ecology and environment engineering, p.c.
International Specialists in the Environment
BUFFALO CORPORATE CENTER
368 Pleasant View Drive
Lancaster, New York 14086
Tel: (716) 684-8060, Fax: (716) 684-0844

June 30, 2014

Mr. David Chiusano, Senior Project Manager
New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau E
625 Broadway, Albany, New York 12233-7016

Re: 2014 Revised Site Management Plan, BB&S Treated Lumber Corporation Site, Town of Southampton, Suffolk County, New York (NYSDEC Site No. 1-52-123)

Dear Mr. Chiusano:

Ecology and Environment Engineering, P.C. (EEEPC) is pleased to provide the revised/updated version of the site-specific Site Management Plan (SMP) for the BB&S Treated Lumber Corporation Site, NYSDEC Site Number 1-52-123. Enclosed is a hard copy of the updated SMP and one electronic copy of the SMP on disk.

The revised pages in updating the SMP are as follows:

- Report Cover Page indicating the revision
- Section 2.3.1.1 Building Improvements: Addition of the drainage swale as an Engineering Control, which will be inspected during semi-annual site inspections.
- Section 3.1.2 Purpose and Frequency: Adjustment of schedule in Table 3-1 for groundwater and potable water sampling to account for annual/semi-annual sampling.
- Section 3.2.1 Groundwater Sampling: Adjustment of schedule for groundwater sampling to account for annual/semi-annual sampling.
- Section 3.2.3 Soil and Sediment Sampling: Addition of sediment sampling location SED-E.
- Section 3.2.4 Potable Water Sampling: Adjustment of schedule for potable water sampling to account for annual sampling.
- Appendix D - Surface Water and Sediment Sampling Work Plan: Updated plan to include sediment sampling location SED-E, addition of Attachment B, and revisions to Sampling Methodology, Sampling Packaging and Shipping, and Report sections.
- Appendix E - Groundwater Monitoring Well Sampling Procedures Work Plan: Addition of Attachment C, revision of Sampling Plan.
- Appendix G – Potable Water Supply Work Plan: Addition of Attachments B and C, revision of potable sample location contacts list, and revision to Analytical Plan, Sample Labeling, and Report sections.
- Appendix I – Site Engineering Controls Inspection Form: Addition of appendix to the report to replace Figures 2-1 through 2-6 in the SMP.

If you have comments or questions regarding the updated/revised SMP, please contact me at 716-684-8060.

Very Truly Yours,
Ecology and Environment Engineering, P. C.

Michael G. Steffan
Project Manager

cc: T. Heins, EEEPC – Buffalo, w/o attachments
S. Karpinski – NYSDOH – CD only
A. Rapiejko – Suffolk County Dept. of Health Services – CD only
CTF- EN-003074-0006-02TTO

August 2012
Revised June 2013
Revised June 2014

FINAL
Site Management Plan for the BB&S Treated Lumber Corporation Site

Town of Southampton, Suffolk County, New York
NYSDEC Site No. 152123

Prepared for:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Environmental Remediation

Prepared by:

ecology and environment engineering, p.c.
Global Environmental Specialists

02:EN-003074-0006-02TTO-B3521\BB&S Treated Lumber Corporation Cover.ai-6/26/14

Final
Site Management Plan for the BB&S Treated Lumber Corporation Site

Town of Southampton
Suffolk County, New York
NYSDEC Site No. 152123

August 2012
Revised: June 12, 2013
Revised: June 30, 2014

Prepared for:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Environmental Remediation
625 Broadway
Albany, New York 12233-7017

Prepared by:

ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
368 Pleasant View Drive
Lancaster, New York 14086

Revisions to Final Approved Site Management Plan:

Revision	Date Submitted	Summary of Revisions	NYSDEC Approval Date
1	June 30, 2014	Section 2.3.1.1: Addition of the drainage swale as an Engineering Control. Site inspection to include evaluation of engineering controls as a whole.	
2	June 30, 2014	Section 3.2.1: Adjustment of schedule for groundwater sampling to account for annual/semi-annual sampling.	
3	June 30, 2014	Section 3.2.3: Addition of sediment sampling location SED-E.	
5	June 30, 2014	Section 3.2.4: Adjustment of schedule for potable water sampling to account for annual sampling.	
5	June 30, 2014	Table 3-1: Adjustment of schedule for groundwater and potable water sampling to account for annual/semi-annual sampling.	
6	June 30, 2014	Appendix D – Surface Water and Sediment Sampling Plan: Updated the plan to include sampling location SED-E, addition of Attachment B, and revisions to Sampling Methodology, Sample Packaging and Shipping, and Report sections.	
7	June 30, 2014	Appendix E – Groundwater Monitoring Well Sampling Procedures: Addition of Attachment C, revision of Sampling Plan section.	
8	June 30, 2014	Appendix G – Potable Water Supply Sampling Work Plan: Addition of Attachments B and C, revision of potable sample location contacts list, and revision to Analytical Plan, Sample Labeling, and Report sections.	
9	June 30, 2014	Appendix I – Site Engineering Controls Inspection Form: Addition of appendix to replace Figures 2-1 through 2-6 in the SMP.	

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List of Abbreviations and Acronyms

AROD	Amended Record of Decision
BB&S	Best Building and Supply
BGS	below ground surface
CCA	chromated copper arsenate
EC	engineering control
EEEPC	Ecology and Environment Engineering, P.C.
ELAP	Environmental Laboratory Accreditation Program
EPA	United States Environmental Protection Agency
FS	feasibility study
HASP	Health and Safety Plan
IC	institutional control
IDW	investigation-derived waste
IRM	interim remedial measure
MCL	maximum contaminant level
MSDS	material safety data sheet
NYCRR	New York Codes, Rules, and Regulations
NYS PE	New York State-licensed Professional Engineer
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
O&M	operation and maintenance
OM&M	operation, maintenance, and monitoring
OSHA	Occupational Safety and Health Administration
PDI	pre-remedial design investigation
ppb	parts per billion
PPE	personal protective equipment
PRAP	proposed remedial action plan
PRR	periodic review report
QA	quality assurance
QAPP	Quality Assurance Project Plan

List of Abbreviations and Acronyms (cont.)

QC	quality control
RA	remedial action
RI	remedial investigation
ROD	Record of Decision
RP	Responsible Party
SCDHS	Suffolk County Department of Health Services
SCGs	standards, criteria, and guidance values
SCOs	soil cleanup objectives
sHASP	Site-Specific Health and Safety Plan
SMP	Site Management Plan
SCWA	Suffolk County Water Authority
USGS	United States Geological Survey
VOC	Volatile Organic Compound

1 Administrative Setting and Site Background

1.1 Introduction and Basis for the Site Management Plan

This report presents the Site Management Plan (SMP) for the long-term operation, maintenance, and monitoring (OM&M) of the Best Building and Supply Treated Lumber Corporation Site (BB&S Treated Lumber Corporation Site) (New York State Department of Environmental Conservation [NYSDEC] Site No. 152123). The site is located on the east side of the road at 1348 Speonk-Riverhead Road in the town of Southampton, Suffolk County, New York (see Figure 1-1).

This SMP identifies and describes the institutional controls (ICs) and engineering controls (ECs) required to implement the remedy identified in the Amended Record of Decision (AROD) issued for the BB&S Treated Lumber Corporation Site. These ICs and ECs are mandated by the AROD. The AROD (included as Appendix A) was signed by NYSDEC and accepted by the New York State Department of Health (NYSDOH) on October 27, 2009. NYSDEC selected off-site disposal of contaminated soils as the final remedy. The AROD also mandates the implementation of ICs and a long-term groundwater, surface water, and soils monitoring program.

In summary, the AROD specifies the following:

1. Removal and off-site disposal of contaminated soil
2. A long-term groundwater, surface water, and soils monitoring program
3. This SMP with various ICs and ECs
4. Provisions for continued proper operation and maintenance of components of the remedy
5. An Environmental Easement
6. Periodic review and certification of ICs and ECs by the responsible party or property owner

If the property owner proposes to convey the whole or any part of its property interest at the site, the property owner shall, not fewer than 60 days before the date of such conveyance, notify NYSDEC in writing of the identity of the transferee and of the nature and proposed date of the conveyance, and the property owner shall notify the transferee in writing, with a copy to NYSDEC, of the applicability of the Environmental Easement.

This SMP was prepared by Ecology and Environment Engineering, P.C., on behalf of NYSDEC, in accordance with the requirements in NYSDEC's Division of Environmental Remediation (DER)-10: *Technical Guidance for Site Investigation and Remediation* (NYSDEC 2010a) and other guidelines provided by NYSDEC.

1.2 Administrative Setting

BB&S Treated Lumber Corporation installed and operated a groundwater treatment system from 1987 to 1996; however, the effluent from this system frequently failed to meet the surface water discharge requirements for chromium. Therefore, NYSDEC placed the BB&S Treated Lumber Corporation Site on the New York State Registry of Inactive Hazardous Waste Disposal Sites in 1993. BB&S declined to perform the Remedial Investigation/Feasibility Study (RI/FS) when asked by NYSDEC. Therefore, the RI (Malcolm Pirnie, Inc. 1998) and FS (Malcolm Pirnie, Inc. 1999) were performed using New York State Superfund monies.

After completion of the site remedial work in 2011, some contamination was left in the subsurface at the site (hereinafter referred to as "residual contamination"). This SMP was prepared to manage the residual contamination at the site in accordance with Environmental Conservation Law (ECL) Article 71, Title 36. All reports associated with the site can be reviewed by contacting NYSDEC or its successor agency managing environmental issues in New York State.

1.3 Environmental Easement

An Environmental Easement will be prepared by NYSDEC and executed with the BB&S Treated Lumber Site property owner(s) and then filed and recorded with the Suffolk County Clerk to ensure that future owners of the site will be informed of development restrictions on the property due to environmental concerns. An example of an Environmental Easement and Final Property Survey is provided in Appendix B.

In New York State an Environmental Easement is required for remedial projects that rely upon one or more ICs and/or ECs after remediation has been completed and where residual contamination remains that must be monitored and controlled. The Environmental Easement remains with the land, binding the owner and the owner's successors and assigns in favor of the state, subject to the provisions of ECL Article 71, Title 36.

An Environmental Easement contains the ICs for use restriction(s) and/or any prohibition(s) on the use of land in a manner consistent with the ECs deemed necessary to control the residual contamination at the BB&S Treated Lumber Corporation Site. The emplacement of an Environmental Easement provides an

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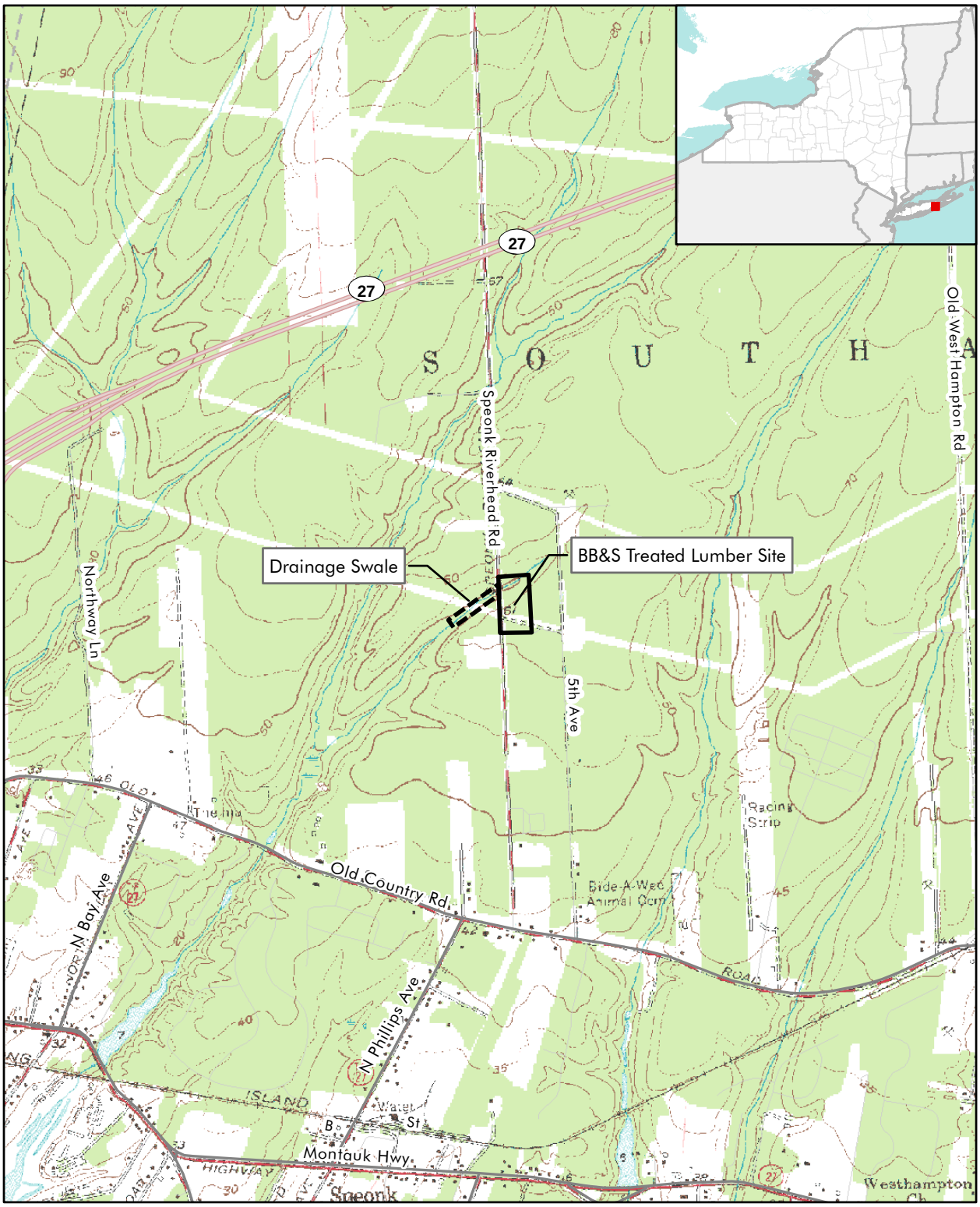


BB&S Treated Lumber Site
Drainage Swale
Secondary Road
Local Road

Figure 1-1
Site Location Map
BB&S Treated Lumber Site
Suffolk County, New York

NYSDEC Site # 152123

0 0.125 0.25 0.5 Miles

effective and enforceable means of encouraging the reuse and redevelopment of a controlled property in a manner that has been determined to be safe for a specific use, while ensuring the performance of the operation, maintenance, and/or monitoring requirements deemed necessary to control the residual contamination on the property.

1.4 Site Management Plan

This SMP specifies the methods and provides a detailed description of the obligations for the future remedial management and monitoring requirements at the BB&S Treated Lumber Corporation Site. The execution of the requirements presented in this SMP or the latest revision are necessary to ensure compliance with the AROD and Environmental Easement to address residual contamination at the site. The ICs were established to place restrictions on the site's use and mandate reporting measures for all ECs in the SMP. The ECs that have been incorporated into this SMP were established to control potential exposure of site personnel and the environment to residual contamination during current and future use of the BB&S Treated Lumber Corporation Site. This SMP may be revised only with the approval of NYSDEC.

This SMP describes the future remedial actions to be performed at the BB&S Treated Lumber Corporation Site, including:

- Implementation and management of all ICs and ECs;
- Media monitoring;
- Maintenance of all mitigation and monitoring systems; and
- Performance of periodic inspections, certification of results, and submittal of Periodic Review Reports (PRRs).

To address these needs, this SMP includes the following plans:

- A plan for implementing and managing ICs and ECs.
- Plans for implementing site monitoring, including:
  - a Groundwater Monitoring Well Sampling Procedures Work Plan;
  - a Potable Water Supply Sampling Plan;
  - a Surface Water and Sediments Sampling Plan;
  - a Soil Management Plan; and
  - a Community Air Monitoring Plan.
- A Maintenance Plan for the inspection and maintenance of the groundwater monitoring well network, surface water and sediment sampling points, and potable water supply sampling points.

This SMP also includes a description of PRRs, which will be used to periodically submit data, information, recommendations, and certifications to NYSDEC.

It is important to note the following:

- This SMP details the 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 6NYCRR Part 375 and the AROD for the site and is subject to applicable penalties.

Revisions to this SMP may be proposed in writing to NYSDEC's project manager for the BB&S Treated Lumber Corporation Site. In accordance with the Environmental Easement for the site, NYSDEC will provide a notice of any approved changes to the SMP and append those notices to the SMP that is retained in its files.

1.5 Summary of Remedial Goals

The four main remedial goals selected for the BB&S Treated Lumber Corporation Site, as identified in the AROD, are the following:

- Eliminate, to the extent practicable, the ingestion of groundwater affected by the site that does not attain NYSDOH Part 5 Drinking Water Standards.

- Eliminate, to the extent practicable, exposures of site workers to shallow contaminated soil on the site.

- Eliminate, to the extent practicable, exposures of the public to shallow contaminated soil on and off the site.

- Eliminate, to the extent practicable, the exposure of wildlife to shallow contaminated soil on and off the site.

Henceforth, the remedial program will consist of monitoring the designated on- and off-site locations with respect to the remaining residual contamination. The monitoring program will consist of the following:

- Long-term monitoring of the groundwater well network, including on-site and off-site monitoring wells, to determine trends in groundwater quality and to determine whether an upgradient source of groundwater contamination exists.

- Long-term monitoring of potable water supplies, including private water supply wells, to determine trends in drinking water quality and to determine whether NYSDOH Part 5 Drinking Water Standards and Suffolk County Water Authority standards (SCWA 2011) are met.

- Long-term monitoring of the surface water sampling network and sediment sampling network to determine trends in surface water quality and whether contaminants are migrating off-site.

1.6 General Site Background and History

1.6.1 Background

The BB&S Treated Lumber Corporation site is located on the east side of Speonk-Riverhead Road in the town of Southampton in eastern Suffolk County, Long Island, New York, approximately 1.5 miles north of the hamlet of Speonk (see Figure 1-2). The approximately 17-acre site was most recently used as a lumberyard for wholesale and retail lumber distribution (Best Building Supply and Lumber Company). In May 2009, the lumberyard ceased operations and filed for Chapter 11 bankruptcy. Recently, the site was being leased by the property owner as a parking area for tractor-trailers.

Several buildings from the former lumberyard remain on site. These include the former Frame Storage Building, former Drip Pad Building, former Chromated Copper Arsenate (CCA) Treatment Building, and the office. These buildings are all located in a horizontal line directly east of and parallel to Speonk-Riverhead Road. A metal building formerly used for the storage of building materials is located behind these buildings, in the southeast corner of the property. Three catch basins discharge into an off-site culvert located on the west side of Speonk Riverhead Road, across from the former CCA Treatment Building and Drip Pad Building. This culvert discharges into a drainage swale that extends in a southwesterly direction from Speonk-Riverhead Road.

The site is located in a rural area considered part of the Central Pine Barrens Preserve (Pine Barrens). Homes and businesses are found within a half-mile radius of the site, including south of the site in the general direction of groundwater flow. Some residences and businesses in the area downgradient of the site still utilize private water supplies, obtained primarily from the Upper Glacial Aquifer, a highly transmissive sand and gravel aquifer. The Upper Glacial Aquifer is underlain by the Gardiners Clay unit to the south of the site, which is expected to occur at depths of approximately 130 to 150 feet below ground surface (bgs) or greater (NYSDEC 2009a).

1.6.2 Site History

Since 1979, the property has been owned and operated by the BB&S Treated Lumber Corporation. From the early 1980s to 1996, the site operated as a lumber treatment and storage facility. Lumber was pressure-treated on-site using a CCA solution. CCA is listed by 6 NYCRR Part 371 as a hazardous waste when spent or disposed of without treatment (code number F035). CCA was documented to be released to the environment through surface spills and sump leakage at the site (NYSDEC 2009a). A flame-proofing solution containing zinc oxide was also used at the site for a time to treat lumber.

Releases of CCA to groundwater are believed to have occurred through leakage from the collection sumps and through malfunction of an on-site water supply well valve. Spills originating from the concrete pad most likely account for soil contamination noted in the vicinity of the metal and frame buildings and for contamination found in the on-site drainage ditch. Higher concentrations of CCA-derived contaminants found off-site on the west side of Speonk-Riverhead Road within the Pine Barrens, across from a site drainage culvert, are indicative of larger surface discharges or spills in the past. Drippings from stored and treated lumber most likely account for soil contamination east of the former treatment area within the on-site lumber yard area (NYSDEC 2009a).

1.6.3 History of Remedial Activities at the Site

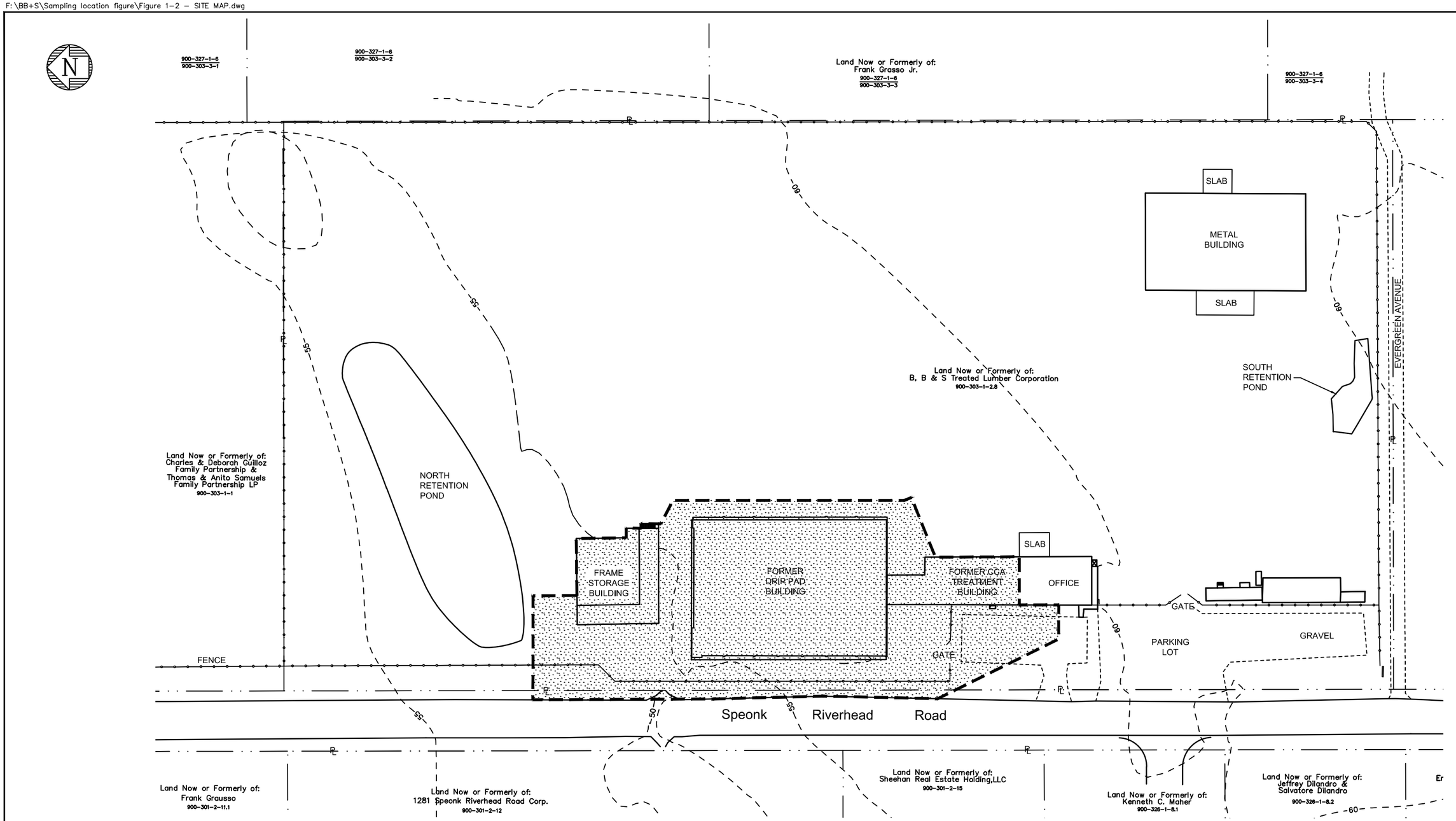
BB&S conducted its own environmental study between 1985 and 1987, after the Suffolk County Department of Health Services (SCDHS) identified chromium contamination in an on-site water supply well (SCDHS 1985). Based on the results of this study (Groundwater Technology, Inc. 1986 and 1988), BB&S installed a network of on-site and off-site groundwater monitoring wells and three groundwater extraction wells. BB&S used the extraction wells to pump and treat groundwater at the site from 1987 to 1996. Effluent from the groundwater treatment system frequently failed to meet surface water discharge requirements for chromium. Consequently, NYSDEC placed the BB&S Treated Lumber Corporation Site on the New York State Registry of Inactive Hazardous Waste Disposal Sites in 1993 and negotiated with BB&S to have the company perform a Remedial Investigation/Feasibility Study (RI/FS); however, BB&S declined to perform additional investigations. Therefore, Malcolm Pirnie, Inc., performed the Remedial Investigation (1998) and the Engineering Feasibility Study (1999) using state Superfund monies.

