAWINGS\ES-004 - EXCAVATION SUPPORT DETAILS-100.dwg, ES-004, 12/28/2016, 1-ELB

MAP REFERENCE:

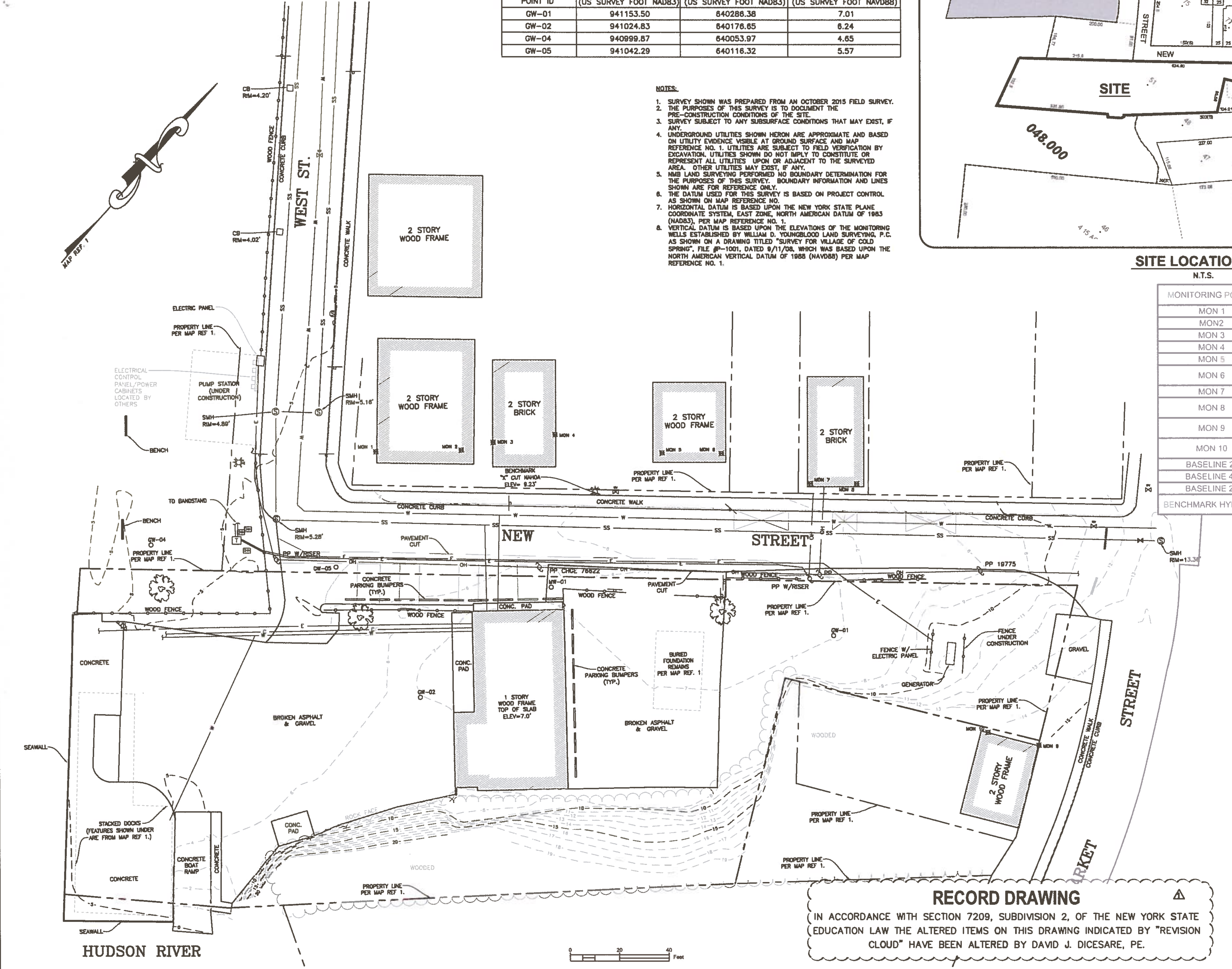
1. MAP AND PLANS ENTITLED "COLD SPRING FORMER MGP SITE REMEDIAL CONSTRUCTION, NYSDEC SITE 340026, COLD SPRING (V), PUTNAM COUNTY, NEW YORK, CONTRACT D009635" DATED MAY 2015 AND PREPARED BY URS CORPORATION.
2. PUTNAM COUNTY TAX MAP 48.12.