The original ROD for the site was issued on February 25, 2000. The original ROD included the extraction and treatment of the groundwater plume and solidification/stabilization with on-site placement of contaminated surface and shallow soils. Contaminated soils would be excavated and treated at an aboveground temporary solidification/stabilization plant in the lumberyard.

NYSDEC initiated a pre-remedial design investigation (PDI) in April 2001 through April 2003 that included shallow soil sampling and groundwater profiling of the chromium plume. In the summer of 2003, work was suspended while NYSDEC negotiated with BB&S after the company expressed an interest in implementing a remedy at the site. The negotiations failed, and in February 2005 NYSDEC resumed its plan to design and implement the remedy. A majority of the PDI field work was completed between September 2005 and February 2006 (Earth Tech Northeast, Inc. 2007).

Additional PDI activities were initiated by NYSDEC in December 2007 and included: (1) an assessment of the existing groundwater treatment system installed by BB&S in 1987, (2) on-site and off-site soil sampling, (3) installation and sampling of four sentinel multi-level groundwater monitoring wells, (4) surveying and

F:\BB+S\Sampling location figure\Figure 1-2 - SITE MAP.dwg



SCALE IN FEET

0 80 160 240

LEGEND

- ROAD
- BUILDING
- APPROXIMATE PROPERTY BOUNDARY
- FENCE LINE
- 60 TOPOGRAPHIC SURFACE CONTOUR (1 FT.)
- HAZARDOUS ZONE - WASTE REMAINING

NOTE

1. ORIGINAL MAPPING BASED ON SURVEYS BY JOHN C. EHLERS , LAND SURVEYOR, 6 MAIN STREET RIVERHEAD, NY 11901 AND WENDEL SURVEYORS, 7405 CANAL ROAD LOCKPORT, NY 14095. ADDITIONAL INFORMATION WAS ADDED BY AECOM FROM FIELD SURVEY AND OBSERVATIONS. CAD FILE 97347-DESIGN-R1.DWG WAS PROVIDED BY AECOM (OCTOBER 2009) AND IS THE DRAWING USED TO CREATE THIS FIGURE.
2. VERTICAL DATUM: NAVD 1988
   HORIZONTAL DATUM: NAD 1927

ecology and environment

FIGURE 1-2 SITE LAYOUT MAP
BB&S TREATED LUMBER CORPORATION SITE
TOWN OF SOUTHAMPTON, SUFFOLK COUNTY, NY

sampling of existing private water supplies, (5) a literature review to identify available technologies suitable for treating contaminated soil on-site, (6) bench-scale testing of the contaminated soil, and (7) development of plans and specifications for the purpose of competitively bidding the cleanup remedy. Additional private water supply well sampling along Speonk-Riverhead Road and Fifth Avenue was conducted by NYSDEC in April and June of 2009 as part of initial long-term efforts to monitor groundwater plume migration and potential impacts on potable water supplies (AECOM Technical Services Northeast, Inc. 2009).

During the above sampling events, chromium and arsenic were detected at concentrations exceeding their soil cleanup objectives (SCOs) in surface, shallow, and deep soil on-site; in surface and shallow soil off-site, just outside the eastern perimeter of the site; and in the surface and shallow soil off-site in the drainage swale. Copper was also detected found above its SCO in soil where arsenic and chromium were found. The results of the 2008 well sampling events revealed that total chromium and hexavalent chromium concentrations exceeded the applicable New York State Ambient Water Quality Standards for groundwater in 17 of the 41 wells making up the well monitoring network.

The analytical results for PDI groundwater samples collected in 2008 indicated the contaminant plume had attenuated since the issuance of the ROD. The highest contaminant concentrations were detected in samples collected from the downgradient wells and at depths of at least 130 feet bgs. Hexavalent chromium was detected in two of the wells sampled at private residences in 2008; however, the levels detected were below the water quality standard of 50 ppb (AECOM Technical Services Northeast, Inc. 2009). A public water line was installed by the SCWA in June 2001 along Old County Road, and Speonk-Riverhead Road, making public water available to residences and businesses located immediately downgradient (i.e., south) of the site.

Based on the PDI soil sampling discussed above, the planned on-site and off-site soil excavation limits were redefined and expanded from those originally identified in the ROD. The total approximate volume of on-site and off-site soil determined to require remediation increased from 5,300 CY to 18,400 CY.

Due to the attenuation of the contaminant plume in the groundwater and the expanded soil volume requiring remediation, NYSDEC issued an AROD on October 27, 2009 (NYSDEC 2009a). The AROD made the following changes:

- eliminated the groundwater extraction and treatment system;
- increased the soil volume requiring remediation;
- provided an alternate water source (AWS) to authorized residents in 2009 by extending the public water supply line north from Old County Road, along Fifth Avenue;

- eliminated the on-site soil remediation treatment in exchange for excavation, transport, and disposal of on-site and off-site contaminated soil; and

- installed additional off-site groundwater monitoring wells.

Site remediation work began in September of 2010 and was completed in October 2011. The following actions were completed:

- Contaminated soil exceeding the SCOs was successfully removed, transported, and disposed of off-site. On-site soils were removed to meet 6NYCRR Part 375 SCOs for the protection of groundwater for arsenic (16 ppm), hexavalent chromium (19 ppm), and total chromium (50 ppm) (see Section 5.3 for a detailed description of the SCOs). Per the AROD, contaminated soil was left beneath and around the foundations of the former Drip Pad Building and former CCA Treatment Building to maintain the structural integrity of the these buildings;

- Off-site contaminated soil was successfully removed to meet the 6NYCRR Part 375 SCOs for arsenic (13 ppm), trivalent chromium (30 ppm), and hexavalent chromium (1 ppm) required for the unrestricted use classification of these areas;

- Excavated areas were backfilled with clean material;

- Support columns in the former Drip Pad Building were repaired;

- Debris and remaining building materials were removed from all buildings on-site;

- New monitoring wells were installed and repairs were made to existing monitoring wells, where necessary;

- The stairway to the loft in the former CCA Treatment Building was removed to prevent access to the loft;

- Improvements were made to existing floor slabs in the former CCA Treatment Building and former Drip Pad Building to create an impervious cap over residual contamination;

- Treatment pits within the CCA Treatment Building were cleaned and filled with a concrete-based flowable material;

- Sumps within the buildings were cleaned and repaired;

- Drainage improvements were made to direct surface water and runoff away from structures with contamination remaining beneath them;

- Two retention ponds were constructed at the northern and southern boundaries of the property to collect surface water runoff and increase the retention time before the storm water is discharged off-site;

- Site restoration and repair of any damages that occurred due to construction on site; and

- Site access was restricted by the installation of chain link fencing around the site.

2 Institutional and Engineering Controls

2.1 Introduction

ICs and ECs are needed to protect human health and the environment from the residual contamination present in soil and groundwater beneath the site. This section describes the procedures for managing all ICs and ECs at the site. The ICs and ECs are components of the SMP, and revisions to the SMP are subject to approval by NYSDEC.

NYSDEC's DER-10: *Technical Guidance for Site Investigation and Remediation* outlines the requirements for all phases of the remediation process (NYSDEC 2010a). Among these requirements are the ICs and ECs that must be followed for this phase of the SMP. The site drawings presented in Appendix C identify the locations of the major ECs for the site.

2.2 Institutional Controls

The ICs that are necessary to ensure the effectiveness of this phase of site management of the remedial action include an Environmental Easement. The ICs at the BB&S Treated Lumber Corporation Site are necessary to ensures that residual contaminated material remains undisturbed. Current and future site owners will be required to perform soil characterization and disposal/reuse in accordance with NYSDEC regulations if residual contaminated soil is disturbed and/or excavated.

The following or similar language should be added to the filed environmental easement: All requirements of the SMP and all referenced plans, latest revision, on file must be adhered to. This applies to all existing and future property owners.

The ICs required by the Environmental Easement refer to non-physical mechanisms designed to:

- Identify the allowable use or development of the site;
- Limit human exposure to site contaminants;
- Prevent any action that would threaten the effectiveness of a remedy at or pertaining to this site; and

- Implement, maintain, and monitor ECs.

In addition to the ICs identified above, the Environmental Easement also stipulates the following:

- Compliance with the SMP;
- Restrictions on the use of groundwater as a source of potable or process water without necessary water quality treatment as determined by the NYSDOH and/or the SCDHS;
- Periodic certification of ICs and ECs by the property owner;
- Restriction on future property use that is no less restrictive than "commercial or industrial use" as defined by 6 NYCRR Part 375; and
- Restriction on the remediated off-site future property use that is no less restrictive than "unrestricted use" as defined by 6 NYCRR Part 375.

2.3 Engineering Controls

2.3.1 Engineering Control Systems

The engineering controls established at the BB&S Treated Lumber Corporation site are designed to limit contaminant migration by reducing the amount of water entering the residual contaminated soil. Groundwater, surface water, soil, and sediment monitoring will also be conducted to ensure that contaminant migration and recontamination of remediated soils does not occur. The analytical results for samples collected from the monitoring locations will be used to evaluate the natural attenuation of contaminants at the site. See appendices D, E, and F for the site-specific media sampling plans. Potable water supply samples will also be collected from residences near the site to determine trends in drinking water quality and whether NYSDOH Part 5 Drinking Water Standards and SCWA standards are being met. See Appendix G for the Potable Water Supply Sampling Plan. Community air monitoring is required a part of the Community Protection Plan (see Appendix H) when any intrusive work occurs on the site.

2.3.1.1 Building Improvements

Improvements were made to the buildings on-site to limit the amount of water entering the residual contaminated soils and to stabilize the structure of the buildings. The ECs installed during site remediation and the procedures for their inspection and maintenance are summarized below.

- The former Drip Pad Building:
  - The existing floor slab of the former Drip Pad Building was waterproofed with a waterproofing membrane and an asphalt top coat. This is a permanent control and the quality and integrity of the cover materials must be inspected annually. The asphalt should be inspected for cracks and flexing.

Observations regarding cracks and distress and comments regarding repairs should be recorded on the Site Engineering Controls Inspection Form (see Appendix I, Former Drip Pad Building).

- Roof support columns of the former Drip Pad Building were repaired to stabilize the building's structure. The support columns should be inspected annually, and any observations regarding column damages or distress and comments regarding repairs should be recorded on the Site Engineering Controls Inspection Form (see Appendix I, Former Drip Pad Building).

- The drainage system on the west side for the former Drip Pad Building was improved to drain surface water and roof runoff away from this structure and the residual contamination beneath it. This drainage system empties into the culvert that crosses Speonk-Riverhead Road. This drainage system must be inspected annually, and any observations regarding damage and repair of damage should be recorded on the Site Engineering Controls Inspection Form (see Appendix I, Former Drip Pad Building).

- A stone drip pad was installed around the east perimeter of the former Drip Pad Building to disperse roof runoff. Excessive runoff during storm events may cause erosion of the drip pad stone. This drip pad must be inspected annually, and any observations regarding erosion and comments regarding repairs should be recorded on the Site Engineering Inspection Form (see Appendix I, Former Drip Pad Building).

■ The former CCA Treatment Building:
  - The existing floor slabs of the former CCA Treatment Building were sealed with two layers of epoxy coating. This coating must be inspected annually. If the red color of the bottom layer is observed through cracks or chips in the grey top layer, additional grey epoxy coating must be applied to repair the cracks. Observations regarding cracks or chips and comments regarding repairs of cracks should be recorded on the Site Engineering Controls Inspection Form (see Appendix I, Former CCA Treatment Building).

  - The drainage system for the former CCA Treatment Building was improved to drain surface water and roof runoff away from this structure and the residual contamination beneath it. This drainage system empties into the culvert that crosses Speonk-Riverhead Road. This drainage system must be inspected annually, and any observations regarding damage and repair of damage should be recorded on the Site Engineering Controls Inspection Form (see Appendix I, Former CCA Treatment Building).

■ The former Frame Storage Building:
  - Contaminated soil was excavated to a depth of 1 foot and a concrete floor was installed in the rack area of the Frame Storage Building. Observations made during annual inspections regarding cracks or distress and comments

regarding repairs should be recorded on the Site Engineering Controls Inspection Form (see Appendix I, Frame Storage Building).

- A new drainage swale was installed east of the former Drip Pad Building and former Frame Storage Building in an attempt to prevent stormwater runoff from entering the Frame Storage Building. This EC must be inspected annually for erosion. Any observations regarding erosion, general damage, and repair of damage should be recorded on the Site Engineering Controls Inspection Form (see Appendix I, Drainage Swale).

- A new catch basin and culvert system was constructed at the entrance to the drainage swale on the west side of Speonk-Riverhead Road. These ECs must be inspected annually and cleaned out as necessary. Any observations regarding cleaning, damage, and repair of damage should be recorded on the Site Engineering Controls Inspection Form (see Appendix I, Culverts and Catch Basins).

- Two retention ponds were constructed at the north and south boundaries of the property to collect surface water runoff and increase the retention time before the storm water is discharged off-site. These ECs must be inspected annually, and any observations regarding damage due to erosion, blockage of the catch basin outlet in the north retention pond, and comments regarding repairs should be recorded on the Site Engineering Controls Inspection Form (see Appendix I, Retention Ponds).

- The AROD also stipulates that existing site ECs (i.e., fencing) will be repaired and/or replaced and maintained to restrict access and protect remedial components. Comments regarding repairs of site fencing should be recorded on the Site Engineering Controls Inspection Form (see Appendix I, Site Access Control).

- Since the site consists of multiple engineering controls that work in conjunction to mitigate the spread of on-site contamination, these controls should be assessed as whole during annual site inspections. Site status should be evaluated with regard to the presence of heavy equipment staged on or near site engineering controls, the condition of the on-site clean backfill that is staged at the northeast corner of the site, and the presence of general site erosion. Comments regarding the repairs of these conditions should be recorded on the Site Engineering Controls Inspection Form (see Appendix I, General Site Status Review).

The engineering controls shall continue to be maintained and monitored until (1) the site is deemed by NYSDEC to no longer be capable of discharging contamination or affecting human health and (2) permission to discontinue is granted in writing by NYSDEC.

2.3.1.2 Monitored Natural Attenuation

Groundwater, surface water, and sediment monitoring activities to assess natural attenuation of contamination will continue until the state has determined that residual levels of contaminants in groundwater are consistently below SCGs or have become asymptotic at an acceptable level over an extended period. Potable water supplies will be monitored to determine whether residual levels of contaminants in groundwater meet MCLs protective of human health. Monitoring will continue until permission to discontinue is granted in writing by NYSDEC. If groundwater contaminant levels become asymptotic at levels that are not acceptable to NYSDEC, additional source removal, treatment, and/or control measures will be evaluated. The groundwater, surface water, and sediment sampling locations will be inspected as follows:

- The on- and off-site groundwater monitoring wells shall be inspected semi-annually to ensure their integrity. See Attachment A of Appendix E for the groundwater monitoring well inspection form. If (1) the wells are damaged or determined to be otherwise unusable for obtaining samples, (2) the wells need to be abandoned and replaced, or (3) an additional monitoring well is required, then:
  - The well(s) shall be decommissioned as described in NYSDEC's Commissioner Policy 43: Groundwater Monitoring Well Decommissioning Policy dated November 3, 2009; or – Replacement well(s) or new well(s) shall be installed as described in Section 4.4.4 of this SMP; or
  - If it is determined that a monitoring well needs to be decommissioned and replaced or an additional monitoring well is required, the work will be performed in accordance with Sections 4.4.3 and 4.4.4 of this SMP.

- The on- and off-site surface water and sediment sampling locations shall be inspected semi-annually to ensure their suitability for sample collection (i.e., have sufficient flow and sediment buildup). See Attachment A of Appendix D for the surface water and sediment sampling location inspection form.

- The potable water supply sampling locations shall be inspected semi-annually to assess their physical condition. Sampling point observations will be noted on the Potable Water Sampling Inspection Checklist (see Attachment A of Appendix G).

2.3.2 Criteria for Completion of Remediation

Generally, remedial processes are considered completed when the effectiveness of the monitoring program indicates that the remedy has achieved the remedial action objectives identified by the ROD or other post-remedial decision documents. The framework for determining when remedial processes are complete is provided in Section 6.5 of NYSDEC's DER-10: *Technical Guidance for Site Investigation and Remediation* (NYSDEC 2010a).

2.4 Certification of Institutional and Engineering Controls

To verify that the ICs and ECs are being monitored and enforced, this SMP and a long-term OM&M program must be instituted at the BB&S Treated Lumber Corporation Site. The major tasks will include the following:

- Maintaining and enforcing ICs;
- Completing all work required in the ECs;
- Patching, sealing cracks, and providing general maintenance of the asphalt cover in the former Drip Pad Building;
- Sealing cracks and maintaining the epoxy paint in the former CCA Treatment Building;
- Repairing, maintaining, replacing, etc., the retention ponds, roof drains, catch basins, and culvert system entering the drainage swale;
- Repairing, maintaining, replacing, etc., the site access control fencing;
- Repairing, maintaining, replacing, etc., groundwater monitoring wells as required;
- Sampling and analysis of potable water supplies, surface water, groundwater, and sediment by an independent, NYSDEC-approved laboratory on an approved schedule and frequency;
- Preparing reports regarding the water and soil analyses based on NYSDEC-provided parameters and format;
- Obtaining access permits from private land owners, and others as necessary, to allow for reasonable access to the groundwater monitoring wells for the purposes of repairing, maintaining, and/or replacing the wells and to obtain required samples; and
- Obtaining access permits from private landowners, and others as necessary, to allow for reasonable access to the potable water supplies (on-site wells), surface water, and sediment monitoring points for the purposes of obtaining required samples.

Periodic certification of ICs and ECs is required per the AROD and is achieved through the preparation of a Periodic Review Report. Specific requirements of IC and EC certifications are listed in Section 5.2 of this SMP.

2.4.1 Certification of Institutional Controls

The ICs described by the Environmental Easement must be prepared by NYSDEC and attached to an amended deed filed with the Suffolk County Clerk and other

appropriate offices. An affidavit shall be submitted annually (via the PRR) to NYSDEC that there have been no changes to the executed Environmental Easement or any other ICs that have been put in place as a result of this SMP.

2.4.2 Certification of Engineering Controls

The ECs described herein must be installed under the direct supervision of a New York State-licensed Professional Engineer (NYS PE), and the ECs must be reviewed and certified by the PE on an annual basis. A separate inspection and repair summary for each inspection and any necessary repair shall be prepared by the supervising NYS PE, who shall sign and certify the summary. An affidavit shall be submitted annually (via the PRR) to NYSDEC that there have been no changes to the ECs that have been put in place as a result of this SMP. Section 5.2 provides additional detail pertaining to the PRR.

3 Site Monitoring Plan Summary

3.1 Introduction

The overall goals of this remediation effort were provided in Section 1 of this SMP. As part of the remediation effort, the monitoring of potable water supplies, groundwater, surface water, sediment, and air, including sampling and analysis, shall be performed in a manner acceptable to NYSDEC. This section provides a summary and a description of the site monitoring and sampling plans for potable water supplies, groundwater, surface water, sediment, and air. Potable water supply monitoring does not include facilities that are on public water supply.

These monitoring activities must continue indefinitely or until NYSDEC has determined that the site is no longer capable of discharging contamination off-site or affecting human health.

3.1.1 General

This SMP describes the measures for evaluating the performance and effectiveness of the remedy to reduce or mitigate contamination at the site and all affected site media. Monitoring procedures are described in the Surface Water and Sediment Sampling Work Plan (Appendix D), Groundwater Monitoring Well Sampling Procedures Work Plan (Appendix E), Soil Management Plan (Appendix F), Potable Water Supply Sampling Work Plan (Appendix G), and Community Protection Plan (Appendix H). These plans may be revised only with the approval of NYSDEC. The SMP and the latest revisions to the SMP shall be filed with NYSDEC.

3.1.2 Purpose and Frequency

The services of a qualified professional firm must be retained to inspect and maintain all monitoring wells, replace wells as required, and obtain and analyze potable water supply, groundwater, surface water runoff, soil, air, and sediment samples.

The site monitoring plan describes the methods to be used for the following:

- Sampling and analysis of all appropriate media (i.e., potable water supply, groundwater, surface water, soil, sediments, and air);

- Assessing compliance with applicable NYSDEC standards, criteria, and guidance (SCGs), particularly ambient groundwater standards, Part 375 Soil Cleanup Objectives, and NYSDOH Part 5 Drinking Water Standards;
- Assessing achievement of the remedial performance criteria;
- Periodically evaluating site information to confirm that the remedy continues to be effective in protecting public health and the environment; and
- Preparing the necessary reports for the various monitoring activities.

To adequately address these issues, this SMP provides information on:

- Sampling locations, protocols, and frequencies;
- Information on all designed monitoring systems (e.g., well logs);
- Analytical sampling program requirements, including independent validation of analytical data;
- Reporting requirements;
- Quality Assurance/Quality Control (QA/QC) requirements;
- Inspection and maintenance requirements for monitoring wells (included in Section 4.4.1);
- Monitoring well decommissioning procedures (included in Section 4.4.3); and
- Annual inspection and periodic review certification.

All groundwater, surface water, sediment, soil, air, and potable water supply sampling shall be completed as described in the Sampling Procedures Work Plans (see Appendices D, E, F, and G). Potable water supply, groundwater, surface water, soil, and sediment samples shall be analyzed for inorganics (metals), including total chromium, hexavalent chromium, and arsenic. Potable water supply and groundwater samples shall also be analyzed for VOCs. Community air monitoring samples shall be analyzed for particulate matter. Table 3-1 presents the sampling program for the BB&S Treated Lumber Corporation Site.

Table 3-1 BB&S Treated Lumber Corporation Site Sampling Schedule and Analytical Methodologies

Monitoring Program	Reporting Frequency[1]	Matrix	Analysis[2,3]
Potable water supply	Semi-annually/annually	Water	EPA Methods 200.8, 524.2, SW-846 EPA Method 7196A, and 7470A
Groundwater	Semi-annually/annually	Water	SW-846 EPA Methods 6010, 7196A, 7470A, and 8260B
On-site Soils and Imported Soils	As needed[4]	Soils	SW-846 EPA Methods 6010 7196A, and 7470A
Surface Water and Sediments	Semi-annually[5]	Water and Soils	SW-846 EPA Methods 6010 7196A, and 7470A
Community Air Monitoring	As needed[6]	Air	Applicable continuous real time air monitoring equipment

[1] The sampling frequency will be as indicated unless otherwise specified by NYSDEC.
[2] Additional analytical parameters may be required under DER-10 to ensure compliance with the site cleanup objectives.
[3] Arsenic and chromium are analyzed through SW-846 EPA Methods 6010 and 200.8. Hexavalent chromium is analyzed through SW-846 EPA Method 7196A. VOCs are analyzed through SW-846 EPA Methods 8260B and 524.2. Mercury is analyzed through SW-846 EPA Method 7470A.
[4] When intrusive work is required on-site.
[5] Surface water sampling will be performed at the same time as sediment sampling.
[6] When intrusive work is required on-site.

3.1.3 Access

Access to properties not owned by BB&S must be obtained to complete the tasks and services described in this SMP, including potable water supply and groundwater well sampling. NYSDEC shall obtain Access Agreements to facilitate the off-site groundwater well sampling. In addition, NYSDEC will obtain temporary access permits from private landowners, and others as necessary, to allow for reasonable access to sample the potable water supply (including private wells), surface water, and sediment monitoring points for the purposes of obtaining required samples to evaluate the effectiveness of the remedial construction and potable water quality.

3.2 Media Sampling Program

All sampling activities shall be recorded in a dedicated site field log book and a groundwater sampling log. The Surface Water and Sediment Sampling Work Plan is provided in Appendix D, the Groundwater Monitoring Well Sampling Procedures Work Plan is provided in Appendix E, the Soil Management Plan is provided in Appendix F, the Potable Water Supply Sampling Work Plan is provided in Appendix G, and the Community Protection Plan is provided in Appendix H.

3.2.1 Groundwater Sampling

Groundwater monitoring will be performed on a periodic basis to assess the performance of the remedy. Twenty active groundwater monitoring well locations are located either on the BB&S Treated Lumber Corporation Site property or off-site, including on private residential and commercial properties. These shallow, intermediate, and deep wells allow for the monitoring of contaminant trends in the local groundwater. Available well logs of the groundwater monitoring wells are provided in Appendix J. Table 3-2 lists the on-site and off-site monitoring wells.

The groundwater monitoring wells must be sampled annually/semi-annually. Annual groundwater sampling will be performed during the spring monitoring events, and semi-annual groundwater sampling will be performed during the fall monitoring events. Twelve of these wells are located on the BB&S Treated Lumber Corporation Site property (within 11 well casings), and 25 wells (within nine well casings) are located off-site. With the exception of MW-13, the off-site monitoring well locations represent a well casing containing three monitoring wells at shallow, intermediate, and deep (S, I, and D) depths. Therefore, a total of 25 off-site monitoring wells must be sampled during each sampling event. Table 3-2 presents a summary of the monitoring wells that must be sampled. The locations of the groundwater monitoring wells are shown on Figures 2 and 3 of the Groundwater Sampling Plan (see Appendix E).

Table 3-2 BB&S Treated Lumber Corporation Site Monitoring Wells

On-Site Monitoring Wells	Off-Site Monitoring Wells
MW-3	MW-13
MW-4	MW-17S, I, D
MW-5	MW-18S, I, D
MW-6	MW-19S, I, D[1]
MW-22	MW-20S, I, D
MW-9	MW-23S, I, D[1]
MW-10	MW-24S, I, D[1]
MW-27S, I	MW-25S, I, D[1]
BB&S-1	MW-26S, I, D[1]
MW-1D	
MW-2S	

[1] Locations scheduled for annual sampling.

Groundwater levels in the wells shall be recorded when the sampling is performed. The samples shall be analyzed for VOCs, hexavalent chromium, and inorganic contaminants (i.e., metals by an Environmental Laboratory Accreditation Program (ELAP) -certified laboratory in accordance with the analytical procedures listed in Table 3-1. Sampling personnel should have spill prevention and spill response equipment on hand in the event of an accidental spill. Standard groundwater well sampling procedures for the BB&S Treated Lumber Corpora-

tion Site are provided in Appendix E. The groundwater well purge and sample record form is provided as Attachment B to Appendix E.

3.2.2 Surface Water Sampling

Surface water sampling at nine locations, including surface water runoff sampling and sampling of the retention ponds in the southeastern corner and northern boundary of the property, shall be performed semi-annually at the same time as sediment sampling. The samples shall be analyzed for total chromium, hexavalent chromium, arsenic, and other contaminants at an ELAP-certified laboratory in accordance with the analytical procedures listed in Table 3-1. Additional information on surface water sampling procedures is provided in Appendix D. Figure 1 of Appendix D identifies the sampling locations.

3.2.3 Soil and Sediment Sampling

Soil sampling is required whenever soil is excavated from any area surrounding the buildings on site where contamination remains. Sediment samples should be collected semi-annually, at a minimum, as follows:

- Sediment samples will be collected from the sumps at each of the three catch basins to the west of Speonk-Riverhead Road;
- Sediment sample will be collected from the sump at the northern retention pond outlet catch basin, CB-3b;
- Sediment sample will be collected at the same location as SW-7 in the south retention pond; and
- Soil samples will be collected from affected areas if erosion occurs around the CCA Treatment, Drip Pad, and Frame Storage buildings.

The samples shall be analyzed for total chromium, hexavalent chromium, arsenic, and mercury contaminants at an ELAP-certified laboratory in accordance with the analytical procedures listed in Table 3-1. Standard soil sampling procedures for the BB&S Treated Lumber Corporation Site are provided in Appendix F. Sediment sampling procedures are provided in the Surface Water and Sediment Sampling Work Plan provided in Appendix D.

3.2.4 Potable Water Supply Sampling

Potable water supply monitoring shall be performed annually, during spring monitoring events, to assess the drinking water quality in residences near the site. The potable water well locations shall be sampled at the direction of the NYSDEC, NYSDOH, and/or the SCDHS.

The potable water supply samples shall be analyzed for VOCs, hexavalent chromium, total chromium, and arsenic by an ELAP-certified laboratory in accordance with the analytical procedures listed in Table 3-1. The standard potable water supply sampling procedures to be used at the BB&S Treated Lumber Corporation

Site are provided in Appendix G. The potable water grab sample data collection form is provided as Attachment B to Appendix G.

3.2.5 Community Air Monitoring

Community air monitoring and dust control are required when any intrusive work dealing with the movement of soils that occurs on the BB&S Site. Real-time air monitoring for particulate matter will be conducted at the perimeter of the exclusion zone during all intrusive activities. Ground-intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells. Particulates will be monitored at the downwind perimeter of the exclusion zone on a continuous basis. The Community Protection Plan is provided in Appendix H.

3.2.6 Sampling Equipment Decontamination Procedures

All decontamination will be performed in accordance with NYSDEC-approved procedures. Sampling methods and equipment have been chosen to minimize decontamination requirements and prevent the possibility of cross-contamination. Standard equipment decontamination procedures for each of the sampling elements are presented in each sampling work plan.

3.2.7 Sample Packaging and Shipping Procedures

Sample shipment will be performed in strict accordance with all applicable U.S. Department of Transportation (DOT) regulations. Sample packaging and shipping procedures are presented in each sampling plan. See Appendices D, E, F, and G for specifics on each environmental media.

3.3 Storage and Disposal of Investigation-Derived Wastes

3.3.1 Typical Wastes

Typical site-related wastes that must be disposed of include the following:

- Liquid and solid investigation-derived waste (IDW) from sampling activities, including water and sediments;
- Personal protective equipment (PPE);
- Excavated soil, asphalt materials, concrete materials, and other objects (e.g., catch basins and similar) from any construction activities; and
- Accumulated debris or sediment removed from the surface water runoff collection system during maintenance or other operations.

Sampling Work Plans (Appendices D, E, F, and G) describe disposal methods for IDW.

3.3.2 Temporary Storage

In the event that disposal cannot be performed immediately, IDW and contaminated materials from the implementation of additional ECs shall be temporarily

stored in a NYSDEC-approved area until an approved waste handling contractor removes them for proper disposal. The storage area must be capable of containing all potential spills and precipitation runoff. All IDW and contaminated materials must be stored in approved containers, roll-offs, or drums. The contents and origin of the material must be clearly described on the exterior of the container and managed in accordance with the requirements of 6 NYCRR Part 375. No wastes shall be stored on site for more than 90 days after the accumulation of the waste without written permission from NYSDEC.

3.3.3 Backfilling of Excavated Areas

Excavated materials from on-site and off-site areas shall not be used for general backfill. Soil that contains contaminants in excess of established limits shall be disposed of in a NYSDEC-approved facility. Clean backfill shall be obtained from a NYSDEC-approved source, be similar to the soil it is replacing, and be suitable for the final in-place use. The soil must be verified clean in accordance with the analytical criteria in NYSDEC's DER-10: *Technical Guidance for Site Investigation and Remediation* (NYSDEC 2010a*)*. The backfill shall be placed and compacted as necessary.

3.3.4 Responsibility

Written documentation and approved manifests describing the disposal destination and handler shall be obtained and stored on-site. Copies of the documentation and manifests shall be submitted annually to NYSDEC along with the PRR for the BB&S Treated Lumber Corporation Site.

3.4 Monitoring Analytical Program

An Analytical Program Work Plan shall be prepared that addresses all requirements and considers all information presented in the analytical program. The two main components of the Analytical Program Work Plan are the Quality Assurance Project Plan (QAPP) (see Appendix K) and monitoring reporting requirements.

The Sampling Procedures Work Plans provided in Appendices D, E, F, and G present the policies, organization, objectives, functional activities, and specific quality assurance (QA) and quality control (QC) measures that must be implemented by the laboratory selected for this project. The program is designed to ensure that all technical data generated by the laboratory are accurate and representative and will (if needed) withstand judicial scrutiny.

3.4.1 Quality Assurance/Quality Control

All sampling and analyses shall be performed in accordance with the requirements of the generic QAPP prepared for the site (see Appendix K). The main components of the QAPP include the following:

- QA/QC Objectives for Data Measurement;
- Sampling Program;

  - Sample containers will be properly washed, decontaminated, and appropriate preservative will be added (if applicable) prior to their use by the analytical laboratory. Containers with preservative will be tagged as such.
  - Sample holding times will be in accordance with the NYSDEC Analytical Service Protocol requirements.
  - Field QC samples (e.g., trip blanks, coded field duplicates, and matrix spike/matrix spike duplicates) will be collected as necessary;

- Sample Tracking and Custody;

- Calibration Procedures;
  - All field analytical equipment will be calibrated immediately prior to each day's use. Calibration procedures will conform to manufacturer's standard instructions.
  - The laboratory will follow all calibration procedures and schedules as specified in U.S. Environmental Protection Agency (EPA) SW-846 (EPA 2007) and subsequent updates that apply to the instruments used for the analytical methods;

- Analytical Procedures;

- Preparation of a Data Usability Summary Report (DUSR), which will present the results of data validation, including a summary assessment of laboratory data packages, sample preservation and chain-of-custody procedures, and a summary assessment of precision, accuracy, representativeness, comparability, and completeness for each analytical method;

- Internal QC and Checks;

- QA Performance and System Audits;

- Preventative Maintenance Procedures and Schedules; and

- Corrective Action Measures.

3.4.2 Reporting Requirements

Forms and any other information generated during regular monitoring events and inspections shall be kept on file at the site. All forms and other relevant reporting formats used during the monitoring/inspection events will be subject to approval by NYSDEC and submitted at the time of the PRR, as specified below. The first PRR shall be submitted 18 months after approval of the Final Engineering Report.

All monitoring results must be reported to NYSDEC on a periodic basis in the PRR. A report will also be prepared, if required by NYSDEC, subsequent to each sampling event. The report (or letter) shall include, at a minimum:

- The date of the event;

- The names of the personnel who conducted the sampling;
- A description of the activities performed;
- The type of samples collected (e.g., groundwater, sediment, surface water);
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation);
- Sample 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 relevant observations, conclusions, or recommendations; and
- A determination as to whether potable water supply, groundwater, or soil conditions have changed since the last reporting event.

Deliverables shall be submitted in electronic format as required by NYSDEC.

4 Maintenance Plan

4.1 Introduction

This Maintenance Plan describes the ECs in place at the BB&S Treated Lumber Corporation Site and the provisions for the continued proper maintenance of the components of the remedy. ECs include the groundwater monitoring well sampling plan, surface water and sediment monitoring plan, and potable water supply monitoring plan. Additional ECs put in place during site remediation include sealant of the existing floors in the former Drip Pad Building and CCA Treatment Building, improved site drainage and storm water management, repaired structural support for buildings, and limits to site access. The maintenance required for these ECs is discussed in Section 2.

NYSDEC will be notified prior to the performance of any work on a monitoring well, including repairs, replacement, or decommissioning. All such work shall be documented in the subsequent PRR.

4.2 Surface Water and Sediment Sampling Location Inspection

All surface water and sediment sampling locations shall be inspected semi-annually to determine whether sufficient water flow and sediment deposition is present for sample collection. These include two surface water sampling locations at each of the north and south retention ponds. The retention pond at the northern property boundary should also be inspected for blockages to the outlet catch basin, CB-3b. Information obtained during inspections of the surface water and sediment sampling locations will be recorded on the inspection forms provided as Attachment A of Appendix D.

4.3 Potable Water Supply Sampling Location Inspection

All potable water supply sampling locations shall be inspected semi-annually to determine whether they are suitable locations for sampling. Information obtained during these inspections will be recorded on the Potable Water Supply Sampling Inspection Checklist (see Attachment A of Appendix G).

4.4 Groundwater Monitoring Well System

ECs for monitoring activities include 20 groundwater monitoring well casing locations, with a total of 37 monitoring wells (see Section 3.2.1). Each permanent groundwater monitoring well must be inspected semi-annually to determine and

document its physical condition and to identify the maintenance required for the well to remain operational.

4.4.1 Groundwater Monitoring Well Inspection

Routine inspections of each component of the monitoring system are to be performed for the duration of the groundwater monitoring program. Minor problems with the physical condition of the existing monitoring wells (problems that will not prevent or interfere with sampling) should be identified during each inspection. Repairs or equipment replacement shall be completed within 10 days after inspection. Inspections of the monitoring wells should be conducted prior to scheduled sampling times to allow scheduled sampling to proceed as planned. Examples of minor problems and typical solutions for monitoring wells are presented in the Operations and Maintenance Plan in Section 4.4.2. The results of the inspections must be documented on the Monitoring Well Inspection Checklists provided in Attachment A of Appendix E.

4.4.2 Monitoring Well Repairs

Repair and/or replacement of each well in the monitoring well network will be performed based on the assessment of its structural integrity and overall performance. Repairs or equipment replacement shall be completed within 10 days after inspection.

Some minor problems that may be encountered and typical solutions include the following:

- Inspection of well identification markings – re-label as necessary;
- Inspection of the protective casing – repair as necessary;
- Cracked anti-percolation pad – replace with new pad;
- Rusty lock or broken cap – replace;
- Casings that have peeling paint or are rusty – remove loose paint and rust and repaint;
- Bent casings – repair if possible (if the casing cannot be repaired to allow for sampling, then the monitoring well may have to be decommissioned and replaced, if determined necessary by NYSDEC); and
- Leaking seals or cap – replace with watertight items.

If biofouling, chemical precipitation, or silt accumulation occurs in the on- or off-site monitoring wells, the wells should be physically agitated, surged, and then redeveloped. The most common well redevelopment methods are bailing, mechanical surging, air surging, jetting, and over-pumping.

Monitoring well redevelopment using the mechanical surging method is performed as follows:

- Following completion of the monitoring well inspection, the well pump is removed and the interior of the well screen is mechanically cleaned (e.g., scrubbed with a wire brush) prior to the start of surging.

- Mechanical surging forces water into and out of the well screen by operating a plunger, called a surge block, which is attached to a drill rod or a wire line. The surge block is lowered to the top of the well screen and operated in a pumping action, with strokes typically of about 3 feet. The surge block is gradually worked downward through the screened interval. The surge block can be constructed of any materials that will not alter the water chemistry (e.g., a sand-filled PVC pipe) and should be 5 feet long with an outside diameter of approximately 0.5 inch less than the well's inside diameter. Periodically, the surge block is removed and fines that have entered the well are removed by pumping or bailing.

- If biofouling or chemical precipitation has occurred, a more rigorous redevelopment procedure may be necessary, including the introduction of chemical agents such as sodium hypochlorite (bleach) or commercially available well cleaners. After the initial surge and sediment removal, chemical agents are added to the well and a second surge is completed. The purpose of the chemical additive is to acidify the water within the well and filter pack, and to break up any carbonate or similar scaling that may have developed.

- The chemical agent is allowed to soak overnight. After soaking, the well is surged again, any accumulated material is bailed from the well, and the well pump is replaced.

In addition, monitoring wells will be properly decommissioned and replaced (in accordance with this SMP) if the redevelopment event renders the wells unusable.

4.4.3 Groundwater Monitoring Well Decommissioning

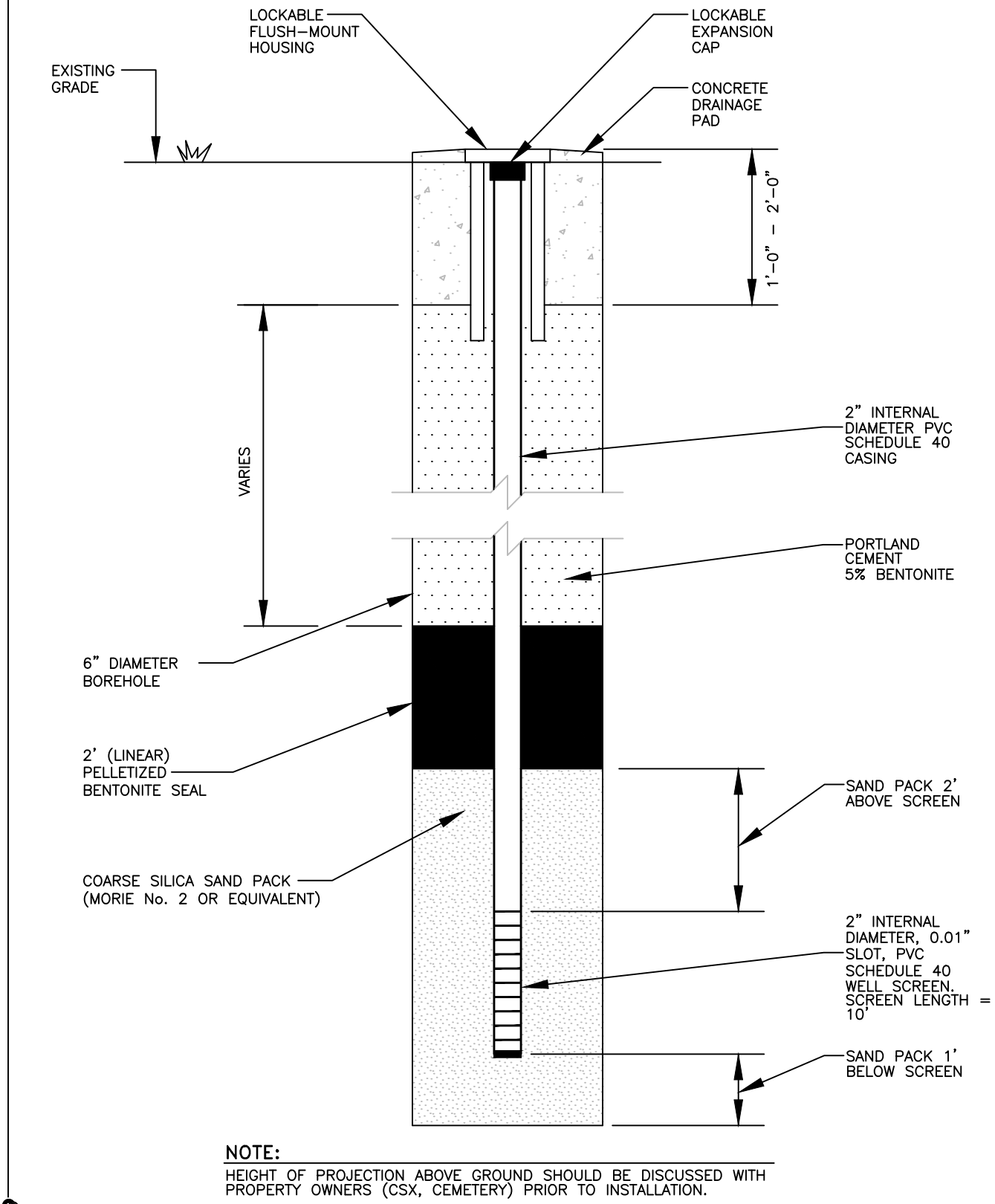
If a monitoring well is determined by the inspection/sampling staff to be unusable for obtaining samples because of damage or otherwise, the well will be decommissioned as described in NYSDEC's Commissioner Policy 43: *Groundwater Monitoring Well Decommissioning Policy* (NYSDEC 2009b).

Well decommissioning without replacement will be performed only with the prior approval of NYSDEC. Well abandonment will be performed in accordance with NYSDEC's latest version of the Commissioner Policy 43: *Groundwater Monitoring Well Decommissioning Policy* (NYSDEC 2009b). Monitoring wells that are decommissioned because they have become unusable will be reinstalled in the nearest available location approved by NYSDEC.

4.4.4 Installation of New or Replacement Groundwater Monitoring Wells

If a new monitoring well is for a new location, the well location and depth will be determined by NYSDEC. If a new monitoring well is intended to replace an existing monitoring well, the new monitoring well shall be installed approximately 5 feet from the existing monitoring well and to the same depth of the monitoring well it is replacing. A typical flush-mount groundwater monitoring well is shown on Figure 4-1. A typical "stick up" groundwater monitoring well is shown on Figure 4-2.

F:\BB&S\STANDARD WELL DETAILS\WELL DETAILS.dwg



NOTE:

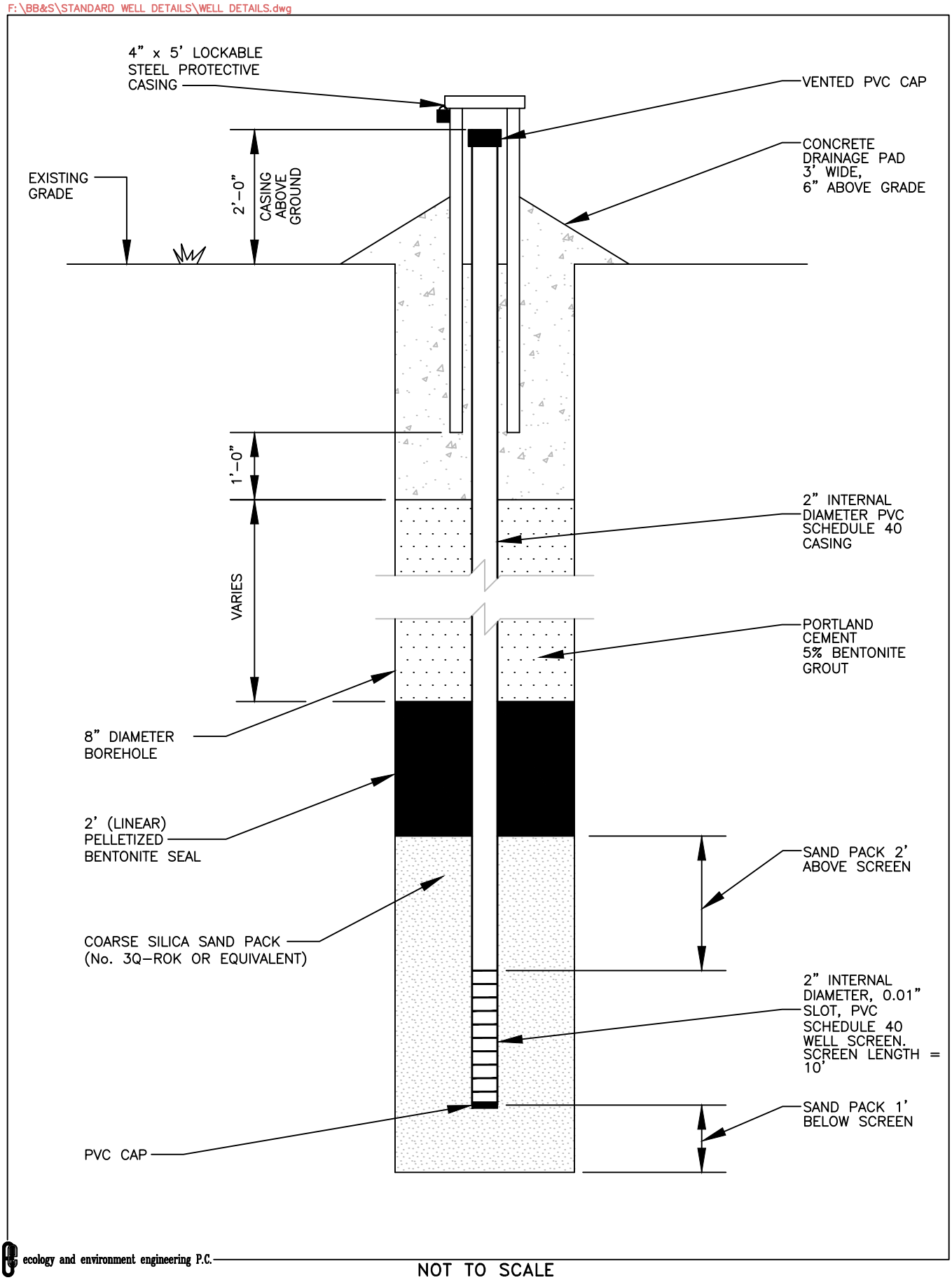
HEIGHT OF PROJECTION ABOVE GROUND SHOULD BE DISCUSSED WITH PROPERTY OWNERS (CSX, CEMETERY) PRIOR TO INSTALLATION.

ecology and environment engineering P.C.

NOT TO SCALE

Figure 4-1
TYPICAL FLUSH MOUNT MONITORING WELL CONSTRUCTION
BB&S TREATED LUMBER CORPORATION SITE
SITE No. 1-52-123
TOWN OF SOUTHAMPTON, NY

F:\BB&S\STANDARD WELL DETAILS\WELL DETAILS.dwg



ecology and environment engineering P.C.