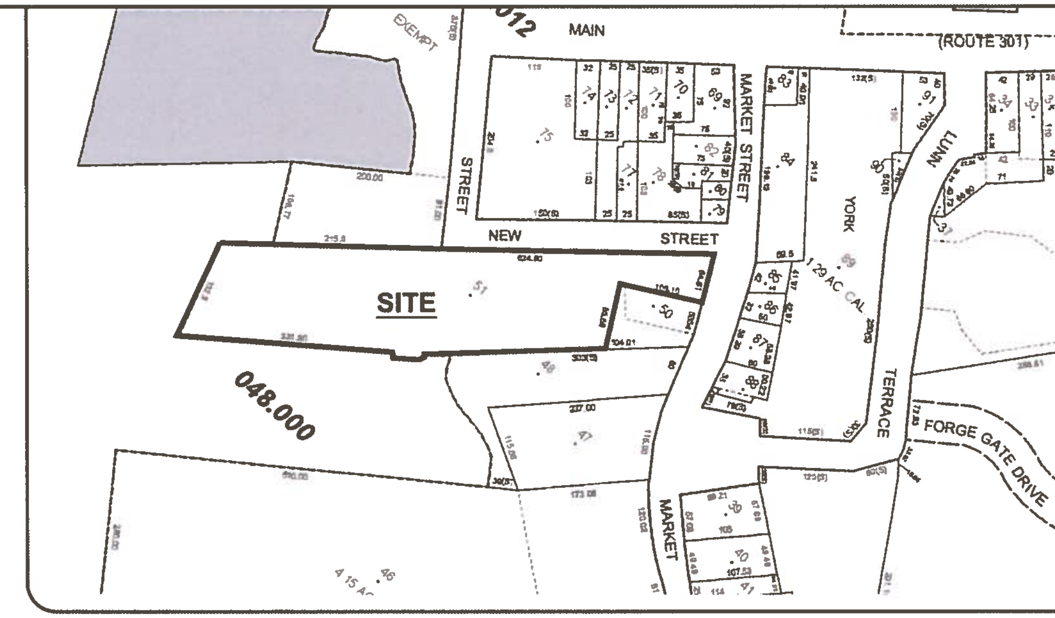
SURVEY CONTROL TABLE
PER MAP REFERENCE NO.1 PAGE C-001

SURVEY CONTROL POINT ID	NORTHING (US SURVEY FOOT NAD83)	EASTING (US SURVEY FOOT NAD83)	ELEVATION (US SURVEY FOOT NAVD88)
GW-01	941153.50	640286.38	7.01
GW-02	941024.83	640176.65	6.24
GW-04	940999.87	640053.97	4.65
GW-05	941042.29	640116.32	5.57

NOTES:

1. SURVEY SHOWN WAS PREPARED FROM AN OCTOBER 2015 FIELD SURVEY.
2. THE PURPOSES OF THIS SURVEY IS TO DOCUMENT THE PRE-CONSTRUCTION CONDITIONS OF THE SITE.
3. SURVEY SUBJECT TO ANY SUBSURFACE CONDITIONS THAT MAY EXIST, IF ANY.
4. UNDERGROUND UTILITIES SHOWN HERON ARE APPROXIMATE AND BASED ON UTILITY EVIDENCE VISIBLE AT GROUND SURFACE AND MAP REFERENCE NO. 1. UTILITIES ARE SUBJECT TO FIELD VERIFICATION BY EXCAVATION. UTILITIES SHOWN DO NOT IMPLY TO CONSTITUTE OR REPRESENT ALL UTILITIES UPON OR ADJACENT TO THE SURVEYED AREA. OTHER UTILITIES MAY EXIST, IF ANY.
5. NMB LAND SURVEYING PERFORMED NO BOUNDARY DETERMINATION FOR THE PURPOSES OF THIS SURVEY. BOUNDARY INFORMATION AND LINES SHOWN ARE FOR REFERENCE ONLY.
6. THE DATUM USED FOR THIS SURVEY IS BASED ON PROJECT CONTROL AS SHOWN ON MAP REFERENCE NO.
7. HORIZONTAL DATUM IS BASED UPON THE NEW YORK STATE PLANE COORDINATE SYSTEM, EAST ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83), PER MAP REFERENCE NO. 1.
8. VERTICAL DATUM IS BASED UPON THE ELEVATIONS OF THE MONITORING WELLS ESTABLISHED BY WILLIAM D. YOUNGBLOOD LAND SURVEYING, P.C. AS SHOWN ON A DRAWING TITLED "SURVEY FOR VILLAGE OF COLD SPRING", FILE #P-1001, DATED 9/11/08, WHICH WAS BASED UPON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) PER MAP REFERENCE NO. 1.





SITE LOCATION MAP

N.T.S.

MONITORING POINTS	DESCRIPTION	ELEVATION
MON 1	WINDOW SIL	10.33'
MON2	TOP OF BRICK	8.26'
MON 3	VERTICAL BRICK	8.38'
MON 4	WHITE BRICK	8.31'
MON 5	WEST SILL	9.24'
MON 6	EAST BUILDING CORNER	7.65'
MON 7	WEST SILL	9.35'
MON 8	EAST BUILDING CORNER	8.12'
MON 9	EAST TOP OF FOUNDATION	18.70'
MON 10	WEST TOP OF FOUNDATION	18.67'
BASELINE 21	X-CUT	5.16'
BASELINE 49	MAG NAIL	9.02'
BASELINE 22	MAG NAIL	6.68'
BENCHMARK HYDRANT	X-CUT	9.23'

LEGEND:

- WATER VALVE
- FIRE HYDRANT
- ELECTRIC TRANSFORMER
- ELECTRIC HANDHOLE
- SIGN (1 POST)
- SIGN (2 POST)
- UTILITY POLE
- LIGHT POST
- MONITORING WELL
- TREE
- W — WATER LINE
- G — GAS LINE
- OH — OVERHEAD UTILITY LINE
- SS — SANITARY SEWER LINE
- C — UNDERGROUND COMMUNICATION LINE
- E — UNDERGROUND ELECTRIC LINE
- PROPERTY LINE

RECORD DRAWING

IN ACCORDANCE WITH SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW THE ALTERED ITEMS ON THIS DRAWING INDICATED BY "REVISION CLOUD" HAVE BEEN ALTERED BY DAVID J. DICESARE, PE.