NOT TO SCALE

Figure 4-2
TYPICAL STICKUP MONITORING WELL CONSTRUCTION
BB&S TREATED LUMBER CORPORATION SITE
SITE No. 1-52-123
TOWN OF SOUTHAMPTON, NY

5 Inspections, Reporting, and Certifications

5.1 Site Inspections

5.1.1 Site-wide Inspection

Site-wide inspections shall be performed at least once a year and after all severe weather conditions that may affect ECs or monitoring devices. Based on the results of these inspections, a report shall be compiled that provides sufficient information to assess the following:

- Compliance with all ICs, including changes in site use;
- The condition and effectiveness of all ECs;
- The condition of all on-site buildings and structures, including condition of the concrete sealant and concrete repairs in the former CCA Treatment, Drip Pad, and Frame Storage buildings;
- General site conditions at the time of the inspection;
- The site management activities being conducted, including, where appropriate, confirmation sampling and health and safety inspections performed as part of the site-wide inspection;
- Compliance with the permits and schedules included in this Site Management Plan; and
- Whether site records are up-to-date.

Site-wide inspections will be performed as scheduled, and interim inspections will be performed as needed. Inspection reports (scheduled and interim) will be submitted to NYSDEC in a timely manner. All inspection reports will be included as part of the annual PRR.

5.1.2 Inspection Frequency

All inspections will be conducted at the frequency specified in the schedules provided in Section 3 (Site Monitoring Plan) of this SMP. At a minimum, a site-wide inspection will be conducted annually.

All inspection and monitoring reports will be sent in electronic format to:

Mr. David J. Chiusano
New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau E
625 Broadway, Albany, New York 12233-7017

Mr. Steve Karpinski
Public Health Specialist
New York State Department of Health
Bureau of Environmental Exposure Investigation
Flanigan Square, Room 300
547 River Street, Troy, New York 12180-2216

The monitoring and analytical report shall be submitted within 45 days after receipt of the samples by the laboratory.

5.1.3 Inspection Forms, Sampling Data, and Maintenance Reports

Information obtained during all inspections and monitoring events will be recorded on the appropriate forms for each respective environmental monitoring plan (see Appendices D, E, F, and G).

5.1.4 Evaluation of Records and Reporting

The inspection and site monitoring data will be evaluated to determine whether:

- The ICs and ECs are in place, are performing properly, and remain effective;
- The Monitoring Plan is being implemented;
- Maintenance activities are being conducted properly; and
- Based on the above items, the site remedy continues to be protective of public health and the environment and is performing as designed.

5.2 Periodic Review Report

A PRR will be submitted to NYSDEC annually, beginning 18 months after NYSDEC approval of the Final Engineering Report. In the event that the site is subdivided into separate parcels with multiple ownerships, a single PRR will be prepared in accordance with NYSDEC's DER- 10 *Technical Guidance for Site Investigation and Remediation* (NYSDEC 2010a) and submitted within 45 days of the end of each certification period. The PRR will include the following:

- Identification, assessment, and certification of all ICs and ECs required by the remedy for the site;

- Results of the required annual site inspections and severe condition inspections, if applicable;

- All applicable inspection forms and other records generated for the site during the reporting period, in electronic format;

- A summary of all discharge monitoring data and/or information generated during the reporting period, including comments and conclusions;

- Data summary tables that 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;

- Graphical representations of the distributions of contaminants of concern, by media (groundwater, surface water, sediment, and soil);

- The results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted electronically in a NYSDEC-approved format;

- A site evaluation that includes the following:
  - The compliance of the remedy with the requirements of the site-specific Remedial Action Work Plan and AROD;
  - The effectiveness of all treatment units, etc., including identification of any needed repairs or modifications;
  - Any new conclusions or observations regarding site contamination based on inspections or data generated by the Monitoring Plan for each media being monitored;
  - Recommendations regarding any necessary changes to the remedy and/or Monitoring Plan; and
  - The overall performance and effectiveness of the remedy.

The PRR will be submitted in hard-copy format to the NYSDEC Central Office and the Region 1 Office (the region in which the site is located), and in electronic format to the NYSDEC Central and regional offices and the NYSDOH, Bureau of Environmental Exposure Investigation.

5.2.1 Certification of Institutional and Engineering Controls

After the last inspection of the reporting period, a qualified environmental professional or NYS PE will prepare the following certifications in a PRR.
For ICs, include the following:

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

- The institutional controls employed at this site are unchanged from the date the control was put in place, or are compliant with Department-approved modifications;

- Nothing has occurred that would impair the ability of the Institutional Controls to protect the public health and environment;

- Nothing has occurred that would constitute a violation or failure to comply with any site-specific requirements of the Site Management Plan;

- Access to the site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of the Institutional Controls;

- 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 in compliance with the Environmental Easement;

- The information presented in this report is accurate and complete; and

- I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [name], of [business address], am certifying as [Owner or Owner's Designated Site Representative] (and if the site consists of multiple properties): [and I have been authorized and designated by all site owners to sign this certification] for the site."

For ECs, include the following:

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

- Inspection of the site to confirm the effectiveness of each engineering control required by the remedial program was performed under my direction;

- Each engineering control employed at this site is unchanged from the date the control was put in place, or are compliant with Department-approved modifications;

- Nothing has occurred that would impair the ability of the Engineering Controls to protect public health and the environment;

- Nothing has occurred that would constitute a violation or failure to comply with any site-specific requirements of the Site Management Plan;

- Access to the site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of the engineering controls;

- 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 in compliance with the Environmental Easement;

- Each engineering control is performing as designed and is effective;

- To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program and generally accepted engineering practices;

- The information presented in this report is accurate and complete; and

- I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [name], of [business address], am certifying as [Owner or Owner's Designated Site Representative] (and if the site consists of multiple properties): [I have been authorized and designated by all site owners to sign this certification] for the site."

The signed certifications will be included in the PRR.

If for any reason one or more of the above statements cannot be certified, the certification cannot be completed and a Corrective Measures Plan must be submitted to NYSDEC (see Section 5.4).

5.3 Reporting Exceedances of Standards, Criteria, and Guidance Values

If metals or VOCs are detected at concentrations exceeding the standards, criteria, and guidance values (SCGs) defined by NYSDEC for groundwater and surface water, the exceedance must be reported to NYSDEC as soon as the information becomes available. If metals or other contaminants are detected in soil at concentrations exceeding the SCOs, the exceedance must be reported to NYSDEC as soon as the information becomes available. If metals or VOCs are detected at concentrations exceeding the maximum contaminant levels (MCLs) for drinking water defined by NYSDOH and the SCWA, the exceedance must be reported to NYSDEC and NYSDOH as soon as the information becomes available. The interim analytical results will then be evaluated by NYSDEC to determine whether further analytical testing or interim remedial actions are needed. NYSDEC's Soil Cleanup Guidance CP-51 (NYSDEC 2010b) and DER-10 *Technical Guidance for*

Site Investigation and Remediation (NYSDEC 2010a) should be reviewed to determine the site-specific soil cleanup objectives, and the AROD (see Appendix A) should be reviewed to identify established cleanup levels. The NYSDOH Part 5 Drinking Water Standards (NYSDOH 2011) and the SCWA MCLs (SCWA 2011) should be reviewed to determine the drinking water quality standards. Table 5-1 lists some relevant SCG values defined by NYSDEC's Ambient Water Quality Standards for groundwater.

Table 5-1 SCG Values for Groundwater and Surface Water at the BB&S Treated Lumber Corporation Site

Contaminant	Groundwater Standards/Criteria (µg/L)
Hexavalent Chromium	50
Arsenic	25
Total Chromium	50
Total VOCs[1]	100
Benzene	1
Toluene	5
Ethylbenzene	5
Xylene	5
Tetrachloroethene	5
Trichloroethene	5
cis-1,2-dichloroethene	5
Vinyl chloride	2

Source: NYSDEC 1998.

[1] The ambient water quality standard for the principal organic contaminant is 5 µg/L; the standard for total organic substances is 100 µg/L.

Key:
µg/L = micrograms per liter
VOCs = volatile organic compounds

Table 5-2 lists some relevant MCLs for public drinking water as defined by the NYSDOH Part 5 Drinking Water Standards and SCWA standards. The NYSDOH Part 5 Drinking Water Standards and SCWA water quality standards do not identify a standard for hexavalent chromium. Therefore, the NYSDEC Ambient Water Quality Standard was used.

Table 5-2 MCL Values for Drinking Water at the BB&S Treated Lumber Corporation Site

Contaminant	Drinking Water MCL (µg/L)
Hexavalent Chromium [1]	50
Arsenic	10
Total Chromium	100
Total VOCs [2]	100
Benzene	5
Toluene	5

Table 5-2 MCL Values for Drinking Water at the BB&S Treated Lumber Corporation Site

Contaminant	Drinking Water MCL (µg/L)
Ethylbenzene	5
Xylene	5
Tetrachloroethene	5
Trichloroethene	5
cis-1,2-dichloroethene	5
Vinyl chloride	2

Sources: NYSDOH 2011; SCWA 2011; NYSDEC 1998.

[1]NYSDOH Part 5 does not list an MCL for hexavalent chromium, and the SCWA does not test for hexavalent chromium. Therefore, the NYSDEC Ambient Water Quality Standard is listed.

[2]The NYSDOH Part 5 Drinking Water Standards MCL for the principal organic contaminant (POC) is 5 µg/L. The MCL for an unspecified organic contaminant (UOC) is 50 µg/L, and the MCL for total POCs and UOCs is 100 µg/L. SCWA water quality standards list principal organic contaminant (POC) MCLs of 5 µg/L.

Key:
µg/L = micrograms per liter

Table 5-3 lists some relevant 6 NYCRR Part 375 SCOs values defined by NYSDEC for on-site soils associated with the protection of groundwater. Due to its low solubility, 6 NYCRR Part 375 does not list an SCO for total chromium associated with protection of groundwater. Therefore, the SCO for total chromium was determined using NYSDEC's DER-10 (NYSDEC 2010).

Table 5-3 SCO Values for On-Site Soils at the BB&S Treated Lumber Corporation Site

Contaminant	Soil Cleanup Objectives (ppm)
Arsenic	16
Hexavalent Chromium	19
Total Chromium	50

Source: NYSDEC 2010b.

Key:
ppm = parts per million

The Community Protection Plan (see Appendix H) provides the particulate matter action levels and required responses for community air monitoring.

5.4 Corrective Measures Plan

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

All records and information regarding maintenance shall be included as a part of the site inspection report. If maintenance is projected for the future or cannot be completed as a result of winter weather or other difficulties, it shall be noted in the site inspection report. Records of all completed maintenance efforts, including any transportation and disposal of waste, shall also be included in the site inspection report.

In order to comply with the above submittal times, it may be necessary to prepare and submit interim reports to NYSDEC to supplement the semi-annual reports.

6 Health and Safety Plan

A Site-specific Health and Safety Plan (sHASP) must be developed for the work assignments to be conducted. As required by NYSDEC's DER-10: *Technical Guidance for Site Investigation and Remediation* (NYSDEC 2010a), the Generic HASP (GHASP) included in this SMP can be used as a guide when producing a sHASP for the activities, or separately for each activity, as required. A copy of the GHASP is provided in Appendix L.

All staff should be aware of Occupational Safety and Health Administration (OSHA) hazardous communication requirements. Personnel should review all required Material Safety Data Sheets (MSDSs) and instructions pertaining to all anticipated chemicals prior to the initiation of any work. MSDSs of contaminants known or suspected to be present on the BB&S Treated Lumber Corporation Site are provided in Appendix M.

6.1 Preparation of a Site-Specific Health and Safety Plan

In accordance with the requirements of 29 CFR 1910.120, an sHASP must be prepared prior to initiating field activities at the site. The sHASP should include the following:

- The names of key personnel responsible for site health and safety, including an appointed site Health and Safety Officer;
- A safety and health-risk analysis for each site task and operation;
- Employee training requirements;
- Specification of PPE to be used by employees for each of the site tasks and operations being conducted;
- Medical surveillance requirements;
- Frequency and types of air monitoring, personnel monitoring, and environmental sampling techniques and instrumentation to be used;
- Site control measures;
- Decontamination procedures;

- Site standard operating procedures; and
- A contingency plan for responses to emergencies.

6.2 Training

All personnel performing monitoring, inspection, or remediation activities at the BB&S Lumber Corporation Site must complete OSHA's 40-hour health and safety training course for work at hazardous waste sites. This includes 8-hour refresher training, first aid/cardiopulmonary resuscitation (CPR) training, and annual physical examinations.

6.3 Emergency Telephone Numbers

NYSDEC – Albany O&M Section 518/457-0927

7 References

AECOM Technical Services Northeast, Inc. 2009. *Supplemental Pre-Design Investigation Report, BB&S Treated Lumber Site, Site # 1-52-123 Southampton, NY, Work Assignment No. D004445-16.1.* Prepared for NYSDEC. July 2009.

Earth Tech Northeast, Inc. 2007. *Pre-Design Investigation Report, BB&S Treated Lumber Site #1-52-123, Work Assignment No. D003821-18.1.* Prepared for NYSDEC. March 2007.

Groundwater Technology, Inc. March 1986. *Subsurface Investigation Project Update for BB&S Treated Lumber Corporation.* Prepared by Groundwater Technology, Inc.

_____. November 4, 1988. Project Update for the BB&S Treated Lumber Corporation Site, July – September 1988. Prepared by Groundwater Technology, Inc.

Malcolm Pirnie, Inc. 1998. Remedial Investigation Report, BB&S Treated Lumber Site, Speonk, New York. Prepared for NYSDEC. June 1998.

_____. 1999. *Engineering Feasibility Study, BB&S Treated Lumber Site (#152123), Speonk, Long Island, New York.* Prepared for NYSDEC. August 1999.

New York State Department of Environmental Conservation (NYSDEC). 1998. Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

_____. 2009a. *Amended Record of Decision, BB&S Treated Lumber Corporation Site Southampton, Suffolk County, New York, Site No. 1-52-123*. October 2009.

_____. 2009b. Commissioner Policy 43: *Groundwater Monitoring Well Decommissioning Policy*. November 2009.

_____. 2010a. *Final Technical Guidance for Site Investigation and Remediation*, DER-10, 3 May 2010.

_____. 2010b. DEC Policy – CP-51 / Soil Cleanup Guidance. October 21, 2010.

New York State Department of Health (NYSDOH). November 2011. *Unofficial Compilation of Codes, Rules, and Regulations of the State of New York*. Title 10. Department of Health, Chapter 1. State Sanitary Code, Part 5. Drinking Water Supplies, Subpart 5-1. Public Water Systems.

Suffolk County Department of Health Services (SCDHS). May 17, 1985. Letter from Martin Trent, to BB&S. Advisory of chromium and arsenic in a supply well at the BB&S Site.

Suffolk County Water Authority. 2011. *2011 Annual Drinking Water Quality Report.*

U.S. Environmental Protection Agency (EPA). 2007. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, Third Edition (Revision 6, February 2007).

A Amended Record of Decision

Department of Environmental Conservation

Division of Environmental Remediation

Amended Record of Decision

BB&S Treated Lumber Corporation Site
Southampton, Suffolk County, New York
Site Number 1-52-123

October 2009

New York State Department of Environmental Conservation
DAVID PATERSON, *Governor* ALEXANDER B. GRANNIS, *Commissioner*

DECLARATION STATEMENT – AMENDED RECORD OF DECISION

BB&S Treated Lumber Corporation Inactive Hazardous Waste Disposal Site
Southampton, Suffolk County, New York
Site No. 1-52-123

Statement of Purpose and Basis

The Amended Record of Decision (AROD) presents the selected remedy for the BB&S Treated Lumber Corporation site, a Class 2 inactive hazardous waste disposal site. The selected remedial program was chosen in accordance with the New York State Environmental Conservation Law and is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300), as amended.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for the BB&S Treated Lumber Corporation inactive hazardous waste disposal site, and the public's input to the Proposed Amendment to the Record of Decision Amendment presented by the Department. A listing of the documents included as a part of the Administrative Record is included in Appendix B of the AROD.

Assessment of the Site

Actual or threatened releases of hazardous waste constituents from this site, if not addressed by implementing the response action selected in this AROD, presents a current or potential significant threat to public health and/or the environment.

Description of Selected Remedy

Based on the results of the Remedial Investigation and Feasibility Study (RI/FS) and Pre-Design Investigations (PDI) for the BB&S Treated Lumber Corporation site and the criteria identified for evaluation of alternatives, the Department has selected excavation and off-site disposal remedy to replace the on-site soil treatment remedy specified in the original ROD. The remedy will also eliminate the extraction and treatment component of the groundwater remedy by offering to fund and provide an alternate water source (AWS) to authorized homes and businesses as determined by the Department and the New York State Department of Health (NYSDOH).

The components of the remedy are as follows:

1. A remedial design program to verify the components of the conceptual design and provide the details necessary for the construction, operation and maintenance and monitoring of the remedial program.

2. The offer to immediately fund and provide an AWS to authorized homes and businesses as determined by the Department and the NYSDOH.

3. Excavation of on-site soil exceeding the groundwater protection soil cleanup objectives (SCOs) for arsenic and hexavalent chromium set forth in 6 NYCRR Part 375, dated December 14, 2006 (Part 375) and exceeding the Department Technical and Administrative Guidance Memorandum (TAGM) 4046 SCO for total chromium. Transportation, pre-treatment (as necessary) off-site and disposal of soil determined to be a hazardous waste into a Resource Conservation and Recovery Act (RCRA) Subtitle C landfill permitted to accept hazardous waste. Contaminated soil characterized to be non-hazardous will be transported off-site for disposal into a RCRA Subtitle D landfill permitted to accept non-hazardous solid waste. Clean fill meeting the requirements of Part 375 will be used as backfill to replace the excavated soil and establish the designed grades at the site.

4. Excavation of off-site soil exceeding unrestricted use SCOs for arsenic, hexavalent chromium, and trivalent chromium set forth in Part 375. All of the off-site soil excavated within the drainage swale will be considered a F035 listed hazardous waste which will require transportation, pre-treatment (as necessary) off-site and disposal into a RCRA Subtitle C landfill permitted to accept hazardous waste. Clean fill meeting the requirements of Part 375 will be used as backfill to replace the excavated soil and establish the designed grades at the site.

5. Installation of additional off-site groundwater wells to monitor plume attenuation and migration. The new off-site wells will include sentinel groundwater monitoring wells between the contaminant plume and downgradient water supply wells. Sampling of a select number of groundwater wells and downgradient private water supply wells to monitor plume migration.

6. Development of a site management plan (SMP) since the remedy results in soil contamination above unrestricted levels remaining on-site. The SMP will include the following controls: (a) address residual contaminated soil adjacent to and below the former CCA treatment area and the former drip pad area located along the western perimeter of the site that may be excavated during future redevelopment. The plan will require soil characterization and, where applicable, disposal/reuse in accordance with Department regulations; (b) identify any use restrictions; (c) provide for the operation and maintenance of the components of the remedy; and (d) long-term monitoring of groundwater.

7. The imposition of an institutional control on-site in the form of an environmental easement that will (a) require compliance with the approved SMP; (b) limit the use and development of the property to commercial or industrial; (c) restrict the use of groundwater as a source of potable water, without necessary water quality treatment as determined by the NYSDOH and/or the Suffolk County Department of Health Services (SCDHS); and (d) require the site property owner to complete

and submit to the Department a periodic certification. The property owner will be required to provide a periodic certification, prepared and submitted by a professional engineer or such other expert acceptable to the Department, until the Department notifies the property owner in writing that this certification is no longer needed. This submittal will contain certification that the institutional controls and engineering controls, are still in place, allow the Department access to the site, and that nothing has occurred that will impair the ability of the control to protect public health or the environment, or constitute a violation or failure to comply with the site management plan.

8. Site engineering control measures (i.e., fencing) will be repaired and maintained to restrict access and protect remedial components.

New York State Department of Health Acceptance

The NYSDOH concurs that the remedy selected for this site is protective of human health.

Declaration

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

OCT 2 7 2009

Date

Dale A. Desnoyers, Director
Division of Environmental Remediation

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AMENDED RECORD OF DECISION

BB&S Treated Lumber Corporation Site
Southampton, Suffolk County, New York
Site No. 1-52-123
September 2009

1.0 INTRODUCTION

On February 25, 2000, the New York State Department of Environmental Conservation (Department) signed a Record of Decision (ROD) which originally selected a remedy to clean up the BB&S Treated Lumber Corporation (BB&S) Site. The remedy selected at the time included the installation of on-site and off-site extraction wells to contain and capture the plume of contaminated groundwater. A long-term groundwater monitoring program would also be instituted. Remediation of impacted on-site and off-site soil would require excavation and consolidation within the lumber yard for treatment in a temporary plant using solidification/stabilization technology. All excavated areas would be backfilled with clean soil and re-seeded.

Pre-remedial design investigations (PDI) of groundwater have shown that the contaminant plume has reduced in concentration since completion of the ROD. Moreover, the Suffolk County Water Authority (SCWA) has since installed a public water line in the area making public water available to home and business owners situated downgradient of the site along Speonk-Riverhead Road, Fifth Avenue, and Old Country Road. In addition, the PDI have redefined the extent of contaminated soil requiring remediation. As a result, the planned excavation limits have since been expanded from those originally identified in the ROD to include additional volumes of impacted soil located both on-site and off-site.

With the increased soil volume now requiring remediation, the Department is replacing the on-site soil treatment remedy with an excavation and off-site disposal remedy. The remedy will also eliminate the extraction and treatment component of the groundwater remedy by offering to fund and provide an alternate water source (AWS) to authorized homes and businesses as determined by the Department and the New York State Department of Health (NYSDOH).

A public comment period was opened on June 22, 2009 in order to provide an opportunity for the public to comment on the proposed changes to the ROD remedy. The comment period was closed on August 31, 2009.

A public meeting on this site was held at the Incorporated Village of Westhampton Beach Office Meeting Room located at 165 Mill Road, Westhampton Beach, on July 14, 2009. At the meeting, a description of the original ROD and the circumstances that have led to proposed changes in the ROD was presented. After the presentation, a question and answer period was held, during which time the public provided verbal comments on the proposal. During that meeting attendees requested additional time to receive, review, and comment on the PDI data gathered by the Department. On July 15, 2009 the Department announced in a press release that the comment period was being

extended by an additional thirty (30) days from July 30, 2009 to August 31, 2009. Verbal and written comments received during the comment period have been summarized and responses provided in the Responsiveness Summary (Appendix A).

The information here is a summary of what can be found in greater detail in reports that have been placed in the Administrative Record for the site (Appendix B). These documents are available at the following repositories:

Westhampton Free Library
7 Library Avenue
Westhampton Beach, NY 11978
Phone: (631) 288-3335
Hours: Monday - Friday 9:30 a.m. - 5 p.m.;
Saturday 9:30 a.m. – 5 p.m.;
Sunday 1 p.m. – 5 p.m.
http://wham.suffolk.lib.ny.us

Department Region 1 Office
50 Circle Road
Stony Brook, NY 11790
Phone: (631) 444-0240
Please call for an appointment
Hours: Monday - Friday
8:30 a.m. - 4:45 p.m.

2.0 SITE INFORMATION

2.1 Site Description

As seen in Figure 1 the BB&S site is located in the Town of Southampton in eastern Suffolk County, Long Island. The approximately five-acre site was most recently used as a lumberyard for wholesale and retail lumber distribution (Best Building Supply and Lumber Company). In May 2009 the lumberyard ceased operations and filed for Chapter 11 bankruptcy. The site is currently being leased by the property owner to park tractor-trailers.

The site is located on Speonk-Riverhead Road, approximately 1.5 miles north of the Hamlet of Speonk. The site is found in a rural area considered part of the Central Pine Barrens Preserve (Pine Barrens). There are homes and businesses found within a half-mile radius of the site, including south of the site in the general direction of groundwater flow. There are some homes and businesses in the downgradient area that still utilize private water supplies, obtained primarily from the Upper Glacial Aquifer, a highly transmissive sand and gravel aquifer. The Upper Glacial Aquifer is underlain by the Gardiners Clay unit to the south of the site expected at depths approximately 130-150 feet below ground surface (bgs) or greater.

2.2 Site History

From the early 1980s to 1996, the site operated as a lumber treatment and storage facility. Lumber was pressure treated on-site using a chromated copper arsenate (CCA) solution. CCA is a 6 NYCRR Part 371 listed hazardous waste when spent or disposed of without treatment (code number F035). CCA was documented to be released to the environment through surface spills and sump leakage. A flame proofing solution containing zinc oxide was also used at the site for a time to treat lumber.

Releases of CCA to groundwater are believed to have occurred through leakage from the collection sumps and through malfunction of an on-site water supply well valve. Spills originating from the concrete pad most likely account for soil contamination noted in the vicinity of the metal and frame buildings and for contamination found in the on-site drainage ditch. Higher concentrations of CCA derived contaminants found off-site on the west side of Speonk-Riverhead Road within the Pine Barrens, across from a site drainage culvert, indicate larger surface discharges or spills in the past. Drippings from stored and treated lumber most likely account for soil contamination east of the former treatment area within the on-site lumber yard area.

BB&S conducted its own environmental study between 1985 and 1987 after the Suffolk County Department of Health Services (SCDHS) identified chromium contamination in an on-site water supply well. As a result, BB&S installed a network of on-site and off-site groundwater monitoring wells and three groundwater extraction wells. BB&S used the extraction wells to pump and treat groundwater at the site from 1987 to 1996. The groundwater treatment system frequently failed to meet surface water discharge requirements for chromium. Consequently, the Department placed the BB&S Site on the New York State Registry of Inactive Hazardous Waste Disposal Sites in 1993 and negotiated with BB&S to have the company perform a Remedial Investigation/Feasibility Study (RI/FS). BB&S declined to perform additional investigations. Therefore, the Department performed the RI/FS using state superfund monies. The original ROD for the site was issued on February 25, 2000. The Department initiated a PDI in April 2001 through April 2003 that included shallow soil sampling and groundwater profiling of the chromium plume. In the summer of 2003, work was suspended while the Department negotiated with BB&S after the company expressed an interest in implementing a remedy at the site. The negotiations failed, and in February 2005 the Department resumed its plan to design and implement the remedy. The majority of the PDI field work was completed between September 2005 and February 2006. Additional PDI activities were initiated by the Department in December 2007 and included an assessment of the existing groundwater treatment system installed by BB&S in 1987, on-site and off-site soil sampling, installation and sampling of four sentinel multi-level groundwater monitoring wells, survey and sampling of existing private water supplies, a literature review to identify available technologies suitable for treating contaminated soil on-site, bench scale testing of the contaminated soil, and development of plans and specifications for the purpose of competitively bidding the cleanup remedy. More private water supply well sampling along Speonk-Riverhead Road and Fifth Avenue was conducted by the Department in April 2009 and June 2009 as part of initial long-term efforts to monitor groundwater plume migration and potential impacts to potable water supplies.

2.3 Nature and Extent of Site Contamination

As described in the original ROD and other documents, many soil and groundwater samples were collected at the site to characterize the nature and extent of contamination. The primary contaminants of concern include inorganics (metals), specifically chromium (in both the hexavalent and trivalent forms) and arsenic. A total of 174 soil borings were advanced from 2001 through 2008 as part of the PDI, and approximately 500 soil samples were submitted for laboratory analysis for arsenic and chromium in order to further delineate the nature and extent of contaminated soil associated with the BB&S Site.

Chromium and arsenic are present in soil and exceed their respective soil cleanup objectives (SCOs) identified in 6 NYCRR Part 375, dated December 14, 2006 (Part 375) and Department Technical and Administrative Guidance Memorandum (TAGM) 4046. Chromium and arsenic are found exceeding their SCO values in surface, shallow and deep soil on-site; and in surface and shallow soil off-site just outside the eastern perimeter of the site and in an area referred to as a "drainage swale" (a zone of surface runoff). The off-site drainage swale begins at Speonk-Riverhead Road, near the BB&S Site former CCA treatment building and drip pad, and drains off-site in a southwestern direction. Analytical results identified elevated arsenic and chromium concentrations above SCO values that extend approximately 700 feet in the drainage swale west of the road. Copper was often found above its SCO value in soil where arsenic and chromium were also found. Zinc was also found in soil above its SCO value but to a lesser extent throughout the site.

The pre-existing site groundwater monitoring well network of 15 wells (8 on-site monitoring wells, 5 off-site monitoring wells, and 2 former recovery wells) was expanded in May 2008 with the installation of 14 new groundwater monitoring wells. Specifically, at that time the Department installed four off-site multi-level monitoring wells (MW-17 through MW-20) to further delineate the groundwater plume and assess downgradient groundwater quality. Also, two additional on-site shallow monitoring wells (MW-21 and MW-22) were installed within the former lumber treatment source areas to further characterize source area groundwater quality and to further delineate the vertical extent of soil contamination. Moreover, in August 2009 the Department installed 12 additional off-site multi-level groundwater wells to monitor plume attenuation (MW-23, MW-24, MW-25, MW-26). The initial round of groundwater sampling of these wells is expected to occur in early Fall 2009. The current groundwater monitoring network now consists of 41 wells (10 on-site monitoring wells, 29 off-site monitoring wells, and 2 former recovery wells).

The BB&S groundwater plume is currently known to extend at least 4,000 feet south of the site. The primary contaminant in groundwater is hexavalent chromium. Arsenic and copper were also detected in groundwater both on-site and immediately downgradient of the site. Copper and zinc were infrequently noted in groundwater above their Standard, Criteria, and Guidance (SCG) values.

As seen in Figures 2, 3, and 4 and summarized in Table 1 of the ROD Amendment, the main categories of contaminants that exceed their SCGs are metals. For comparison purposes, where applicable, SCGs are provided for each medium.

The following are the media which were investigated and a summary of the findings of the investigation. Chemical concentrations are reported in parts per billion (ppb) for water and parts per million (ppm) for soil.

On-Site Soil

Based on the RI and PDI data, an estimated 12,700 cubic yards (CY) of soil will require excavation and off-site disposal to obtain compliance with Part 375 SCOs to protect the groundwater for arsenic (16 ppm) and hexavalent chromium (19 ppm). Since there is no

Part 375 SCO for total chromium associated with the protection of groundwater due to its low solubility, the SCO for total chromium has been determined by utilizing TAGM 4046 (50 ppm).

Of 102 soil samples collected for hexavalent chromium analyses during the RI and PDI, all but two results were non-detect or well below 19 ppm. One of the two samples was collected from beneath the former treatment building where the concrete cap will be maintained, and the second was from the off-site drainage swale and within the current planned excavation limits. Many of the soil samples collected were of impacted soil with total chromium concentrations as high as 1,300 ppm on-site and 1,180 ppm off-site (refer to Table 1). Based on these results, the SCO of 50 ppm for total chromium identified in the ROD will reach compliance with the 19 ppm hexavalent chromium SCO and, therefore, will be considered to be protective of the groundwater quality for chromium.

Figure 2 is a map that depicts the lateral and vertical limits of the on-site soil to be excavated and removed in order to obtain compliance with the established SCO's for arsenic and chromium based on analytical results for all samples collected in the on-site area both during the RI and PDI. Based upon evaluation of this figure, the volume of impacted soil in on-site areas requiring remediation is estimated at 12,700 CY. As further indicated on Figure 2, shallow soil arsenic and chromium contamination has been detected around the former CCA treatment building and concrete drip pad building, and along the northern and eastern perimeter of the site (refer to Figure 2 for the concrete drip pad, former CCA treatment building, and vehicle maintenance shop locations). This delineation is consistent with that depicted in the RI and FS. The on-site area with the most widespread impacted soil appears to surround the former CCA treatment building and concrete drip pad. Impacted soil was detected up to a depth of 5 feet below grade near most of the perimeter of these structures. Since deep excavation adjacent to the buildings has the potential to cause structural damage, the estimated removal volume assumes that no more than one foot of material will be excavated from within four feet of these buildings. Contaminated soil remaining below this depth in these areas determined to be exceeding the SCOs will be demarcated with a visual barrier (e.g., geotextile fabric), and then capped with an asphalt and/or geomembrane material as an apron around the buildings to prevent precipitation/runoff from being able to infiltrate through the residual impacted soil. The amount of on-site soil contamination to remain in these areas for future site management under an environmental easement has been estimated at 14,000 CY.

During the PDI soil borings were drilled beneath the contaminant source area to a depth of approximately 40 feet bgs at most locations. Specifically, borings were drilled through the concrete drip pad, inside the former CCA treatment building, and inside the vehicle maintenance shop. Based upon review of the analytical data generated, samples from two borings installed through the concrete drip pad exhibited the highest concentrations detected in site soil, with 1,410 ppm of arsenic and 1,300 ppm of chromium at a depth of 4 feet bgs, and elevated concentrations of arsenic to a depth of 8 feet bgs. In addition, deeper soil samples collected beneath the former CCA treatment building exhibited elevated concentrations of arsenic at 23 feet bgs (233 ppm) to 39 feet bgs (47.1 ppm).

In general, soil samples collected along the northern and eastern sides of the site exhibited impacted soil to a depth of 1 to 3 feet bgs. The concentrations of metals in samples from these locations ranged from non-detect to 231 ppm for arsenic and 1.5 ppm to 320 ppm for chromium.

Off-Site Soil (Drainage Swale)

Based on the RI and PDI data, an estimated 5,700 CY of off-site soil will require excavation and off-site disposal to obtain compliance with Part 375 unrestricted use SCOs for arsenic (13 ppm), trivalent chromium (30 ppm) and hexavalent chromium (1 ppm). Excavation to these SCOs will also be protective of the groundwater. The majority of off-site soil requiring remediation is located from the western property boundary across Speonk- Riverhead Road within the drainage swale (5,600 CY). Approximately 100 CY of soil located outside of the eastern property boundary will also require remediation.

Figure 3 depicts the lateral and vertical limits of off-site (drainage swale) soil to be excavated and removed to obtain compliance with the SCO's for arsenic and chromium based on analytical results for all samples collected during the RI and PDI. The map depicts the total volume of soil to be removed from the drainage swale and is representative of approximately 5,600 CY. Analytical results identified concentrations of arsenic up to 672 ppm and chromium up to 1,180 ppm in surface soil from this area.

Figure 3 also shows that arsenic and chromium exceed their SCOs and are essentially confined laterally near the longitudinal axis of the base of the swale (i.e., did not extend laterally out of the swale) extending approximately 600 feet west from the culvert discharge point where discharge of CCA waste from the site to the drainage swale originated. The most elevated detections of arsenic and chromium were found at depths of 1 and 4 feet bgs. There were 15 samples collected from the drainage swale and analyzed for hexavalent chromium. The samples were collected from the surface down to a depth of 2 feet bgs. Thirteen samples were found to be non-detect and only two samples had detections of 2 ppm and 3 ppm. The PDI sampling rationale was based on the RI surface and subsurface hexavalent chromium results being non-detect or very low even in areas of high total chromium concentrations, suggesting the hexavalent chromium overall has readily chemically reduced to the trivalent state.

Groundwater

The PDI groundwater analytical results generated from sampling between 2005 and 2008 indicate that the chromium concentrations along the axis of the contaminant plume have decreased since completion of the RI in 1998. Chromium concentrations in on-site monitoring wells detected during the RI were reported as high as 10 ppm at the time, whereas during the PDI the maximum concentrations decreased to below 1 ppm. The groundwater sample results from monitoring recently conducted in 2008 revealed total chromium and hexavalent chromium concentrations in either or both the total matrix or filtered samples from 17 of the monitoring well samples exceeded applicable New York State Ambient Water Quality Standards for groundwater (NYSGWS) of 50 parts per billion (ppb). Arsenic was detected above the NYSGWS of 25 ppb without an accompanying chromium exceedance in one well (MW-4).

The highest total chromium concentration was detected in downgradient deep well MW-19D (818 ppb in June 2008), located approximately 0.75 miles south of the site, near the intersection of Speonk-Riverhead Road and Old Country Road (see Figure 4). The highest hexavalent chromium concentration was detected in downgradient intermediate depth well MW-17I (600 ppb in June 2008 and 700 ppb in September 2008), located approximately 1/3 of a mile south of the site at 1480 Speonk-Riverhead Road (see Figure 4). Both of these wells were resampled in September 2008 due to high turbidities in June 2008, which appears to have caused sample parameters to be biased high. The highest hexavalent chromium detected in an on-site well was 476 ppb in well MW-21. Contaminant concentrations detected during the 2008 sampling round were noticeably lower than those detected during the previous sampling round (October, 2005), and indicate a continued significant decrease since completion of the RI. The decreasing contaminant trends at the BB&S Site reflect an attenuating plume in the former source area and likely indicate decreasing contaminant loading rates from former source area soils to groundwater. The highly elevated chromium concentrations in samples from downgradient wells MW-17I and MW-19D indicate the contaminant plume has expanded vertically downgradient of the site, to depths of 130 feet or more bgs.

The volatile organic compound (VOC) results for all groundwater samples collected during the 2008 monitoring well sampling event were non-detect. This data indicates that groundwater, downgradient and within the known limits of the BB&S plume, has not been impacted with VOCs.

Private water supply wells within the range of 0.25 - 1.0 miles south of the site are in the potential path of the plume. In January 2001 and February 2001 the private water supply well of a Non-Community Water Supplier (NCWS) located approximately 1500 feet downgradient of site was sampled by the SCDHS. Sampling of the water supply at that time detected 325 ppb of total chromium. The SCDHS transmitted the sampling data to the owner in writing and further recommended that the business connect to the existing public water supply line. It was further recommended at the time that bottled water be used at that location for consumptive purposes until a permanent remedy was found. The business was removed from the NCWS inventory in 2001 due to a non-qualifying population (< 25 persons). Following occupancy of the property by a new landscaping business in 2006, the water supply was sampled again by the SCDHS. Total chromium was again detected at a concentration of 69 ppb. This facility was re-evaluated for but did not meet the criteria to be regarded as a NCWA. The business has since connected to the public water supply existing along Speonk-Riverhead Road.

In June 2008, April 2009, and June 2009 the Department collected tap water samples from private water supply wells located within or near the chromium groundwater plume downgradient of the site. In all samples analyzed, site related contaminants of concern (i.e., arsenic, chromium and copper) were not detected or detected at concentrations less than applicable maximum contaminant levels (MCL), as established by the NYSDOH. Although the most recent residential well sampling and analysis effort in the area did not find any private water supply wells contaminated above MCLs, monitoring of plume migration indicates a possible future impact to the remaining private drinking water supplies.

2.4 Summary of Human Exposure Pathways

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the human exposure pathways can be found in Section 6.0 of the RI report that can be found at the document repositories listed on page 2 of the ROD Amendment. An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has five elements: [1] a contaminant source; [2] contaminant release and transport mechanisms; [3] a point of exposure; [4] a route of exposure; and [5] a receptor population.

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

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

Pathways which are known to or may exist on and off the site include:

- ingestion, direct contact, and inhalation of soils or dusts when disturbing surface or subsurface soil as part of typical work (i.e., moving piles with equipment), repairs (i.e., utility trench), or recreational activities (i.e., off-roading); and

- ingestion of or direct contact with groundwater from private drinking water supply wells.

2.5 Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts include existing and potential future exposure pathways to fish and wildlife receptors, as well as damage to natural resources such as aquifers and wetlands. The Fish and Wildlife Impact Analysis, which is included in the RI report, presents a detailed discussion of the existing and potential impacts from the site to fish and wildlife receptors.

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

- Absorption of contaminants into plant roots and/or animal ingestion of contaminated plants.

Site contamination has also impacted the groundwater resource in the Upper Glacial Aquifer consisting primarily of brown to gray sand and gravel to a depth of approximately 120-150 feet bgs. Groundwater in the Upper Glacial Aquifer primarily flows south from the site toward the Atlantic Ocean. The Town of Southampton has been designated as a sole source aquifer.

The sole source aquifer designation means that Southampton has only one groundwater resource for its drinking water supply.

2.6 Original Remedy

Based on the results of the RI/FS for the BB&S site and the criteria identified for evaluation of alternatives, the Department selected extraction and treatment of the groundwater plume, and solidification/stabilization with on-site placement of contaminated surface and shallow soil. The components of the February 2000 remedy are as follows:

- A remedial design program to verify the components of the conceptual design and provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program. Any uncertainties identified during the RI/FS would have been resolved.

- Installation of extraction wells on and off-site both to capture the source area of the plume and to intercept the plume at its leading edge where chromium concentrations exceed its SCG of 50 ppb. All collected groundwater would have been piped back to the BB&S property, where a chemical precipitation treatment system in a new building and a reinjection gallery would be constructed. As a contingency plan, any existing household or business in the vicinity of the site whose private water supply becomes impacted by chromium or other site-specific contaminants of concern would have had treatment installed at the point of use.

- Installation of off-site groundwater wells to monitor plume migration. The new off-site wells would have included sentinel groundwater monitoring wells between the contaminant plume or recovery wells and downgradient water supply wells.

- Site fencing would have been repaired and maintained to restrict access and protect remedial components.

- Excavation of on-site and off-site soil where chromium concentrations exceed the TAGM 4046 SCO of 50 ppm (estimated at 5,300 cy). All excavated soil would have been brought into the lumberyard and treated above ground surface within a temporary plant by solidification/stabilization technology. Treated soil would have been placed on site and covered with clean soil and/or the new treatment building or pavement. All excavated areas would have been backfilled with clean soil and reseeded.

- Designation of a Corrective Action Management Unit (CAMU). In order to complete the selected remedy component for soil, ex-situ solidification/stabilization, it would have been necessary to designate a portion of the BB&S property as a CAMU. Generally speaking, a CAMU is an area of the facility that is approved by the Department for the purpose of managing and implementing the treatment requirements of the chosen remedial action. A CAMU is based on federal regulations and promotes the use of on-site treatment of contaminated soil. Without the use of this mechanism, the treated soil could not be placed back into the ground on-site even after contaminants are treated by solidification/ stabilization. Use of a CAMU would have promoted on-site remediation and reduced off-site disposal. The dimensions, location, and maintenance/monitoring program for the CAMU would have been determined during remedial design, in accordance with procedures outlined in 6 NYCRR Part 373-2.19 **(Final Status Standards For Owners and Operators Of Hazardous Waste Treatment, Storage and Disposal Facilities)**.

in 6 NYCRR Part 373-2.19 **(Final Status Standards For Owners and Operators Of Hazardous Waste Treatment, Storage and Disposal Facilities).**

- Implementation of the remedy would have resulted in untreated hazardous waste remaining at the site, since a long period of time would have been required to clean up the groundwater plume. A long-term monitoring program would have been instituted. This program would have consisted chiefly of periodic sampling of existing on-site monitoring wells and new off-site wells. This monitoring would have began as soon as possible and would have continued during and after installation of the selected groundwater collection and treatment system. This program would have monitored the effectiveness of the groundwater remediation and would have been a component of future operation and maintenance for the site.

3.0 DESCRIPTION OF CHANGES

3.1 New Information

Early in the PDI process, some on-site and off-site areas were re-sampled to better define the nature and extent of impacted soil and groundwater that will require remediation. PDI groundwater data collected in the summer of 2008 has shown that the contaminant plume has attenuated since issuance of the ROD. The highest contaminant concentrations are now found in the downgradient groundwater monitoring wells and also appear to have migrated vertically to depths of at least 130 feet or more bgs. Remaining private water supply wells nearest the site and within the plume were most recently sampled by the Department in July 2008, March 2009 and June 2009. Hexavalent chromium was detected in two of the wells sampled in June 2008, but at levels below the water quality standard of 50 ppb that are known to cause adverse health effects.

Furthermore, since issuance of the ROD, a public water line was installed by the SCWA in June 2001 along Old Country Road and Speonk-Riverhead Road, making public water available to residents and businesses located immediately downgradient of the site to the south.

Based upon subsequent soil data gathered and evaluated during the PDI, the planned on-site and off-site excavation limits have been redefined and expanded from those originally identified in the ROD. Specifically, the total approximate volume of on-site and off-site soil determined to require remediation has been increased from 5,300 CY to 18,400 CY, a 247% increase in volume of 13,100 CY. Also, the amount of on-site soil contamination located adjacent to and beneath the former CCA treatment area and concrete drip pad that is currently inaccessible and will remain for future site management has been estimated at 14,000 CY.

Following issuance of the ROD in 2000, the Department and the NYS Office of the Attorney General initiated negotiations with an adjacent property owner located immediately south of BB&S Site in order to obtain access associated with the testing of existing groundwater recovery wells on the property previously installed by BB&S and the installation of new groundwater recovery wells required by the ROD. The property owner continued to deny the Department access to the property to carry out the ROD remedy, causing the Department to evaluate other remedial alternatives for the groundwater and prolonging completion of remedial design activities.

3.2 Changes

The groundwater extraction and treatment remedial alternative selected for the site in the original ROD has been eliminated and replaced with a comprehensive groundwater monitoring program including taking necessary actions to offer, fund and provide an AWS in accordance with Department program policy **Assistance for Contaminated Water Supplies, dated July 2008 (DER-24)** to authorized homes and businesses as identified by the Department and the NYSDOH. The major factors considered in making this decision are as follows:

- While the contaminant plume has migrated downgradient of the site and has migrated vertically to depths of 130 feet or more bgs, the PDI groundwater sample data shows that contaminant levels have decreased significantly at the BB&S Site since issuance of the ROD, indicating reduced contaminant loading to groundwater in the former lumber treatment source area and residual impacted soil at the site.

- Implementation of soil remedial actions planned for the BB&S Site can be expected to further reduce or eliminate future contaminant loading to groundwater, which will promote increased attenuation rates of the groundwater plume.

- The ROD groundwater remedial scenario will not feasibly remove contaminants that are now migrating further downgradient of the site. Based on the lateral and vertical expanse of the plume downgradient of the site, the cost to implement a combined on-site and off-site groundwater remedial scenario is currently estimated to be in the range of $8 to $10 million to construct.

- A public water supply is now available to potentially impacted properties located downgradient of the BB&S Site. The estimated cost to fund and provide an AWS to authorized homes and businesses is approximately $160,000.

Also, the on-site soil treatment remedy identified within the original ROD will be replaced with an excavation and off-site disposal remedy. The major factors considered in making this decision as follows:

- The PDI redefined the extent of contaminated soil requiring remediation. As a result, the planned excavation limits have since been expanded from those originally identified in the ROD to include additional impacted soil located both on-site and off-site. Based on results from the PDI the volume of soil identified for remediation is being increased by 13,100 CY from the ROD. Under this amendment an estimated 12,700 CY of on-site contaminated soil will be excavated and disposed of off-site. The amount of on-site soil contamination located adjacent to and beneath the former CCA treatment area and concrete drip pad that is currently inaccessible and will remain for future site management has been estimated at 14,000 CY. An estimated 5,700 CY of off-site contaminated soil, located primarily within the drainage swale, will also be excavated and disposed of off-site.

- The updated estimated present worth cost to complete the soil remedy as prescribed in the ROD taking into account the revised excavation limits (18,400 CY) is $11.7 million. The estimated present worth cost for the amended remedy associated with the off-site disposal of 18,400 CY of soil is $7.6 million. Based on this analysis, the Department has amended the soil remedy to the off-site disposal option.

4.0 EVALUATION OF CHANGES

4.1 Remedial Goals

Goals for the cleanup of the site were established in the original ROD. The goals selected for this site are to:

- Eliminate, to the extent practicable, ingestion of groundwater affected by the site that does not attain NYSDOH Part 5 Drinking Water Standards.
- Eliminate, to the extent practicable, exposures to workers from shallow contaminated soil on-site.
- Eliminate, to the extent practicable, exposures to the public from shallow contaminated soil on-site and off-site.
- Eliminate, to the extent practicable, the exposure of wildlife to shallow contaminated soil on-site and off-site.

4.2 Evaluation Criteria

The criteria used to compare the remedial alternatives are defined in the regulation that directs the remediation of inactive hazardous waste sites in New York State (Part 375). For each criterion, a brief description is provided. A detailed discussion of the evaluation criteria and comparative analysis is contained in the original Feasibility Study dated August 1999.

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

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

   For groundwater, both the amended remedy and the ROD remedy will result in an untreated portion of the plume being left to migrate and monitor. Under both scenarios, protection of public health will be achieved through monitoring well and private water supply monitoring and the provision of an AWS to authorized homes and businesses as identified by the Department and the NYSDOH. The amended remedy will be protective of the environment in that the site groundwater contamination has recently been determined to be attenuating. In addition, there are no surface water bodies, fish, wildlife, or vegetation in danger of being affected by the groundwater.

With regard to the amended soil remedy, excavation and off-site disposal will be protective of human health and the environment since contaminated soil will be removed from the site, off-site from the drainage swale and the eastern side of property boundary. The solidification/stabilization and on-site placement of contaminated surface and shallow soil required in the ROD remedy would have been protective of human health and the environment by covering the contamination with a protective cover. However, the on-site treatment and placement remedy would have left the treated, contaminated media in place requiring long-term site management. The amended off-site disposal remedy will be more protective of the environment than the ROD on-site treatment remedy because less residual contamination will remain that could potentially provide an ongoing source of contamination to the groundwater. The on-site area with the most widespread impacted soil appears to surround the former CCA treatment building and concrete drip pad. Impacted soil was detected up to a depth of 5 feet below grade near most of the perimeter of these structures. Since deep excavation adjacent to and beneath the buildings has the potential to cause structural damage, the estimated removal volume assumes that no more than one foot of material will be excavated from within four feet of the buildings and there will be no excavation below the footprint of the buildings. Contaminated soil remaining below this depth exceeding the SCOs will be demarcated with a visual barrier (e.g. geotextile fabric), and then capped with an asphalt and/or geomembrane material as an apron around the buildings to minimize the potential for human exposure and to prevent precipitation/runoff from being able to infiltrate through the residual impacted soil. The amount of on-site soil contamination to remain in these areas for future site management has been estimated at 14,000 CY. The excavation depths from both alternatives will be sufficient in protecting human health and ecological receptors because potential surface soil exposures will be eliminated. The engineering and institutional controls will reduce the potential for contact with remaining subsurface contaminated soil below the former CCA treatment area.