0 20 40 Feet

EXCAVATION ELEVATIONS
COLD SPRING FORMER MGP SITE
NYS REGISTRY NO 340026
CONTRACT D009635

VILLAGE OF COLD SPRING
COUNTY OF PUTNAM
STATE OF NEW YORK

REV. NO.	DATE	RECORD OF WORK	DRAWN
1	02/22/17	RECORD DRAWING	

NATHAN M. BURROWS L.S.
NEW YORK LIC. No. 50,724

PREPARED FOR

Watermark
175 Cabot Street • Lowell, MA 01854
Phone: 978.452.9696 • Fax: 978.453.9988

DRAWING: NB15-021 COLD SPRING PRE-CONSTRUCTION.dwg

DATE: OCTOBER 21, 2015 | SCALE: 1"=20'

PROJECT: COLD SPRING FORMER MGP SITE

DRAWN BY: NMB | CHECKED BY: NMB

NMB LAND SURVEYING PLLC
20 TROY AVE. WYNANTSKILL NY, 12198
518-376-4630

PRE-CONSTRUCTION MAPPING

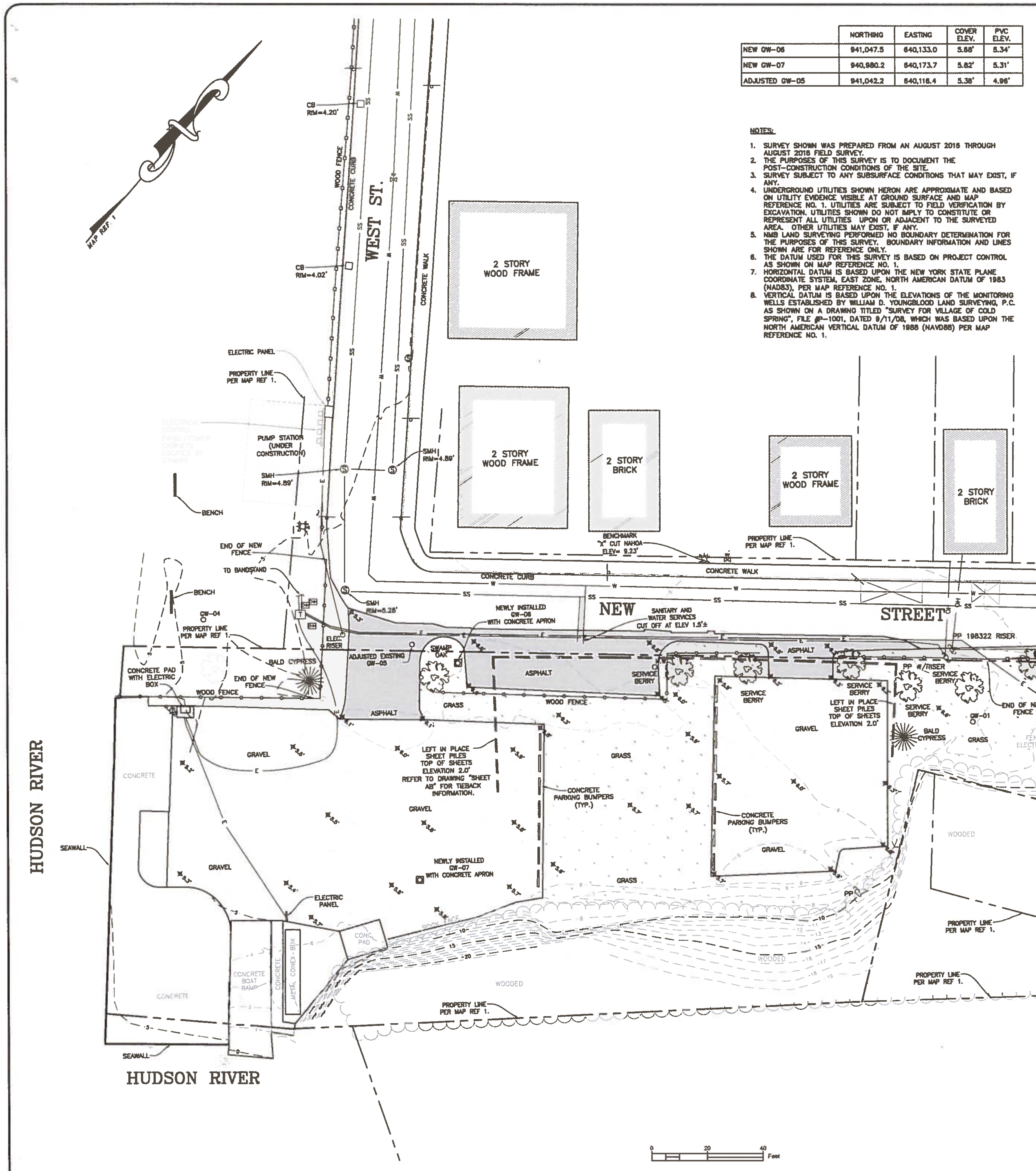
PRE-C-1

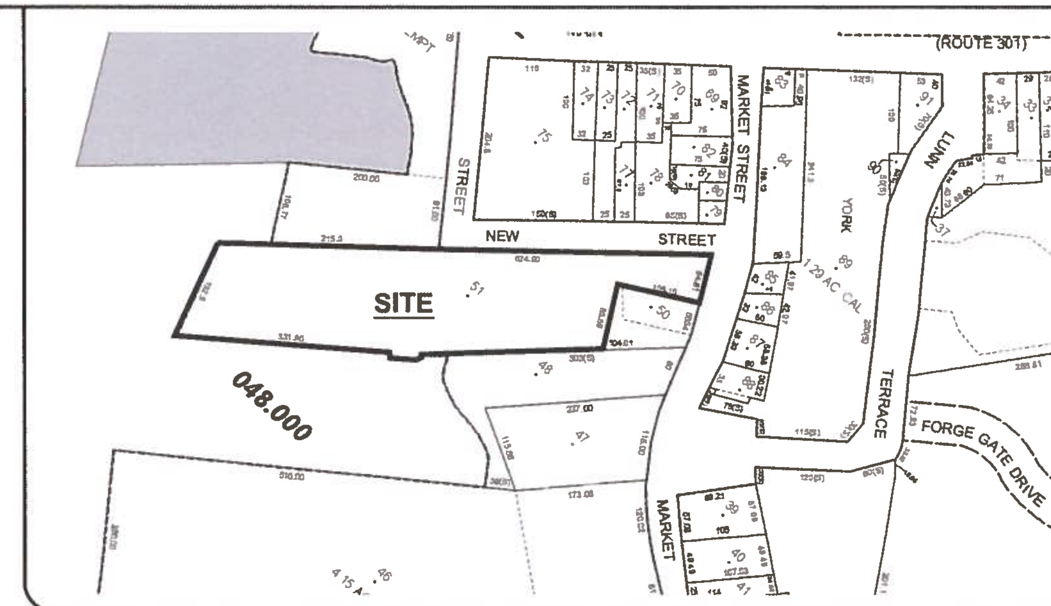
SHEET 1 OF 1

	NORTHING	EASTING	COVER ELEV.	PVC ELEV.
NEW GW-06	941,047.5	640,133.0	5.68'	5.34'
NEW GW-07	940,980.2	640,173.7	5.62'	5.31'
ADJUSTED GW-05	941,042.2	640,116.4	5.38'	4.96'

NOTES:

1. SURVEY SHOWN WAS PREPARED FROM AN AUGUST 2016 THROUGH AUGUST 2016 FIELD SURVEY.
2. THE PURPOSES OF THIS SURVEY IS TO DOCUMENT THE POST-CONSTRUCTION CONDITIONS OF THE SITE.
3. SURVEY SUBJECT TO ANY SUBSURFACE CONDITIONS THAT MAY EXIST, IF ANY.