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

   The relevant soil cleanup objectives at the BB&S site are in compliance with Part 375 SubPart 6 Remedial Program SCOs and TAGM 4046. On-site soil compliance with Part 375 groundwater protection SCOs for arsenic (16 ppm) and hexavalent chromium (19 ppm) will be achieved. There is no Part 375 SCO for total chromium associated with the protection of groundwater due to its low solubility. Therefore, the SCO has been determined by utilizing TAGM 4046 (50 ppm). For off-site soil compliance with unrestricted use SCOs for arsenic (13 ppm), trivalent chromium (30 ppm), and hexavalent chromium (1ppm) will be achieved (Table 2).

   Groundwater, drinking water and surface water SCGs identified for the BB&S site are based on NYSGWS and Part 5 of New York State Sanitary Code. For groundwater, the SCG for total chromium is 50 ppb and arsenic is 25 ppb. Once the source is removed, the groundwater standards will be met over time.

The proposed remedy will not be effective for remediation of contaminated groundwater, as groundwater treatment is not part of the amended remedy. However, given the recent reductions in groundwater contaminant concentrations, the amended remedy will monitor the remedial goals by evaluating the changes over an extended period of time to verify that selected downgradient locations are experiencing a decrease in contaminated groundwater concentrations. The original ROD remedy would have been expected to achieve the remedial action objectives for a significant portion of the contaminated groundwater. However, any contamination remaining adjacent to and below the former CCA treatment area and the former drip pad area (refer to Figure 2) has a potential to leach from site soil and provide a potential ongoing source of groundwater contamination. The amount of on-site soil contamination to remain in this area has been estimated at 14,000 CY. Additionally, it is assumed that groundwater contamination located downgradient of the site will not meet SCGs as the plume will not be captured for remediation but will expect to continue to decrease in concentration.

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

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

   With regard to the amended and original ROD soil remedies, both remedies will have short-term impacts. The impacts associated with excavation activities will be more significant with the on-site treatment and placement alternative, which will require more handling of the contaminated media. In addition, the on-site treatment and placement alternative would have left the contaminated media in place and will have posed various degrees of short-term impacts to on-site workers, visitors, the public, and the environment from disturbance and/or transport. The amended remedy eliminates this impact.

   For groundwater, the amended remedy will not be expected to generate contaminant releases. However, the original ROD remedy involves intrusive construction work which could cause releases of contamination during excavation activities. The amended groundwater remedy will be expected to potentially pose minor disruptions to off-site areas (installation of outpost and monitoring wells). The ROD remedy would be expected to pose significant disruptions to existing site activities and operations during construction of the treatment building.

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

The original ROD remedy would be considered a reliable and permanent remedy for site-contaminated groundwater and an adequate and reliable remedy for protecting human health and the environment (in terms of affecting habitat or vegetation) due to groundwater. The ROD remedy would establish long-term effectiveness for the shallow and intermediate portion of the aquifer related to metals because those areas of the plume would have been captured and treated. Portions of the downgradient contaminant plume that would not be captured for treatment would have continued to attenuate and institutional controls would have been imposed. For the amended remedy institutional controls will be imposed upon groundwater use at the site which will comply with NYSDOH and SCDHS use and development restrictions.

For remediation of impacted soil, the amended soil remedy is considered to be a reliable remedy for site contaminated soil as a significant portion of the metals contaminated soil will be removed. On-site contaminated soil located in inaccessible areas will remain on-site indefinitely and potentially impact the groundwater. Therefore, both the amended remedy and the original ROD remedy are reliable remedies for mitigating environmental impacts associated with on-site subsurface soil contamination. An institutional control with an environmental easement on the site will be implemented for the amended remedy to limit the risks associated with the contaminated soil left on-site adjacent to and below the former CCA treatment area and the former drip pad area located along the western perimeter of the site.

The amount of on-site soil contamination to remain in this area has been estimated at 14,000 CY. Also with respect to the amended remedy, to address future construction or excavation, a soil management plan (SMP) will be developed.

For groundwater, the amended remedy will not be considered a permanent long-term site remedy for contaminated groundwater because the groundwater will not be actively remediated. Despite this, the amended remedy will provide controls that will monitor the presence of metals in the groundwater in the vicinity and downgradient of the site. In addition, the amended remedy will include monitoring the progress (effectiveness over time) of natural attenuation including the contamination levels, the extent of contamination and the natural processes.

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

   The amended soil remedy will provide for the greatest reduction of toxicity, mobility and volume of contaminants in soil, as a significant portion of the contamination will be removed from the site. The solidification/stabilization and on-site placement of contaminated surface and shallow soil ROD remedy would have also reduced the toxicity and mobility, but not the volume of contaminated soil by leaving the treated media in place on-site.

For groundwater, the amended remedy will not reduce the toxicity, mobility and volume of groundwater contaminants, as treatment of the contaminants is not part of this proposal. The original ROD remedy provides for the greatest reduction of toxicity, mobility and volume of contaminants in groundwater, as a significant portion of the contamination would have been captured and treated. Additionally, any residual waste generated on-site as part of the groundwater treatment process would have been disposed of off-site. On the other hand, recent sampling of the groundwater indicates that the contaminant plume is attenuating since completion of the ROD in 2000.

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

   Both the amended and original ROD soil remedies can be implemented on a technical basis, although they are complicated by the presence of an on-site business utilizing the existing buildings and former lumberyard area. Both remedies will remediate surface and subsurface soil by excavation of contaminated soil using conventional excavation equipment and standard construction methods.

   In order to complete the ROD remedy component for soil (ex-situ solidification/ stabilization) it would have been necessary to designate a portion of the BB&S property as a CAMU, and thus be subject to long-term site management and potential long-term impacts to current and future on-site business operations. Although the planned excavation limits have been expanded the amended soil remedy will result in a short-term impact to any on-site business during remedial construction. Long-term impacts originating from the amended remedy, primarily involving the monitoring of groundwater contaminant levels and an annual certification ensuring that institutional and engineering controls are in place, will be minimal.

   In terms of administrative concerns, these alternatives can be implemented and will require coordination and approval by Town of Southampton, Suffolk County agencies and utility companies as well as site occupants. An institutional control in the form of an environmental easement on the site will be imposed to preclude contact with remaining contaminated media on-site. There are no anticipated, specific problems associated with obtaining permits or approvals from the various agencies and other concerns.

   For groundwater, both the amended remedy and the original ROD remedy can be implemented on a technical basis. Implementation of the ROD remedy would have been more complicated than the amended remedy due to on-site business operations. The materials and services necessary for these remedial alternatives are readily available. In terms of administrative concerns, these alternatives can be implemented through the required coordination and approval by numerous Town of Southampton, Suffolk County agencies and utility companies. For both remedies there are no anticipated problems from the various agencies associated with obtaining permits or approvals and imposing

institutional controls upon groundwater use at the site to comply with SCDHS use and development restrictions.

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

   The original ROD provided an estimated present worth cost to construct and operate the on-site groundwater pump and treat remedial scenario at approximately $3.7 million. Adjusting that cost for an estimated 4% per year inflation increase, the current present worth cost for the on-site remedial scenario is now estimated to be at least $5.7 million. The on-site remedial scenario also would have not removed contaminants that are migrating further downgradient of the Site. Based on the lateral and vertical expanse of the plume downgradient of the Site, the cost to implement a combined on-site and off-site groundwater remedial scenario is estimated to be in the range of $8 to $10 million.

   The cost estimate for the amended groundwater remedy associated with long term on and off-site monitoring of the attenuation of the contaminant plume is $1.4 million. The SCWA public water line provides additional benefits and remedial options at no additional cost to the Department.

   The cost estimate for the amended soil remedy associated with off-site disposal of hazardous soil into a permitted RCRA Subtitle C landfill and non-hazardous soil into a RCRA Subtitle D permitted landfill is $7.6 million. On the other hand, the cost for construction and long-term on-site management for 30 years in a CAMU cell in accordance with the ROD is estimated at $11.7 million.

This final criterion is considered a modifying criterion and is considered after evaluating those above. It is focused upon after public comments on the proposed ROD amendment have been received.

8. **Community Acceptance.** Concerns of the community regarding the changes to the ROD have been evaluated. A responsiveness summary has been prepared that describes public comments received and the manner in which the Department has addressed the concerns raised (Appendix A).

5.0 SUMMARY OF ROD CHANGES

The Department has amended the ROD for the BB&S Site. The changes include:

1. Based upon the elimination of the extraction and treatment component, a revision of soil SCOs for the protection of groundwater in accordance with Part 375. Implementation of this revision will result in a volume increase of on-site soil requiring remediation from 4,000 CY to 12,700 CY. In addition, the revision will result in a volume increase of off-site soil requiring remediation from 1,300 CY to an estimated 5,700 CY (Table 3).

2. The elimination of the groundwater extraction and treatment component. An existing public water supply will be offered to authorized homes and businesses as identified by the Department and the NYSDOH. The cost estimate for the amended groundwater remedy associated with long term on-site and off-site monitoring of the attenuation of the contaminant plume is $1.4 million, an estimated savings of approximately $6.6 million or more over a 30 year period from the ROD remedy (Table 4).

3. The revision of the remedial technology for impacted soil is based upon PDI data, revised soil SCOs, and cost savings. The amended soil remedy includes the off-site transportation, pre-treatment (as necessary) and disposal of hazardous and non-hazardous soil exceeding SCOs at an estimated cost of $7.6 million, an estimated savings of at least $4 million from the ROD remedy (Table 4).

4. The imposition of an institutional control at the on-site area of the site in the form of an environmental easement to limit the risks associated with the contaminated soil left on-site adjacent to and below the former CCA treatment area and the former drip pad area located along the western perimeter of the site. The amount of on-site soil contamination to remain in this area has been estimated at 14,000 CY.

   The estimated present worth cost to carry out the amended remedy is $9,000,000. The estimated present worth to complete the original remedy is $21,700,000. The cost to construct the amended remedy is estimated to be $6,700,000 and the estimated average annual cost for 30 years is $70,000 (Table 4).

5. Development of a SMP.

The elements of the amended remedy are as follows:

1. A remedial design program to verify the components of the conceptual design and provide the details necessary for the construction, operation and maintenance and monitoring of the remedial program.

2. The offer to immediately fund and provide an AWS to authorized homes and businesses as identified by the Department and the NYSDOH.

3. Excavation of on-site soil exceeding the groundwater protection SCOs for arsenic and hexavalent chromium set forth in Part 375 and the TAGM 4046 SCO for total chromium (50 ppm). Transportation, pre-treatment (as necessary) off-site and disposal of soil determined to be a hazardous waste into a RCRA Subtitle C landfill permitted to accept hazardous waste. Contaminated soil characterized as non-hazardous will be transported off-site for disposal into a RCRA Subtitle D landfill permitted to accept non-hazardous, solid waste. Clean fill meeting the requirements of Part 375 will be used as backfill to replace the excavated soil and establish the designed grades at the site.

4. Excavation of off-site soil exceeding unrestricted use SCOs for arsenic (13 ppm), trivalent chromium (30 ppm) and hexavalent chrome (1 ppm) set forth in Part 375. All of the off-site soil excavated within the drainage swale will be considered a F035 listed hazardous waste which will require transportation, pre-treatment (as necessary) off-site and disposal into a RCRA Subtitle C landfill permitted to accept hazardous waste. Clean fill meeting the requirements of Part 375 will be used as backfill to replace the excavated soil and establish the designed grades at the site.

5. Installation of additional off-site groundwater wells to monitor plume attenuation. The new off-site wells will include sentinel groundwater monitoring wells between the contaminant plume and downgradient water supply wells. Sampling of a select number of groundwater wells and downgradient private water supply wells to continue to monitor plume migration.

6. Development of a SMP since the amended remedy results in contamination above unrestricted levels remaining on-site. The SMP will include the following controls: (a) address residual contaminated soil adjacent to and below the former CCA treatment area and the former drip pad area located along the western perimeter of the site that may be excavated during future redevelopment. The plan will require soil characterization and, where applicable, disposal/reuse in accordance with Department regulations; (b) identify any use restrictions; (c) provide for the operation and maintenance of the components of the remedy; and (d) long-term monitoring of groundwater.

7. The imposition of an institutional control on-site in the form of an environmental easement that will (a) require compliance with the approved SMP; (b) limit the use and development of the property to commercial or industrial; (c) restrict the use of groundwater as a source of potable water, without necessary water quality treatment as determined by the NYSDOH and/or the SCDHS; and (d) require the site property owner to complete and submit to the Department a periodic certification. The property owner shall provide a periodic certification, prepared and submitted by a professional engineer or such other expert acceptable to the Department, until the Department notifies the property owner in writing that this certification is no longer needed. This submittal will contain certification that the institutional controls and engineering controls, are still in place, allow the Department access to the site, and that nothing has occurred that will impair the ability of the control to protect public health or the environment, or constitute a violation or failure to comply with the site management plan.

8. Site engineering control measures (i.e., fencing) will be repaired and/or replaced and maintained to restrict access and protect remedial components.

6.0 HIGHLIGHTS OF COMMUNITY PARTICIPATION

As part of the remedial program, a number of citizen participation activities were undertaken in an effort to inform and educate the public about environmental conditions at the BB&S Site. The following public participation activities were conducted for the site:

1. A repository for documents pertaining to the site was established at the Department headquarters in Stony Brook, New York, and also at the Westhampton Free Library, Incorporated Village of Westhampton Beach, New York.

2. A site mailing list was established which included nearby property owners, local political officials, local media and other interested parties.

3. In January 1996, a Fact Sheet announcing the start of the RI/FS and a public meeting was mailed to the site contact list.

4. In February 1996, a public meeting was held in Eastport, New York, concerning the work plan for the RI/FS.

5. In November 1996, a second Fact Sheet was mailed to the site contact list to summarize preliminary RI results and to announce a public meeting.

6. In December 1996, a second public meeting was held in Eastport, New York, to present preliminary RI results.

7. In September 1999, a Fact Sheet was sent to the site contact list announcing the release of the PRAP.

8. A public meeting was held on September 21, 1999, in Eastport, New York, to solicit comments on the PRAP.

9. In February 2000 a Responsiveness Summary was prepared as part of the final ROD and made available to the public, to address the comments received during the public comment period for the PRAP.

10. In April 2004, a Fact Sheet providing an update on the ongoing PDI was mailed to the site contact list.

11. In March 2008, a Fact Sheet announcing the start of the remedial design was mailed to the site contact list.

12. A Fact Sheet was mailed to all persons on the contact list on June 19, 2009 announcing the availability of the June 2009 proposed amendment to the ROD and the associated public meeting.

13. A public meeting was held on July 14, 2009 at the Incorporated Village of Westhampton Beach Office Meeting Room located at 165 Mill Road, Westhampton Beach.

A public comment period for the proposed amendment to the ROD was established, beginning on June 22, 2009 and originally scheduled to end on July 30, 2009. During the public meeting attendees requested additional time to receive, review, and comment on the PDI data gathered by the Department. On July 15, 2009 the Department announced in a

press release that the comment period was being extended an additional 30 days from July 30, 2009 to August 31, 2009. A Responsiveness Summary (Appendix A) was prepared and included as part of this document, to address the comments received during the public comment period for the proposed amendment to the ROD. A notice describing the Department's final decision was sent to all persons on the mailing list on October 30, 2009.

TABLE 1
Nature and Extent of Contamination
1996-2008

ON-SITE SURFACE SOIL	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Inorganic Compounds	Arsenic	1.21 - 298	13	96/162
	Total Chromium	2.20 - 695	30	70/162
	Hexavalent Chromium	ND - 17	1	9/30

OFF-SITE SURFACE SOIL (DRAINAGE SWALE)	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Inorganic Compounds	Arsenic	0.56 - 672	13	40/91
	Total Chromium	1.09 – 1180	30	31/91
	Hexavalent Chromium	ND – 41	1	11/12

ON-SITE SUBSURFACE SOIL	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Acetone	ND – 0.093	0.05	2/9
	Tetrachloroethene	ND – 0.019	1.3	0/9
Inorganic Compounds	Arsenic	ND – 1410	13	57/231
	Total Chromium	0.52 – 1300	30	37/231
	Hexavalent Chromium	ND – 35	1	4/54
	Copper	95.5 – 463	50	4/4

OFF-SITE SUBSURFACE SOIL (DRAINAGE SWALE)	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Inorganic Compounds	Arsenic	ND – 439	13	55/140
	Total Chromium	0.92 – 771	30	53/140
	Hexavalent Chromium	2.20 – 5.5	1	2/2

TABLE 1
Nature and Extent of Contamination
1996-2008

ON-SITE SHALLOW GROUNDWATER[c]	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
Inorganic Compounds	Arsenic	ND to 478	25	6 of 11
	Total Chromium	ND to 771	50	8 of 11
	Hexavalent Chromium	ND to 760	50	6 of 11
	Copper	ND to 386	200	2 of 11
	Iron	ND to 35,200	300	7 of 11

OFF-SITE SHALLOW GROUNDWATER[c]	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
Inorganic Compounds	Arsenic	ND to 2.8	25	0 of 9
	Total Chromium	ND to 389	50	4 of 9
	Hexavalent Chromium	ND to 110	50	3 of 9
	Copper	ND to 40.8	200	0 of 9
	Iron	ND to 33,900	300	5 of 9

ON-SITE INTERMEDIATE GROUNDWATER[c]	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
Inorganic Compounds	Arsenic	ND to 236	25	1 of 2
	Total Chromium	ND to 978	50	2 of 2
	Hexavalent Chromium	ND to 11	50	0 of 2
	Copper	ND to 109	200	0 of 2
	Iron	5,460 to 42,100	300	2 of 2

TABLE 1
Nature and Extent of Contamination
1996-2008

OFF-SITE INTERMEDIATE GROUNDWATER[c]	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
Inorganic Compounds	Arsenic	ND to 11.1	25	0 of 6
	Total Chromium	ND to 677	50	3 of 6
	Hexavalent Chromium	ND to 700	50	2of 6
	Copper	ND to 73.1	200	0 of 6
	Iron	ND to 93,200	300	5 of 6

ON-SITE DEEP GROUNDWATER[c]	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
Inorganic Compounds	Arsenic	ND to 3.6	25	0 of 1
	Total Chromium	ND to 23.2	50	0 of 1
	Hexavalent Chromium	ND to 90	50	1 of 1
	Copper	ND to 6.1	200	0 of 1
	Iron	ND to 5,300	300	1 of 1

OFF-SITE DEEP GROUNDWATER[c]	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
Inorganic Compounds	Arsenic	ND to 126	25	1 of 4
	Total Chromium	ND to 818	50	2 of 4
	Hexavalent Chromium	ND to 10	50	0 of 4
	Copper	ND to 923	200	1 of 4
	Iron	138 to 436,000	300	4 of 4

[a] ppb = parts per billion, which is equivalent to micrograms per liter, ug/L, in water;
ppm = parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
[b] SCG = standards, criteria, and guidance values. Established for **UNRESTRICTED USE** per 6 NYCRR Part 375.
[c] Shallow Groundwater Zone = water table to 70 feet bgs;
Intermediate Groundwater Zone = 70 feet bgs to 100 feet bgs;
Deep Groundwater Zone = 100 feet bgs to 130 feet bgs;
ND = non-detect

TABLE 2
Comparison of Soil Cleanup Objectives

ON-SITE SOIL	Contaminant	*Original ROD SCO[a] (ppm)[b]	**ROD Amendment SCO[a] (ppm)[b]
Inorganic Compounds	Hexavalent Chromium	NS	19
	Trivalent Chromium	NS	NS
	Total Chromium	50	***50
	Arsenic	30	16

NS = Not Specified;
[a] SCO = soil cleanup objectives;
[b] ppm = parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
* Established using Department Technical and Administrative Guidance Memorandum (TAGM) 4046, dated January 1994;
** Established for the **PROTECTION OF GROUNDWATER** using NYCRR Part 375, dated December 14, 2006;
*** SCO established using TAGM 4046. SCO for Total Chromium is not specified in NYCRR Part 375.

OFF-SITE SOIL	Contaminant	*Original ROD SCO[a] (ppm)[b]	**ROD Amendment SCO[a] (ppm)[b]
Inorganic Compounds	Hexavalent Chromium	NS	1.0
	Trivalent Chromium	NS	30
	Total Chromium	50	30
	Arsenic	30	13

NS = Not Specified;
[a] SCO = soil cleanup objectives;
[b] ppm = parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
* Established using Department Technical and Administrative Guidance Memorandum (TAGM) 4046, dated January 1994;
** Established for **UNRESTRICTED USE** per 6 NYCRR Part 375, dated December 14, 2006.