4. UNDERGROUND UTILITIES SHOWN HERON ARE APPROXIMATE AND BASED ON UTILITY EVIDENCE VISIBLE AT GROUND SURFACE AND MAP REFERENCE NO. 1. UTILITIES ARE SUBJECT TO FIELD VERIFICATION BY EXCAVATION. UTILITIES SHOWN DO NOT IMPLY TO CONSTITUTE OR REPRESENT ALL UTILITIES UPON OR ADJACENT TO THE SURVEYED AREA. OTHER UTILITIES MAY EXIST, IF ANY.
5. NMB LAND SURVEYING PERFORMED NO BOUNDARY DETERMINATION FOR THE PURPOSES OF THIS SURVEY. BOUNDARY INFORMATION AND LINES SHOWN ARE FOR REFERENCE ONLY.
6. THE DATUM USED FOR THIS SURVEY IS BASED ON PROJECT CONTROL AS SHOWN ON MAP REFERENCE NO. 1.
7. HORIZONTAL DATUM IS BASED UPON THE NEW YORK STATE PLANE COORDINATE SYSTEM, EAST ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83), PER MAP REFERENCE NO. 1.
8. VERTICAL DATUM IS BASED UPON THE ELEVATIONS OF THE MONITORING WELLS ESTABLISHED BY WILLIAM D. YOUNGBLOOD LAND SURVEYING, P.C. AS SHOWN ON A DRAWING TITLED "SURVEY FOR VILLAGE OF COLD SPRING", FILE #P-1001, DATED 9/11/08, WHICH WAS BASED UPON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) PER MAP REFERENCE NO. 1.





SITE LOCATION MAP

N.T.S.