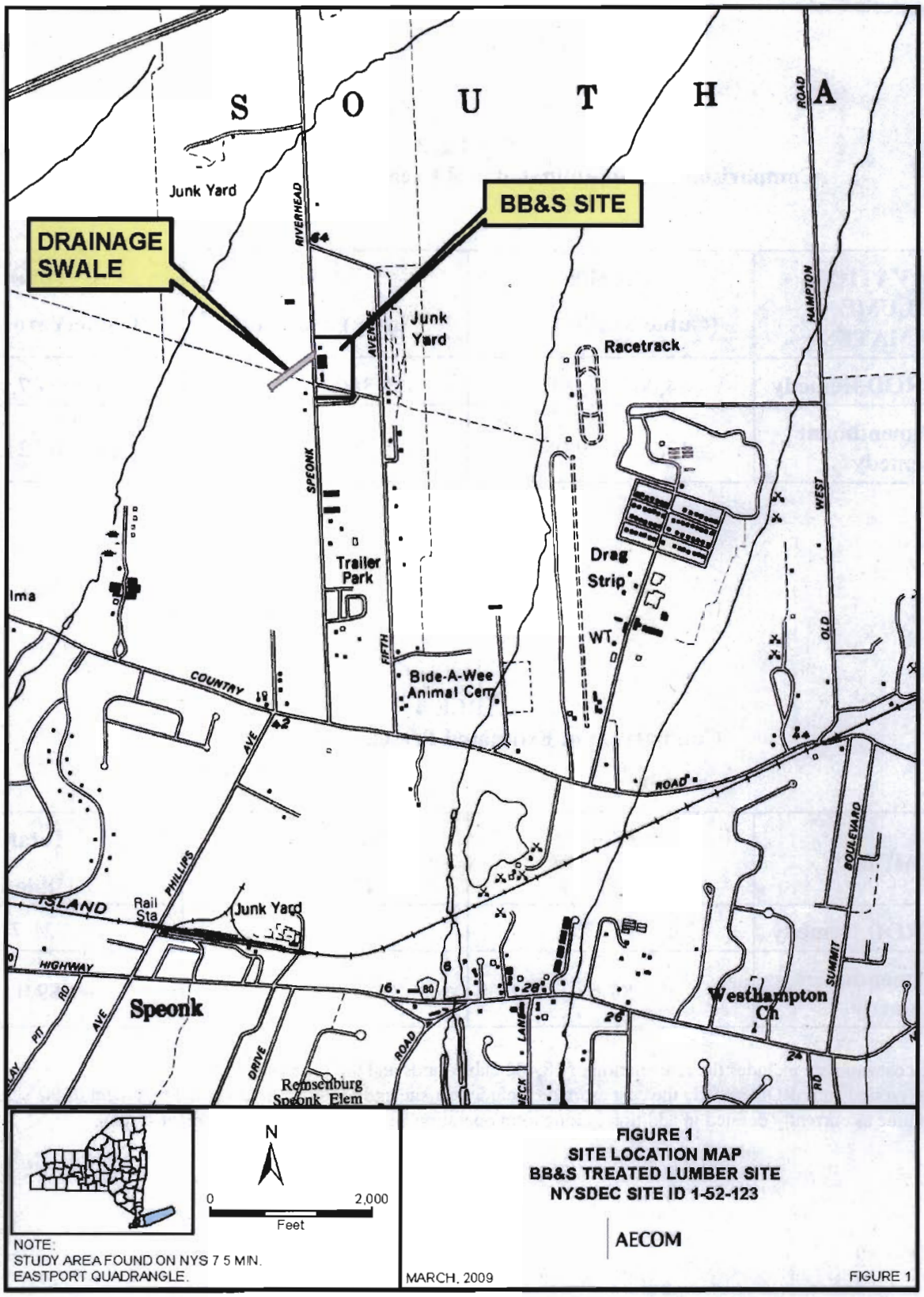
TABLE 3
Comparison of Contaminated Soil Excavation Volume Estimates

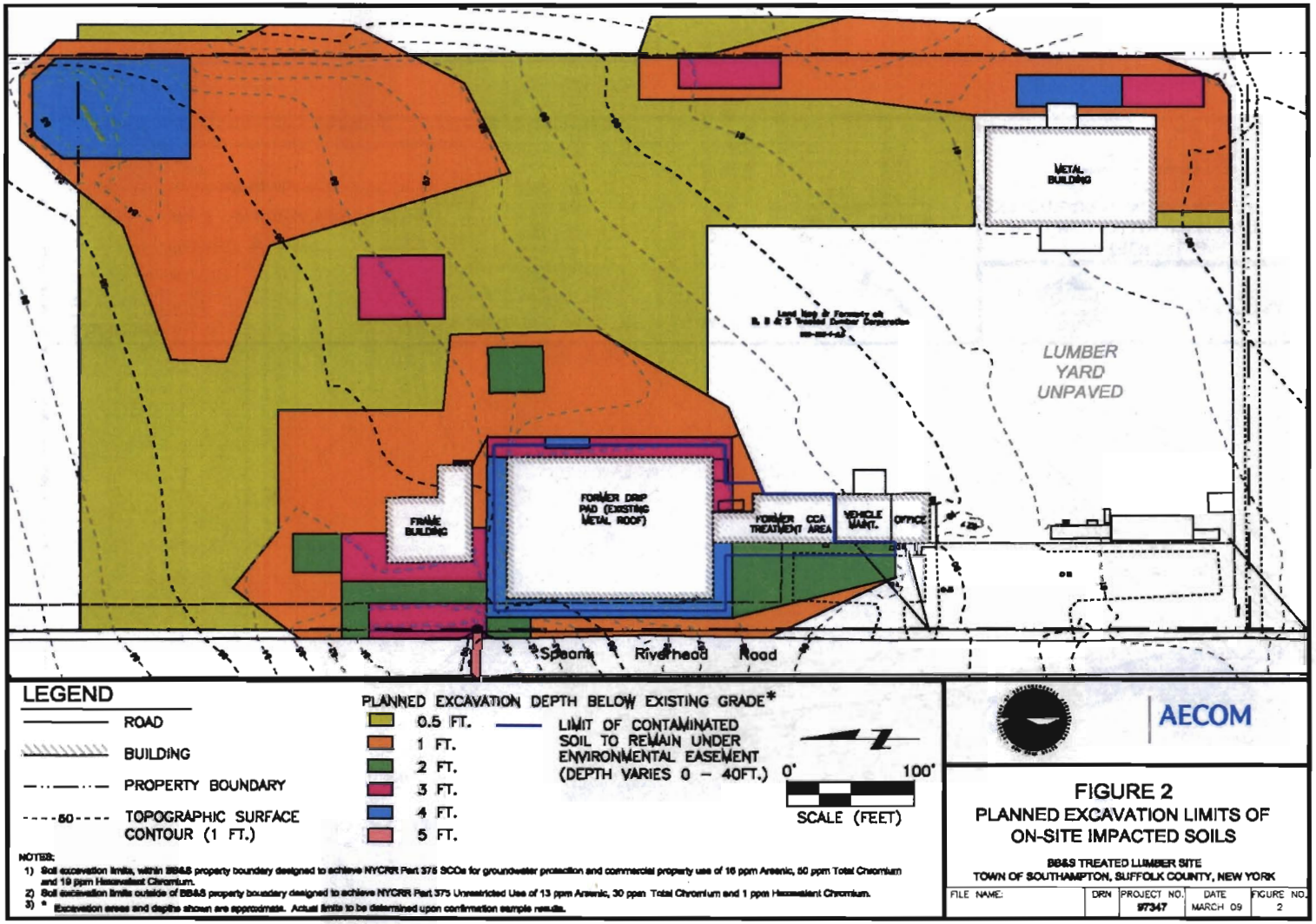
EXCAVATION VOLUME ESTIMATES	On-Site (Cubic Yards/Tons)	Off-Site (Cubic Yards/Tons)	Total (Cubic Yards/Tons)
Original ROD Remedy	4,000 / 6,000	1,300 / 1,950	5,300 / 7,950
ROD Amendment Remedy	12,700 / 19,050	5,700 / 8,550	18,400 / 27,600

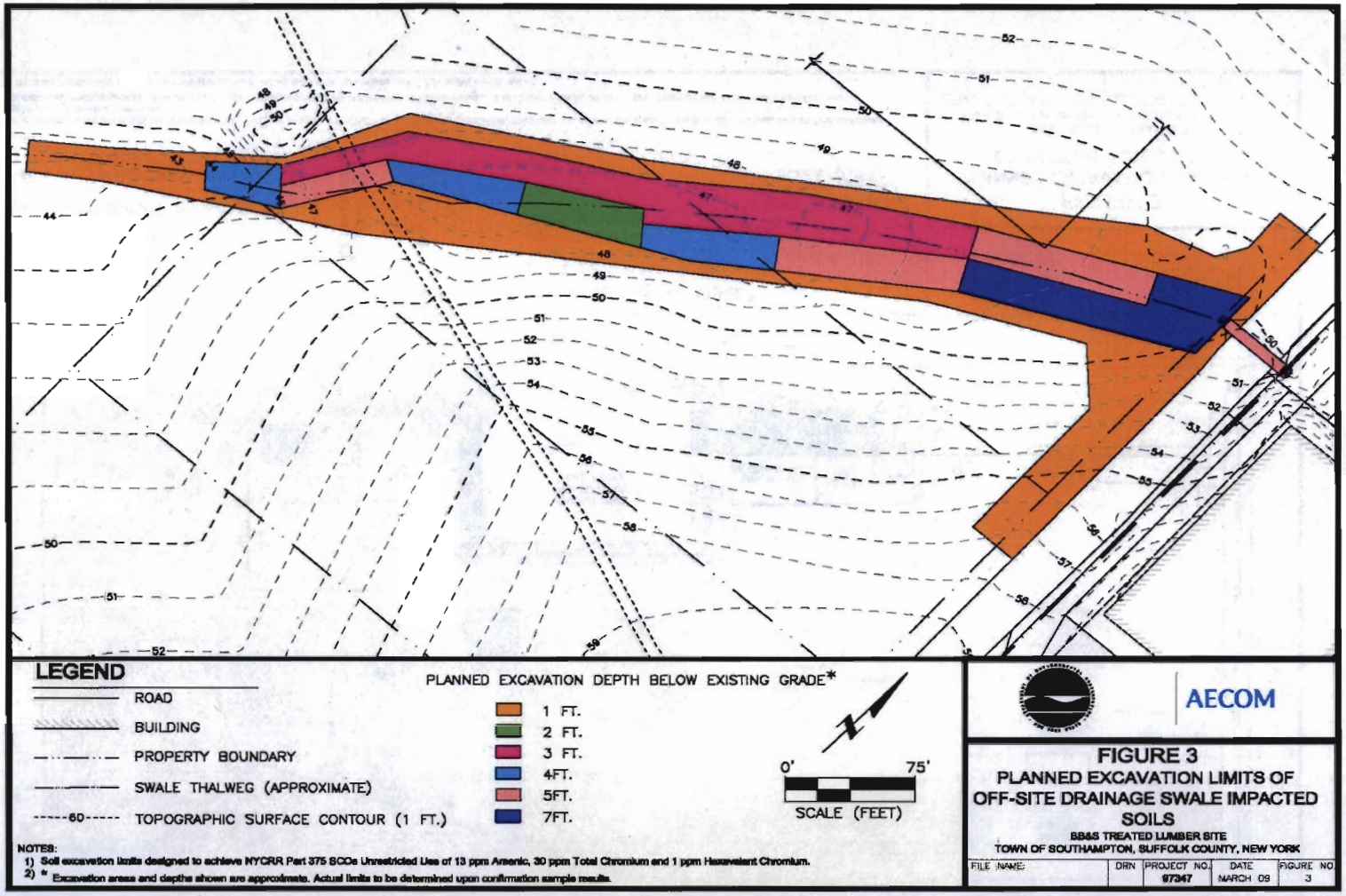
TABLE 4
Comparison of Estimated Present Worth Costs

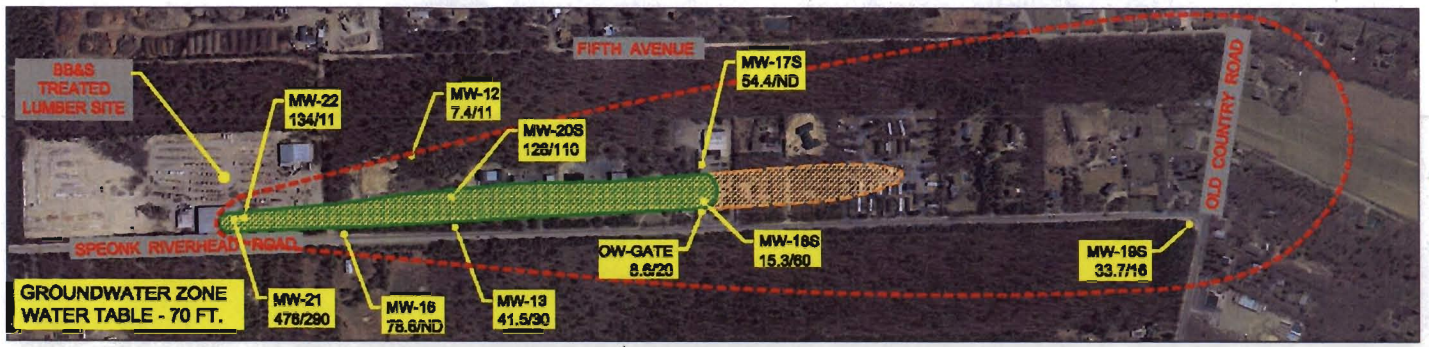
REMEDY	*Soil (Million)	Groundwater (Million)	Total (Million)
Original ROD Remedy	$11.7	**$10.0	$21.7
ROD Amendment Remedy	$7.6	$1.4	$9.0

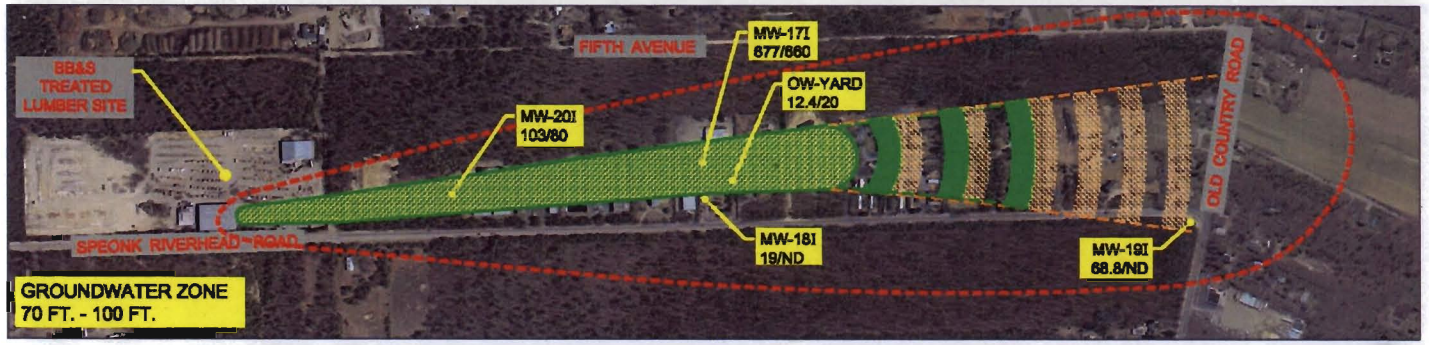
* For soils the cost estimate includes the remediation of 18,400 cubic yards and long term site management;
** For original groundwater ROD remedy the cost estimate includes on-site and off-site collection and treatment of the site contaminant plume as currently defined in addition to long term operation and maintenance of treatment system.

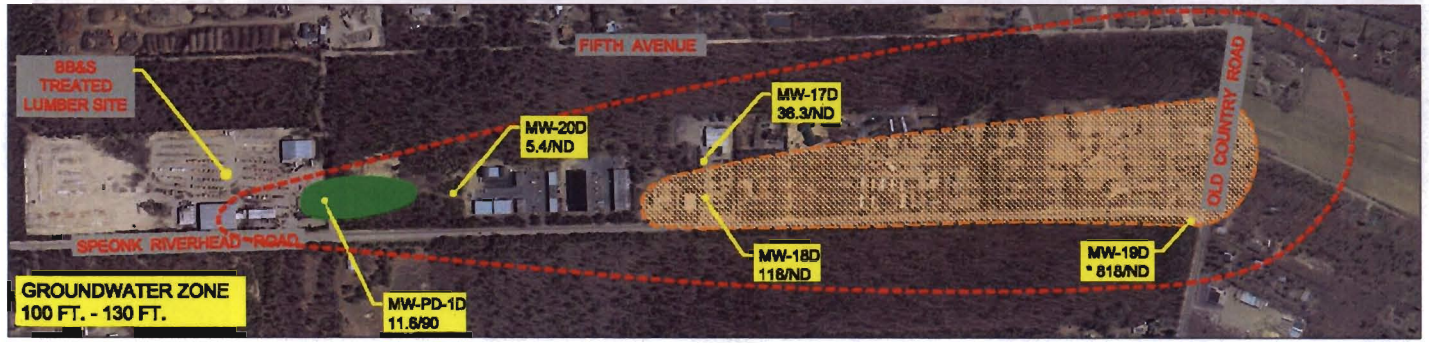

S O U T H A
DRAINAGE SWALE
BB&S SITE
Junk Yard
Junk Yard
Racetrack
Trailer Park
Drag Strip
Ima
Bide-A-Wee Animal Cem
WT
COUNTRY
ROAD
ISLAND
Rail Sta
Junk Yard
HIGHWAY
Speonk
Westhampton Ch
Remsenburg Speonk Elem
RIVERHEAD
SPEONK
FIFTH
PHILLIPS
DRIVE
LANE
HAMPTON
WEST
OLD
BOULEVARD
SUMMIT
N
0
2,000
Feet
NOTE:
STUDY AREA FOUND ON NYS 7 5 MIN.
EASTPORT QUADRANGLE.
FIGURE 1
SITE LOCATION MAP
BB&S TREATED LUMBER SITE
NYSDEC SITE ID 1-52-123
AECOM
MARCH, 2009
FIGURE 1
97347_Site_Location.mxd


METAL BUILDING
LUMBER YARD UNPAVED
FRAME BUILDING
FORMER DRIP PAD (EXISTING METAL ROOF)
FORMER CCA TREATMENT AREA
VEHICLE MAINT.
OFFICE
Sparrow Riverhead Road
LEGEND
ROAD
BUILDING
PROPERTY BOUNDARY
50 TOPOGRAPHIC SURFACE CONTOUR (1 FT.)
PLANNED EXCAVATION DEPTH BELOW EXISTING GRADE*
0.5 FT.
1 FT.
2 FT.
3 FT.
4 FT.
5 FT.
LIMIT OF CONTAMINATED SOIL TO REMAIN UNDER ENVIRONMENTAL EASEMENT (DEPTH VARIES 0 – 40FT.)
0'
100'
SCALE (FEET)
NOTES:
1) Soil excavation limits, within BB&S property boundary designed to achieve NYCRR Part 375 SCOs for groundwater protection and commercial property use of 16 ppm Arsenic, 50 ppm Total Chromium and 19 ppm Hexavalent Chromium.
2) Soil excavation limits outside of BB&S property boundary designed to achieve NYCRR Part 375 Unrestricted Use of 13 ppm Arsenic, 30 ppm Total Chromium and 1 ppm Hexavalent Chromium.
3) * Excavation areas and depths shown are approximate. Actual limits to be determined upon confirmation sample results.
AECOM
FIGURE 2
PLANNED EXCAVATION LIMITS OF ON-SITE IMPACTED SOILS
BB&S TREATED LUMBER SITE
TOWN OF SOUTHAMPTON, SUFFOLK COUNTY, NEW YORK
FILE NAME:
DRN
PROJECT NO. 97347
DATE MARCH 09
FIGURE NO. 2


LEGEND
ROAD
BUILDING
PROPERTY BOUNDARY
SWALE THALWEG (APPROXIMATE)
60 TOPOGRAPHIC SURFACE CONTOUR (1 FT.)
PLANNED EXCAVATION DEPTH BELOW EXISTING GRADE*
1 FT.
2 FT.
3 FT.
4FT.
5FT.
7FT.
0'
75'
SCALE (FEET)
NOTES:
1) Soil excavation limits designed to achieve NYCRR Part 375 SCOs Unrestricted Use of 13 ppm Arsenic, 30 ppm Total Chromium and 1 ppm Hexavalent Chromium.
2) * Excavation areas and depths shown are approximate. Actual limits to be determined upon confirmation sample results.
AECOM
FIGURE 3
PLANNED EXCAVATION LIMITS OF OFF-SITE DRAINAGE SWALE IMPACTED SOILS
BB&S TREATED LUMBER SITE
TOWN OF SOUTHAMPTON, SUFFOLK COUNTY, NEW YORK
FILE NAME:
DRN
PROJECT NO. 97347
DATE MARCH 09
FIGURE NO 3







MW-22 134/11 * Monitoring well location with reported Total Chromium / Hexavalent Chromium concentration (ppb) (June 2008)

Approximate Total Chromium Plume Limit > 50 ppb

Approximate Hexavalent Chromium Plume Limit > 50 ppb

Estimated Limit of Detectable Hexavalent Chromium

Note: Lines dashed where inferred

MAP SOURCE INFORMATION:
Background imagery from NYS Office of Cyber Security & Critical Infrastructure Coordination Geographic Information Systems Clearinghouse, dated 2007.

PLAN

0' 250' 500' 1000'

* : Total Chromium results possibly bias high due to sample turbidity. Well retested in October 2008 with Total Chromium results = 42.1 ppb.

AECOM

BB&S TREATED LUMBER SITE
NYSDEC SITE NO. 1-52-123
SPEONK, NEW YORK
ESTIMATED CHROMIUM GROUNDWATER PLUME LIMITS
JUNE 2008

PROJECT START DATE (M / Y): MARCH 2009
PROJECT NO.: 60347
SHEET NO.: 4
DRAWING NO.: FIGURE 4

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

BB&S Treated Lumber Corporation
Town of Southampton
Suffolk County, New York
Site No. 1-52-123

The Proposed Amendment to the Record of Decision (PAROD) for the BB&S Treated Lumber Corporation (BB&S) site, was prepared by the New York State Department of Environmental Conservation (the Department) in consultation with the New York State Department of Health (NYSDOH) and was issued to the document repositories on June 19, 2009. The PAROD outlined the amended remedial measure proposed for the contaminated soil and groundwater at the BB&S Treated Lumber Corporation site.

The release of the PAROD was announced by sending a notice to the public contact list, informing the public of the opportunity to comment on the proposed amendment to the ROD remedy.

A public meeting was held on Tuesday, July 14, 2009, which included a presentation of the original February 25, 2000 ROD remedy, the circumstances that have led to proposed changes in the ROD remedy, as well as a discussion of the proposed amendment to the ROD remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed amendment to the ROD remedy. These comments have become part of the existing Administrative Record for this site. The public comment period was to have ended on July 30, 2009, however it was extended to August 31, 2009 at the request of the public.

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

COMMENT 1: Will all new information gathered on this site be made available to the public? Where will it be summarized and published?

RESPONSE 1: Yes. Detailed information on past site investigations and the cleanup plan have been and will continue to be made available for your review at repositories previously established at the Department's Region 1 Office in Stony Brook, New York and at the Westhampton Free Library located in Westhampton Beach, New York. Also, site information can be found on the Department's web site at http://www.dec.ny.gov/chemical/8431.html .

COMMENT 2: Will the end of the comment period be over prior to public availability of the Pre-remedial Design Investigation (PDI) site data ?

RESPONSE 2: No. Per comments received by the Department at the July 14, 2009 public meeting the Department announced, in a press release on July 15, 2009, that the comment period was being extended an additional thirty (30) days from July 30, 2009 to August 31, 2009. The time extension was to provide the public sufficient time to receive and review the July 2009 Supplemental PDI Report.

COMMENT 3: Are the Soil Cleanup Objectives (SCOs) that have been developed for the protection of groundwater in 6 NYCRR Part 375, dated December 14, 2006 (Part 375) and used to determine if a property can be used for future development (be it residential, commercial, or industrial), based on a site-specific basis or are these general numbers used throughout the state?

RESPONSE 3: The SCOs are applicable statewide and do not account for many site specific considerations which could potentially result in higher SCO values. SCOs are set well below those levels that are known to cause health effects. Thus, soil concentrations that are higher than the SCOs are not necessarily a health concern. The degree of public health concern when a SCO is exceeded depends upon several factors, including (among others) the magnitude of exceedance, the accuracy of the exposure estimates, other sources of exposure to the chemical, and the strength and quality of the available toxicological information on the chemical.

COMMENT 4: Are the safety standards the same for Speonk as they are for Buffalo?

RESPONSE 4: If the commenter is asking if the goal of the program is the same in Speonk as in Buffalo, the answer is yes.

COMMENT 5: When excavation begins on the site, it seems that on a dry day, a lot of dust will be released into the air. How will the Department prevent this type of event?

RESPONSE 5: This is a concern that the Department and the NYSDOH are well aware of, and have published procedures to address fugitive dust during construction. As part of the requirements for a Health and Safety Plan (HASP) the remedial contractor will be required to develop and implement a Community Air Monitoring Program subject to Department and NYSDOH approval. As part of that program the Contractor is responsible for developing action levels for dust control. To protect on-site personnel and the neighboring community the Contractor's HASP will include provisions for suspending work and implementing mitigation measures based upon instrument monitoring results and observation. Moreover, the Department will have on-site inspectors during remedial activities to oversee and document critical activities such as movement of contaminated soil by the contractor.

COMMENT 6: Will the excavated soil be put in sealed containers prior to being trucked out?

RESPONSE 6: The remedial contractor will have the option of excavating and temporarily staging the soils prior to off-site disposal or placing the excavated soil directly into transport vehicles for immediate disposal in accordance with appropriate protocols. Soils may be temporarily staged in storage units or within lined and covered stockpiles in accordance with appropriate provisions set forth in the remedial action contract documents currently being developed by the Department.

COMMENT 7: I bought property about 10 years ago without being told about this contamination. There has been a lot of buying and selling of property in this area, and most people do not know about the contamination under the ground. Is there any method of alerting a potential buyer of contamination on or adjacent to the property? Are there any laws regulating this type of necessary disclosure?

RESPONSE 7: A Citizen Participation Program already has been established as required in Part 375, Subpart 375-1.10 to facilitate the remedial process and enable citizens to participate more fully indecisions that affect their health. The Department requires the provision of opportunities for citizen involvement and encourages consultation with the public early in that process before the Department forms or adopts final positions. A Citizen Participation Plan (CPP) was developed for this project and has been placed into the document repositories. The CPP includes a site contact list. Additionally parties can request to be added to the site contact list over time.

The commenter may seek legal counsel as to what obligations parties have to disclose information before selling property. Additionally, the New York State Department of State's webpage provides helpful information: see http://www.dos.state.ny.us/lcns/legamd.htm .

COMMENT 8: It seems that if the buyer of property on or adjacent to the site does not do his or her due diligence, they may become responsible for the cleanup. Is this true?

RESPONSE 8: In accordance with Part 375, Subpart 375-2.2.i a "Responsible Party" means any of the following, subject to the defenses, exemptions, and/or limitations set forth at Environmental Conservation Law (ECL) 27-1323:

(1) Any person who currently owns or operates a site or any portion thereof;
(2) Any person who owned or operated a site or any portion thereof at the time of disposal of the contaminant;
(3) Any person who generated any contaminants disposed at a site;
(4) Any person who transported any contaminants to a site selected by such person;
(5) Any person who disposed of any contaminants at a site;
(6) Any person who arranged for:
    (i) the transportation of any contaminants to a site; or,
    (ii) the disposal of any contaminants at a site; and
(7) Any other person who is responsible according to the applicable principles of statutory or common-law liability pursuant to ECL 27-1313(4) and/or Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

COMMENT 9: The Department should be able to contact everyone in the area about the contamination in the community. Why were people not notified about this site?

RESPONSE 9: See the Response to Comment 7 above.