MAP REFERENCE:

1. MAP AND PLANS ENTITLED "COLD SPRING FORMER MGP SITE REMEDIAL CONSTRUCTION, NYSDEC SITE 340026, COLD SPRING (V), PUTNAM COUNTY, NEW YORK, CONTRACT D009635" DATED MAY 2015 AND PREPARED BY URS CORPORATION.
2. PUTNAM COUNTY TAX MAP 48.12.

LEGEND:

- WATER VALVE
- FIRE HYDRANT
- ELECTRIC TRANSFORMER
- ELECTRIC HANDHOLE
- SIGN (1 POST)
- SIGN (2 POST)
- UTILITY POLE
- LIGHT POST
- M.W. MONITORING WELL
- TREE
- NEWLY INSTALLED FENCE
- EXISTING FENCE
- W WATER LINE
- G GAS LINE
- OH OVERHEAD UTILITY LINE
- SS SANITARY SEWER LINE
- C UNDERGROUND COMMUNICATION LINE
- E UNDERGROUND ELECTRIC LINE
- PROPERTY LINE
- INSTALLED ASPHALT
- INSTALLED GRAVEL

RECORD DRAWING

IN ACCORDANCE WITH SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW THE ALTERED ITEMS ON THIS DRAWING INDICATED BY "REVISION CLOUD" HAVE BEEN ALTERED BY DAVID J. DICESARE, PE.

STATE OF NEW YORK — DAVID JOHN DICESARE — LICENSED PROFESSIONAL ENGINEER

0 20 40 Feet

EXCAVATION ELEVATIONS
COLD SPRING FORMER MGP SITE
NYS REGISTRY NO 340026
CONTRACT D009635

VILLAGE OF COLD SPRING
COUNTY OF PUTNAM
STATE OF NEW YORK

REV. NO.	DATE	RECORD OF WORK	DRAWN
1	02/22/17	RECORD DRAWING	

NATHAN M. BURROWS L.S.
NEW YORK LIC. No. 50,724

PREPARED FOR

Watermark
175 Cabot Street • Lowell, MA 01854

DRAWING: NB15-021 COLD SPRING POST-CONSTRUCTION.dwg

DATE: AUGUST 18, 2016 | SCALE: 1"=20'

PROJECT: COLD SPRING FORMER MGP SITE

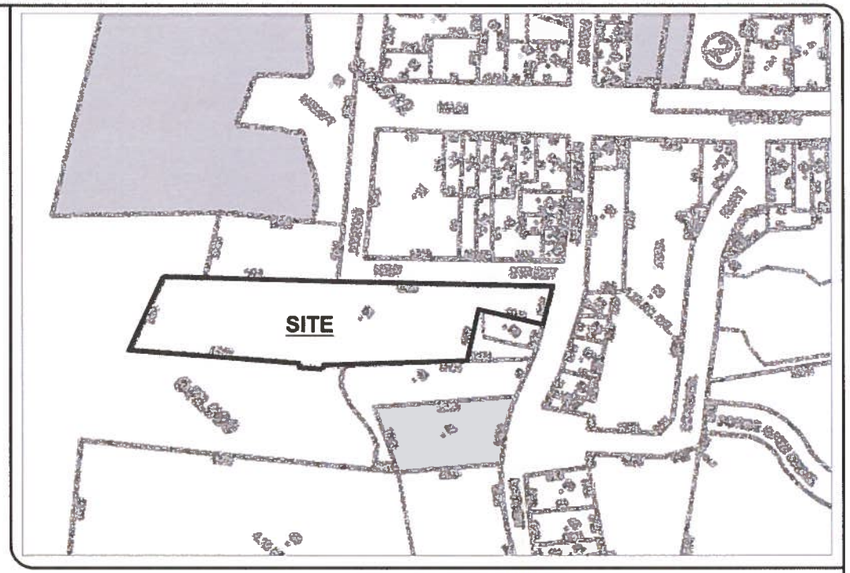
DRAWN BY: NMB | CHECKED BY: NMB

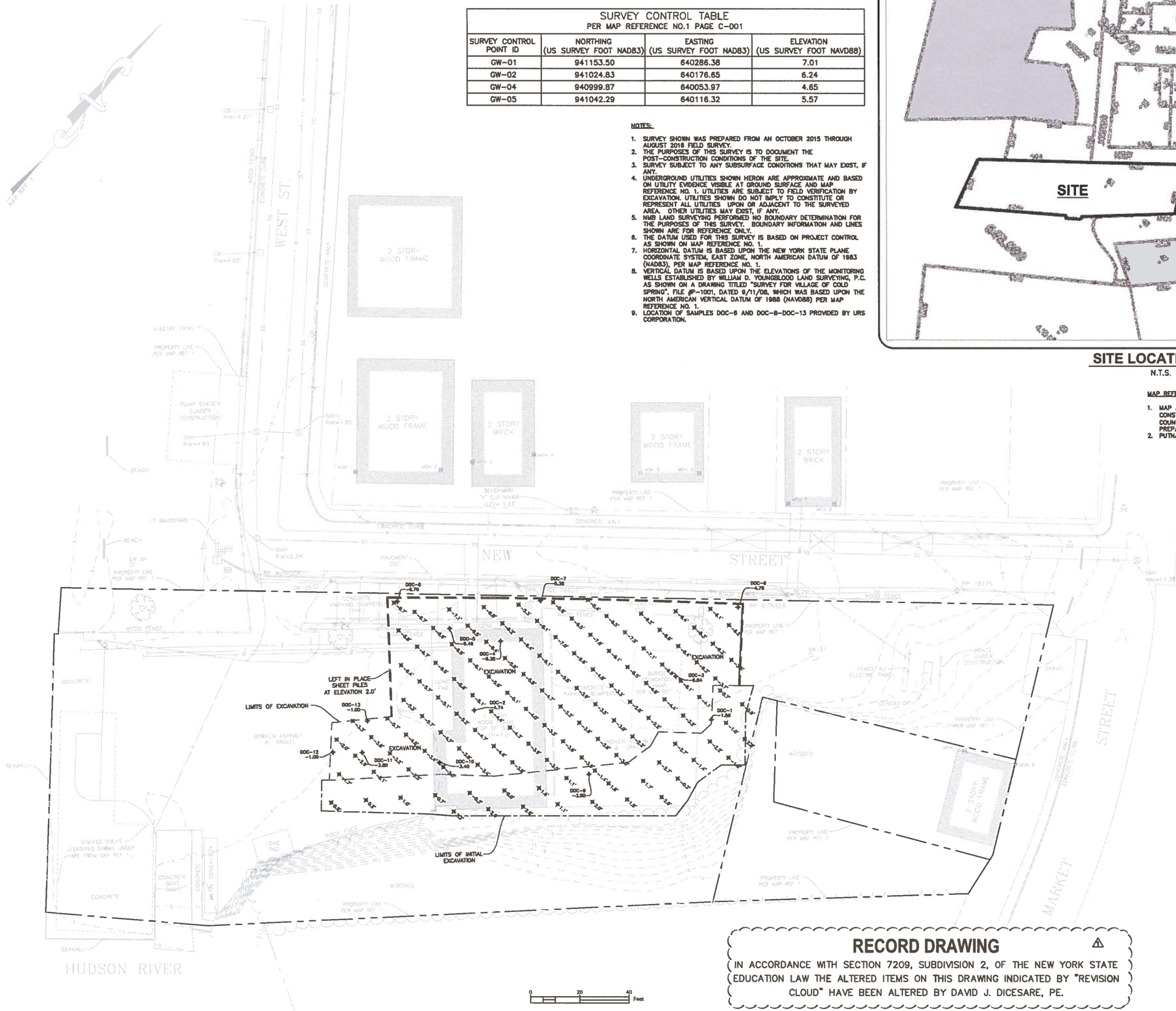
NMB LAND SURVEYING PLLC
20 TROY AVE. WYNANTSKILL NY. 12198
518-376-4630

POST-CONSTRUCTION MAPPING

POST-C-1

SHEET 3 OF 4





SURVEY CONTROL TABLE
PER MAP REFERENCE NO.1 PAGE C-001

SURVEY CONTROL POINT ID	NORTHING (US SURVEY FOOT NAD83)	EASTING (US SURVEY FOOT NAD83)	ELEVATION (US SURVEY FOOT NAVD88)
GW-01	941153.50	640286.38	7.01
GW-02	941024.83	640176.65	6.24
GW-04	940999.87	640053.97	4.65
GW-05	941042.29	640116.32	5.57

NOTES:

1. SURVEY SHOWN WAS PREPARED FROM AN OCTOBER 2015 THROUGH AUGUST 2016 FIELD SURVEY.
2. THE PURPOSES OF THIS SURVEY IS TO DOCUMENT THE POST-CONSTRUCTION CONDITIONS OF THE SITE.
3. SURVEY SUBJECT TO ANY SUBSURFACE CONDITIONS THAT MAY EXIST, IF ANY.
4. UNDERGROUND UTILITIES SHOWN HERON ARE APPROXIMATE AND BASED ON UTILITY EVIDENCE VISIBLE AT GROUND SURFACE AND MAP REFERENCE NO. 1. UTILITIES ARE SUBJECT TO FIELD VERIFICATION BY EXCAVATION. UTILITIES SHOWN DO NOT IMPLY TO CONSTITUTE OR REPRESENT ALL UTILITIES UPON OR ADJACENT TO THE SURVEYED AREA. OTHER UTILITIES MAY EXIST, IF ANY.
5. NMB LAND SURVEYING PERFORMED NO BOUNDARY DETERMINATION FOR THE PURPOSES OF THIS SURVEY. BOUNDARY INFORMATION AND LINES SHOWN ARE FOR REFERENCE ONLY.
6. THE DATUM USED FOR THIS SURVEY IS BASED ON PROJECT CONTROL AS SHOWN ON MAP REFERENCE NO. 1.
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9. LOCATION OF SAMPLES DOC-6 AND DOC-8-DOC-13 PROVIDED BY URS CORPORATION.

SITE LOCATION MAP
N.T.S.

MAP REFERENCE:

1. MAP AND PLANS ENTITLED "COLD SPRING FORMER MGP SITE REMEDIAL CONSTRUCTION, NYSDEC SITE 340026, COLD SPRING (V), PUTNAM COUNTY, NEW YORK, CONTRACT D009635" DATED MAY 2015 AND PREPARED BY URS CORPORATION.
2. PUTNAM COUNTY TAX MAP 48.12.

LEGEND:

⊠	WATER VALVE
☼	FIRE HYDRANT
T	ELECTRIC TRANSFORMER
EH	ELECTRIC HANDHOLE
—o—	SIGN (1 POST)
—o—o—	SIGN (2 POST)
○	UTILITY POLE
☼	LIGHT POST
○M.W.	MONITORING WELL
✿	TREE
W ———	WATER LINE
G ———	GAS LINE
OH ———	OVERHEAD UTILITY LINE
SS ———	SANITARY SEWER LINE
C ———	UNDERGROUND COMMUNICATION LINE
E ———	UNDERGROUND ELECTRIC LINE
	PROPERTY LINE
⊠ -3.0'	EXCAVATED ELEVATION

RECORD DRAWING ⚠

IN ACCORDANCE WITH SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW THE ALTERED ITEMS ON THIS DRAWING INDICATED BY "REVISION CLOUD" HAVE BEEN ALTERED BY DAVID J. DICESARE, PE.

DAVID JOHN DICESARE

EXCAVATION ELEVATIONS
COLD SPRING FORMER MGP SITE
NYS REGISTRY NO 340026
CONTRACT D009635

VILLAGE OF COLD SPRING
COUNTY OF PUTNAM
STATE OF NEW YORK

REV. NO.	DATE	RECORD OF WORK	DRAWN
1	02/22/17	RECORD DRAWING	

NATHAN M. BURROWS L.S.
NEW YORK LIC. No. 50,724

PREPARED FOR
Watermark
175 Cabot Street • Lowell, MA 01854
Phone: 978.452.9696 • Fax: 978.453.9988

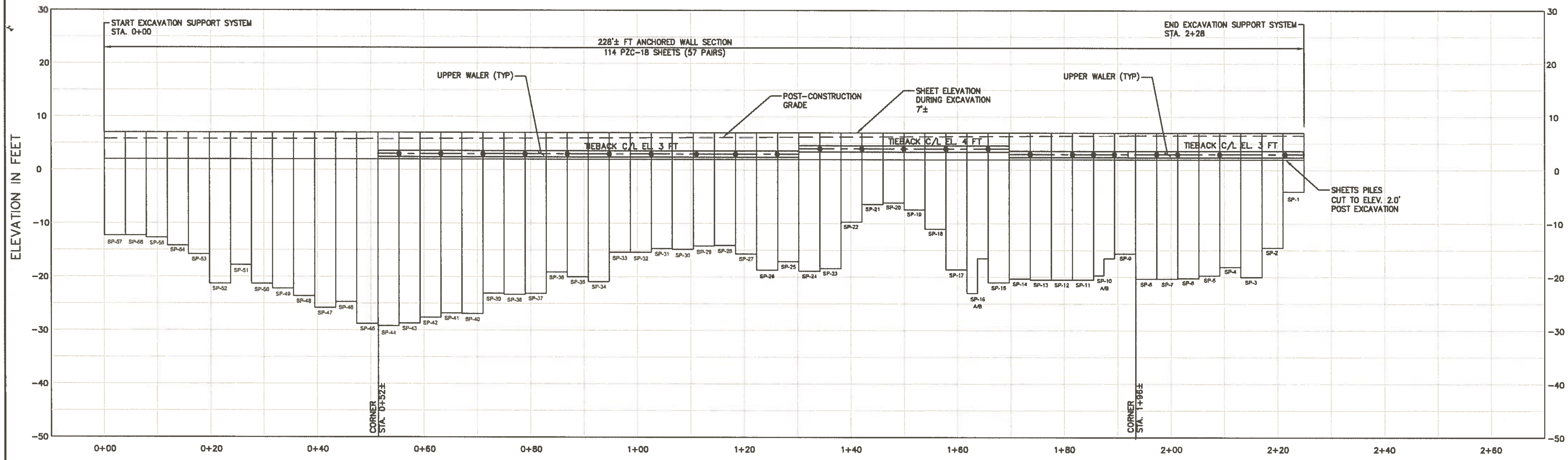
DRAWING: NB15-021 COLD SPRING POST-CONSTRUCTION.dwg

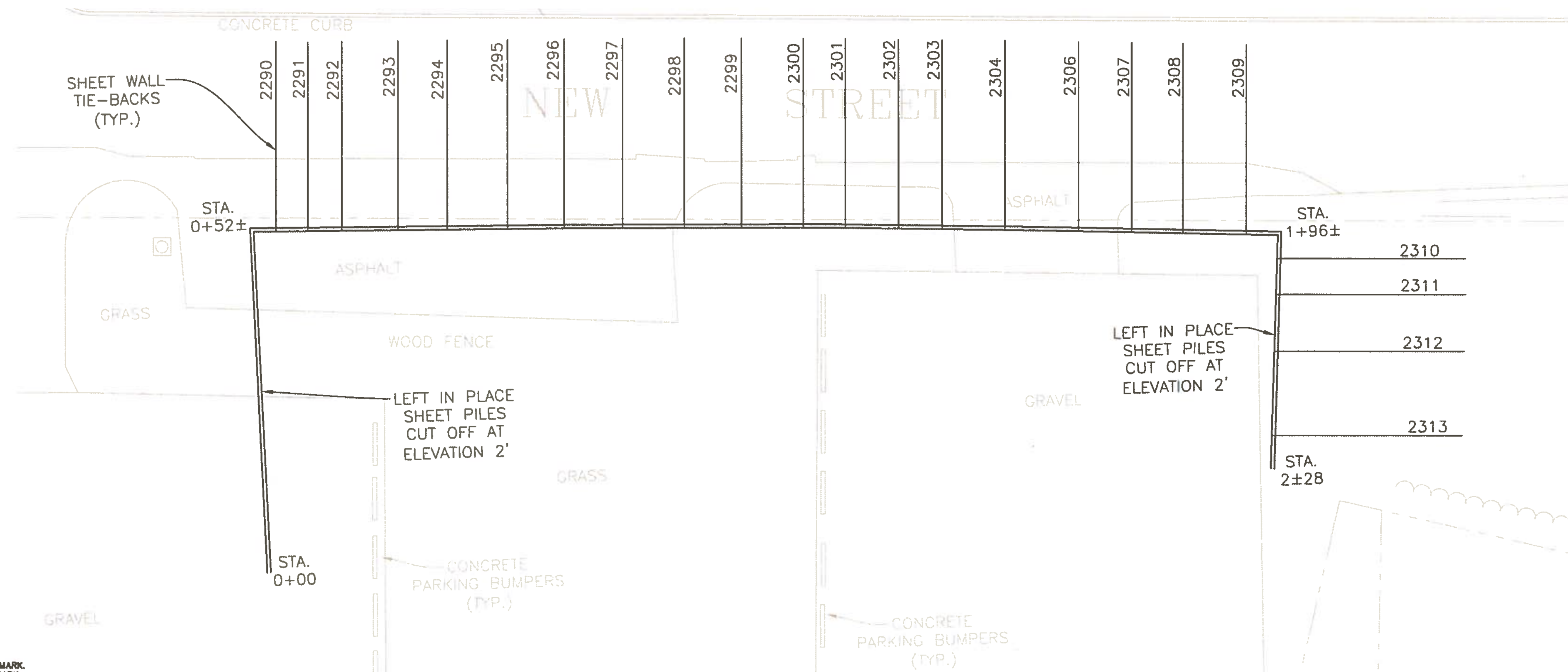
DATE: AUGUST 16, 2016	SCALE: 1"=20'
PROJECT: COLD SPRING FORMER MGP SITE	
DRAWN BY: NMB	CHECKED BY: NMB

NMB
LAND SURVEYING
PLLC
20 TROY AVE. WYNANTSKILL NY, 12198
518-376-4630

EXCAVATED ELEVATIONS

EXCA-C-1
SHEET 2 OF 4





NOTES:

1. TIEBACK ELEVATIONS WERE PROVIDED BY WATERMARK.
2. TIEBACK LOCATIONS WERE PROVIDED BY WATERMARK.
3. SHEETING ELEVATIONS WERE PROVIDED BY WATERMARK.
4. REFER TO "REVISED TIEBACK INSTALLATION DOCUMENTATION REPORT" SUBMITTAL FOR INSTALLATION DEPTH OF TIEBACKS.
5. NUMBERING OF SHEETS AND TIE-BACKS WERE PROVIDED BY WATERMARK AND URS CORPORATION.

MAP REFERENCE:

1. MAP AND PLANS ENTITLED "COLD SPRING FORMER MGP SITE REMEDIAL CONSTRUCTION, NYSDEC SITE 340026, COLD SPRING (V), PUTNAM COUNTY, NEW YORK, CONTRACT D009635" DATED MAY 2015 AND PREPARED BY URS CORPORATION.

RECORD DRAWING

IN ACCORDANCE WITH SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW THE ALTERED ITEMS ON THIS DRAWING INDICATED BY "REVISION CLOUD" HAVE BEEN ALTERED BY DAVID J. DICESARE, PE.

EXCAVATION ELEVATIONS
COLD SPRING FORMER MGP SITE
NYS REGISTRY NO 340026
CONTRACT D009635

VILLAGE OF COLD SPRING
COUNTY OF PUTNAM
STATE OF NEW YORK

REV. NO.	DATE	RECORD OF WORK	DRAWN
1	02/22/17	RECORD DRAWING	

NATHAN M. BURROWS L.S.
NEW YORK LIC. No. 50,724

PREPARED FOR
Watermark
175 Cabot Street • Lowell, MA 01854
Phone: 978.452.9696 • Fax: 978.453.9988

DRAWING: NB15-021 COLD SPRING SHEET.dwg
DATE: SEPTEMBER 23, 2018 | SCALE: 1"=10'
PROJECT: COLD SPRING FORMER MGP SITE
DRAWN BY: NMB | CHECKED BY: NMB

NMB LAND SURVEYING PLLC
20 TROY AVE. WYNANTSKILL NY, 12198
518-378-4630

SHEETING

SHEET-AB

SHEET 4 OF 4