COMMENT 10: Why is a moratorium not placed on buying and selling properties affected by the site due to this contamination?

RESPONSE 10: The comment is beyond the scope of this decision document.

COMMENT 11: The only time I was given information on this site was through a letter that was dated June 16, 2009. Why was this the first time I heard about this site if it has been ongoing since the 1980s?

RESPONSE 11: See the Response to Comment 7 above.

COMMENT 12: The Department should use the Southampton Town government to find out how to contact property owners who are affected by the site and get P.O. Box addresses. The Town government must send out tax collection information to everyone, so they should have all addresses in their system.

RESPONSE 12: See the Response to Comment 7 above. Since the July 14, 2009 public meeting the Department has reached out to the Speonk-Remsenburg Civic Association (SRCA) for assistance in updating the current site contact list.

COMMENT 13: The SRCA sends out their mailings to all the P.O. boxes in the Remsenburg-Speonk district. You can contact us to further delineate your mailing list.

RESPONSE 13: The Department appreciates the offer for assistance. Also, see the Response to Comments 7 and 12 above.

COMMENT 14: On Figure 2 shown in the PowerPoint presentation during the July 14, 2009 public meeting (the figure showing levels of soil contamination on-site requiring remediation by color coding), what is the large white area adjacent to the treatment building? Why is the area white?

RESPONSE 14: Figure 2 uses a variable color code overlay on a white background base map to depict the planned lateral and vertical limits of excavation on the lumberyard property. The white area depicts the portion of the site where the soil was determined to comply with site SCOs and not subject to soil remediation.

COMMENT 15: Some residents would like to thoroughly review the PDI report document prior to submitting comments. Will it be available soon so we can comment on it?
RESPONSE 15: See the Response to Comment 2 above.

COMMENT 16: When referring to the cost tables of the ROD, and when comparing the original ROD to the amended ROD, why is the cost of soil removal less for the amended ROD, even though you are removing more soil now?

RESPONSE 16: The cost estimate for the amended soil remedy does not involve construction and long term on-site management of a Corrective Action Management Unit (CAMU) cell. The $7.6 million cost estimate for the amended soil remedy is associated with off-site disposal of hazardous soil to a Resource Conservation and Recovery Act (RCRA) Subtitle C permitted facility and non-hazardous soil to a permitted landfill. On the other hand, the cost for construction and long-term on-site management for 30 years in a CAMU cell in accordance with the ROD is currently estimated at $11.7 million.

COMMENT 17: The Department stated during the public meeting that they are in the process of connecting eight (8) houses to the existing public water line running up Speonk-Riverhead Road, Fifth Avenue and along Old Country Road. What about future development? Is there any control over off-site groundwater contamination? How are people notified about contaminated groundwater under their property prior to purchase? This should not be a buyer beware situations. People should be notified of what they are buying.

RESPONSE 17: All applications for future development within the Town of Southampton are to be reviewed by the Town of Southampton Planning Board. If the Planning Board identifies the Department as an Involved Agency we will be provided an opportunity to review and provide comment on the proposed action as it pertains to the BB&S Site. Also see Response to Comment 7 above.

COMMENT 18: Are there any restrictions of groundwater use on properties over the BB&S plume? Residents and potential property buyers should be notified of any current or future restrictions.

RESPONSE 18: In accordance with the amended remedy institutional controls will be imposed upon groundwater use on-site. These controls will not be inconsistent with NYSDOH and the Suffolk County Department of Health Services (SCDHS) use and development restrictions.

A public water supply is now available to potentially impacted properties located downgradient of the BB&S Site. Also, as part of the amended remedy, the Department installed and sampled additional off-site groundwater wells in October 2009 to monitor plume attenuation. The new off-site wells include sentinel groundwater monitoring wells between the contaminant plume and downgradient water supply wells. Long-term monitoring of a select number of groundwater wells and downgradient private water supply wells will continue to evaluate plume migration. Also see the Response to Comment 7 above.

COMMENT 19: The problem in these types of contaminated sites seems to be a lack of coordination between Town Hall and Suffolk County, who seem to be making decisions without coordination with the Department. Many development projects and other construction projects are being proposed and approved without the Department's input. The Department should coordinate with Southampton and Suffolk County in making decisions over contaminated sites.

RESPONSE 19: The law requires the municipality to contact the Department and obtain our approval prior to approving an action on a site impacted by an environmental easement. Additionally, it is recommended that the municipality contact the Department for adjacent properties. Also see the Response to Comment 17 above.

COMMENT 20: Is the Department testing groundwater for volatile organic compounds (VOCs) on all groundwater monitoring wells?

RESPONSE 20: Yes, all monitoring wells associated with the remedial program at the BB&S Site are also being tested for VOCs in addition to site-related inorganic contaminants (metals).

COMMENT 21: Is the estimated rate of groundwater plume migration (1 foot/day), the same for all contaminated groundwater elevations currently being monitored (70 feet below ground surface (bgs), 100 feet bgs, and 130 feet bgs)?

RESPONSE 21: There is some variability in the horizontal hydraulic conductivity between various zones within the Upper Glacial Aquifer due to varying sediment grain size. However, the rate of horizontal groundwater migration is anticipated to be relatively similar within the zones because the zones are hydraulically connected to each other and to the same discharge area.

COMMENT 22: What is the rate of horizontal migration of groundwater contamination?

RESPONSE 22: Due to a relatively low retardation factor for the BB&S site contaminants and groundwater, the horizontal rate of groundwater contaminant migration in the Upper Glacial Aquifer is estimated to be similar or only slightly less than the groundwater migration rate of approximately 1 foot per day.

COMMENT 23: I heard that there was once a BB&S retail store along Montauk Highway years ago. Is there any chance of contamination from that satellite operation?

RESPONSE 23: The Department is not aware of any CCA wood treatment activities that occurred at that location. A retail operation would not be likely to cause environmental impacts similar to the actual process that occurred and was documented at the BB&S site.

COMMENT 24: In order to ensure accurate mailing addresses for property owners, the Department should contact the voter registration agency. No mailing list is more comprehensive than them.

RESPONSE 24: See Responses to Comments 7 and 12 above.

COMMENT 25: It was stated during the public presentation that approximately 20,000 cubic yards (CY) of contaminated soil would be excavated and disposed of off-site as part of the amended remedy. What type of material is being put back to fill in the site? Where is the material coming from?

RESPONSE 25: The excavated material will be replaced with material exhibiting similar geotechnical and physical properties. As part of technical specifications being developed for the remedial action the contractor will be required to obtain certification from the backfill suppliers that all fill materials to be supplied for use on this project are clean (meet analytical criteria specified). The Department shall utilize Part 375 as the basis for acceptance of the fill materials. Certification must be received from the contractor and approved by the Department prior to delivery and placement of specified fill materials.

COMMENT 26: The SCDHS wishes to inform anyone who has a private well that has not been tested to contact them for testing.

RESPONSE 26: Comment noted.

COMMENT 27: It was mentioned that there is contamination existing at depths of 40 feet bgs. Is this contamination in groundwater or soil? Where is the deepest soil contamination?

RESPONSE 27: Groundwater contamination has been detected at depths of approximately 130 feet bgs. On the other hand, deep soil samples collected on-site during the PDI beneath the former CCA treatment building exhibited elevated concentrations of arsenic at 23 feet bgs (233 ppm) to 39 feet bgs (47.1 ppm).

COMMENT 28: Will the building that has contamination under it be covered under an environmental easement? Are all the other areas apart from the standing building structure being remediated to Part 375 SCOs?

RESPONSE 28: Yes. The on-site area with the most widespread impacted soil surrounds the former CCA treatment building and concrete drip pad. Impacted soil was detected up to a depth of 5 feet below grade near most of the perimeter of these structures. Since deep excavation adjacent to the buildings has the potential to cause structural damage, the estimated removal volume assumes that no more than one foot of material will be excavated from within four feet of the buildings. Contaminated soil remaining below this depth exceeding the SCOs will be demarcated with a visual barrier (e.g., geotextile fabric), and then capped with an asphalt and/or geomembrane material as an apron around the buildings to prevent precipitation/runoff from being able to infiltrate through the residual impacted soil. The amount of on-site soil contamination to remain in these areas for future site management has been estimated at 14,000 CY. All other areas on-site exceeding the Part 375 groundwater protection SCOs for arsenic and hexavalent chromium and the TAGM 4046 SCO for total chromium will be remediated. Also see Response to Comment 18 above.

COMMENT 29: Will there be an environmental easement on-site for the restricted use of groundwater as a potable source of water? Is this restriction limited to on-site use?

RESPONSE 29: The amended remedy includes the imposition of an institutional control on-site in the form of an environmental easement that will (a) require compliance with the approved site management plan; (b) limit the use and development of the property to commercial or industrial; (c) restrict the use of groundwater as a source of potable water, without necessary water quality treatment as determined by the NYSDOH and/or the SCDHS; and (d) require the site property owner to complete and submit to the Department a periodic certification. The property owner shall provide a periodic certification, prepared and submitted by a professional engineer or such other expert acceptable to the Department, until the Department notifies the property owner in writing that this certification is no longer needed. This submittal will contain certification that the institutional controls and engineering controls, are still in place, allow the Department access to the site, and that nothing has occurred that will impair the ability of the control to protect public health or the environment, or constitute a violation or failure to comply with the site management plan. This restriction is limited to the on-site groundwater. Also see Response to Comment 18 above.

COMMENT 30: It was my understanding that there was one monitoring well on the site that was contaminated and another right next to it that was not. How did that happen? How do groundwater monitoring wells work?

RESPONSE 30: Without knowing which monitoring wells are being specifically referred to, in general contaminant concentrations detected within monitoring wells are dependent upon location of the monitoring well and the depth of monitoring well in relation to the source of the contamination. For instance if a monitoring well is installed upgradient of the suspected source area you would expect the concentrations of contaminants to be very low or non-detect. On the other hand, monitoring wells installed downgradient and in the path of the groundwater contaminant plume would expect to see higher levels of contaminant concentrations. Similarly, a

shallow groundwater monitoring well may detect contamination before a deeper groundwater monitoring well since it takes time for the contaminant to migrate vertically downward.

A monitoring well is an excavation or structure created in the ground by digging, driving, boring or drilling to access groundwater in underground aquifers. Monitoring wells are often small diameter wells (1 inch or 2 inches) used to monitor the water surface elevation or sample the groundwater for chemical constituents. Wells can vary greatly in depth, water volume and water quality. Monitoring wells can also be completed at multiple levels, allowing discrete samples or measurements to be made at different vertical elevations at the same map location.

COMMENT 31: When it rains, is groundwater contamination affected? Does the contamination get pushed to lower elevations in the groundwater table?

RESPONSE 31: Where contaminants are present on the BB&S Site without impervious surface cover, infiltrating rainwater can leach contaminants downward to the water table where they begin to migrate downgradient. When the remediation is completed, contaminated soil above the water table will be removed or capped to prevent future leaching to the aquifer. Downgradient of the site, where infiltrating groundwater does not contact or leach contaminants in the unsaturated zone, no additional impact to groundwater occurs. The addition of unimpacted groundwater into the aquifer can act to dilute groundwater contaminant levels in the upper portions of the aquifer.

COMMENT 32: Is the intent of the removal of the contaminated soil to prevent further groundwater contamination?

RESPONSE 32: Yes, that is one of the remedial goals. The overall remedial goal is to meet all New York State Standards, Criteria, and Guidance (SCGs) and be protective of human health and the environment. At a minimum, the amended remedy will eliminate or mitigate all significant threats to public health and/or the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

COMMENT 33: How many trucks will be necessary to remove the contaminated soil? How long will the operation take?

RESPONSE 33: The total estimated weight of contaminated soil to be trucked off-site is estimated at about 30,000 tons. This will require an estimated 1,250 truck loads. It is expected that the complete restoration project will take between 6 months and 1 year to complete, although the length of time to remove the contaminated soil will be less than that and anticipated to last 3 to 6 months.

COMMENT 34: This area already has issues with truck traffic due to several other construction and demolition sites in the general area and no direct access to Sunrise Highway. How will this be addressed?

RESPONSE 34: The remedial contractor will be required to develop and implement a Transportation Plan subject to Department approval before implementation. As part of that plan the contractor is responsible for determining the type and number of vehicles to be used during remedial activities, developing appropriate travel routes, and obtaining any required federal, state, and local transportation permits.

COMMENT 35: Was any Gardiner's Clay found in the deep soil borings detailed as part of past and present BB&S site investigations?

RESPONSE 35: No, not to date.

COMMENT 36: The main building is where the treatment of the wood took place. The contamination probably went into the wells and then into the soil. Is that correct? Why is it not possible to demolish the building now to excavate the contaminated soil underneath it?

RESPONSE 36: According to historic site information gathered by the Department, releases of CCA to groundwater are believed to have occurred through leakage from the collection sumps and through malfunction of an on-site water supply well valve. Spills originating from the concrete pad most likely account for soil contamination noted in the vicinity of the metal and frame buildings and for contamination found in the on-site drainage ditch.

The Department does not typically demolish structurally sound buildings, particularly if they are currently in use. The feasibility of demolishing any of the site buildings will be evaluated during site management.

COMMENT 37: Does bankruptcy protect BB&S from paying for the cleanup?

RESPONSE 37: The Department's approach to bankruptcy issues is beyond the scope of this decision document. As a general matter the Department approaches bankruptcy issues on a case by case basis in light of the specific facts involved.

COMMENT 38: Are attempts to reach out to the public focused only on those in the immediate area, or do you attempt to reach a larger group of people?

RESPONSE 38: See Responses to Comments 7 and 12 above.

COMMENT 39: Is the Department going to go after the identified responsible parties to recover cleanup costs? What happens next in paying for the cleanup?

RESPONSE 39: Yes. Responsible parties are liable for monies expended by the State in taking response actions at sites where hazardous substances have been released, including investigative, planning, removal, and remedial work. Also see Response to Comment 8 above.

COMMENT 40: There was mention during the public meeting that there was one home situated downgradient and situated along Fifth Avenue that had a detection of a site related contaminant in their private water supply well below maximum contaminant levels (MCLs) as established by the NYSDOH. What happens to that property owner? What is their remedy? Would the best answer be that the entire Town be connected to public water supply due to the vast number of contaminated groundwater plumes, or do we have to wait until the residents health is affected before something is done? It seems like there is nothing but groundwater plumes in this area. Can all of these separate sites be looked at as a whole when discussing hookup to public water?

RESPONSE 40: In accordance with the amended remedy the Department has offered to fund and provide an alternate water supply (AWS) to that particular home. The offer includes a connection to the existing public water supply. Construction associated with that particular connection has been initiated and is expected to be completed in December 2009 since it also involves an extension to the existing water main.

The quality of drinking water supplies is regulated by the federal Safe Drinking Water Act and the New York State Sanitary Code. The Department is responsible for responding to releases of contamination into the environment which could impact the quality of drinking water supplies. When individual water supplies become contaminated, the Department in consultation with the NYSDOH may direct or take emergency actions to provide a temporary or permanent AWS.

In October 2009 the Department installed and sampled additional off-site groundwater wells to monitor plume migration and attenuation in relation to this site. The new off-site wells include sentinel groundwater monitoring wells between the contaminant plume and known downgradient private water supply wells. Based upon the data that is generated from future sampling of these wells the Department and NYSDOH will determine if the provision of an AWS is warranted on a case by case basis.

COMMENT 41: Is the Department investigating all four plumes in the Speonk area?

RESPONSE 41: The Department is aware of two plumes in the vicinity of the BB&S Site. Specifically, the Department is investigating the groundwater plumes associated with the BB&S site (Site No. 1-52-123) and the Speonk Groundwater Plume site (Site No. 1-52-185) in the Speonk area.

COMMENT 42: Ideally, the current cleanup plan is going to work and the contamination will be taken care of. Following the immediate cleanup plan, will there be ongoing monitoring to make sure everything is clean? What happens if some of the monitoring wells get unexpected hits? What is Department's procedure if this happens?

RESPONSE 42: A site management plan (SMP) will be developed since the amended remedy results in contamination above unrestricted levels remaining on-site. The SMP will include the following controls: (a) address residual contaminated soil adjacent to and below the former CCA treatment area and the former drip pad area located along the western perimeter of the site that may be excavated during future redevelopment. The plan will require soil characterization and, where applicable, disposal/reuse in accordance with Department regulations; (b) identify any use restrictions; (c) provide for the operation and maintenance of the components of the remedy; and (d) long-term monitoring of groundwater. If the concentrations in the monitoring wells increase, the Department will evaluate what, if any, additional actions are required. Also see response to Comment 40 above.

COMMENT 43: I am concerned that since it took so long for us to get to this point, that if there is still a problem in the future, what is the Department's plan to deal with it in a timely manner? Will it be a new project and will we have to go through this entire process again from the start, or can the issue be addressed immediately?

RESPONSE 43: It is the objective of the Department to address any unexpected delays to the tentative project schedule in a timely manner. The Department anticipates completing remedial design of the amended remedy in the Fall 2009. Following public advertisement of the remedial construction contract documents the project is anticipated to be awarded by the Department in the Spring 2010 pending the availability of state funding. Remedial construction activities are expected to continue for approximately one year.

COMMENT 44: Is it possible for the public to see and comment on the SMP when it is developed?

RESPONSE 44: The SMP will be developed with input from the NYSDOH, Town of Southampton, and Suffolk County officials. A copy of the SMP will be made available to the public at the document repositories identified in the amended ROD. The public will be notified of its' availability through the issuance of a project fact sheet.

COMMENT 45: I heard that the soil, after being removed, would be made into concrete. Couldn't we excavate the soil, mix it with cement on-site in order to stabilize the contamination and reduce dust, and then haul it away? I am concerned that the dust will migrate to my property, affecting my garden and health.

RESPONSE 45: Any pretreatment of the soil prior to landfilling is planned to occur off-site. The potential for dust emissions at the site from stabilizing soil would be at least as great as that for trucking the soil off-site.

COMMENT 46: When it comes to complaining about on-site remediation work that may not be up to par, I am not sure about calling in about the potential violations because I do not want to call attention to the contamination. I am torn between my property investment and the public health.

RESPONSE 46: The public is encouraged to contact the Department with any comments or concerns that they may have during implementation of the amended remedy. The Department will have a project trailer and an on-site inspector during all major remedial activities to oversee and document critical activities.

COMMENT 47: Is the groundwater contamination too far gone to be cleaned? Do we know how far the groundwater contamination goes? Why can't we clean the water now?

RESPONSE 47: The Pre-Design Investigation has determined that the contaminant plume has migrated downgradient of the site at least as far as Old Country Road to the south and has migrated vertically to depths of 130 feet or more bgs. Based upon the current lateral and vertical extent of contamination it is no longer feasible to collect and treat groundwater in accordance with the original ROD remedy.

Both the amended remedy and the original remedy for groundwater will result in an untreated portion of the plume. However, under both scenarios, protection of public health will be achieved through monitoring and the provision of an AWS to authorized homes and businesses as identified by the Department and the NYSDOH. The amended remedy will be protective of

the environment in that the site groundwater contamination has recently been determined to be attenuating. In addition, there are no surface water bodies, fish, wildlife, or vegetation currently in danger of being affected by the groundwater.

The original ROD provided an estimated present worth cost to construct and operate the on-site groundwater pump and treat remedial scenario at approximately $3.7 million. Adjusting that cost for an estimated 4% per year inflation increase, the current present worth cost for the on-site remedial scenario is now estimated to be at least $5.7 million. The on-site remedial scenario also would not have removed contaminants that are migrating further downgradient of the Site. Based on the lateral and vertical expanse of the plume downgradient of the Site, the cost to implement a combined on-site and off-site groundwater remedial scenario is estimated to be in the range of $8 to $10 million and is no longer feasible. The cost estimate for the amended groundwater remedy associated with long term on and off-site monitoring of the attenuation of the contaminant plume is $1.4 million. The SCWA public water line has provided additional benefits and remedial options.

COMMENT 48: Will the Department be testing all clean fill that is coming in to backfill the site following excavation activities? Will the public be able to see the testing records and reports stating it is clean? In the past there have been times when people provided material that was not what it claimed to be so we are concerned.

RESPONSE 48: See the Responses to Comments 1 and 25 above. Also, testing records and reports associated with the backfill will be made available upon request during implementation of remedial activities and as part of a Final Engineering Report (FER) following completion of remedial activities. A copy of the FER will be made available to the public at the document repositories identified in the amended ROD. The public will be notified of its' availability through the issuance of a project fact sheet.

COMMENT 49: Does the Department regulate all waste coming in to all sites? Does it include West Hampton Mining Aggregates? There are about three or four sites up Speonk-Riverhead Road that dump fill. How do we know that these facilities are safe?

RESPONSE 49: Typically mining business operations require a state permit for operation. It is recommended that the Department's Region 1 Permit Administrator located in Stony Brook at (631) 444-0365 be contacted to obtain any information regarding those business operations.

COMMENT 50: It seems that the longer we wait to take action at a site, the more negative impacts there are due to groundwater plumes. What can we learn from our experience with the Speonk Groundwater Plume? What new methods can be used to prevent this from happening again? We need to do it better and faster. We don't want to come back five years from now and find out it is too late to do anything again. What can we do? What are the lessons learned?

RESPONSE 50: Comment noted. The Department has addressed this site pursuant to all applicable laws and regulations. Between 2000 through 2007, remedial design and construction activities were delayed at this site primarily due to a breakdown in negotiations for access to adjacent lands required to implement the original ROD groundwater extraction and treat remedy. Following issuance of the ROD in 2000, the Department and the NYSOAG initiated negotiations

with a property owner located south of BB&S Site in order to obtain access associated with the testing of existing groundwater recovery wells previously installed by BB&S and the installation of new groundwater recovery wells required by the ROD. The negotiations were unsuccessful causing the Department to evaluate alternate remedial alternatives for the groundwater and prolonging completion of remedial design activities.

COMMENT 51: How can we alert people to these types of sites and notify them about the concerns they should have?

RESPONSE 51: See Responses to Comments 1, 7 and 12 above.

COMMENT 52: The public comment period is not long enough since the public cannot see the necessary data to comment on.

RESPONSE 52: See response to Comment 2 above.

COMMENT 53: Will the extension of the comment period delay the hookup to public water supply?

RESPONSE 53: No. The connections to the public water supply have already been initiated. Specifically, all homes and businesses identified for connection along Speonk-Riverhead Road have been completed. The one home identified for connection on Fifth Avenue has been initiated and is expected to be completed in December 2009 since it also involves an extension to the existing water main.

COMMENT 54: How will the public be notified if the comment period is extended? Could you contact those who have attended the meetings on this site using our contact information on the sign in sheets (including e-mail and physical addresses)?

RESPONSE 54: See response to Comment 2 above. Also, on July 15, 2009 the Department announced in a press release that the comment period was being extended an additional thirty (30) days from July 30, 2009 to August 31, 2009. The press release was also posted on the Department's public web site and sent to persons whom provided their e-mail address at the July 14, 2009 public meeting.

Robert J. Mozer (CPG) and Suzanne T. Collins (President) representing the Speonk Remsenburg Civic Association, Inc. (SRCA) jointly submitted a letter (dated August 29, 2009) which included the following comments:

COMMENT 55: The SRCA would like to see the proposed remedy, with some appropriate modifications, implemented as quickly as possible such that further migration of impacted soil can be eliminated and exposures to site-related contaminated soil and groundwater can be controlled.

RESPONSE 55: Agreed. See response to Comment 43 above.

COMMENT 56: We strongly urge the Department to reach out proactively to the SCDHS and the Town of Southampton prior to and during the remedial process as these agencies should be made aware of certain concerns.

RESPONSE 56: Comment noted. The Department has been working with the SCDHS and the Suffolk County Water Authority during the PDI and remedial design for this site, and is committed to continue to do so. Town of Southampton officials have been made part of the Department's existing site contact list and received and will continue to receive site related mailings from the Department.

COMMENT 57: It has recently come to our attention that the SCDHS Groundwater Investigation Unit and their vital community service program is in jeopardy of being eliminated. We strongly urge you to utilize their services and find a way to reimburse them for their efforts.
RESPONSE 57: This comment is beyond the scope of this decision document.

COMMENT 58: The Town of Southampton is responsible for the maintenance of the Speonk-Riverhead Road, which bisects and is part of the area of impacted soil; a road-paving project that is likely to disturb this soil is planned for 2009. Furthermore, the Town is responsible for reviewing/approving subdivisions and construction projects in the affected area, portions of which are undergoing active development apparently without regard to the environmental impacts from BB&S. During this approval process, restrictions can be imposed that would further reduce potential exposure to site-related contaminants. Frankly, these agencies are in a better position to address these concerns than the Department. Further, we are very concerned about protecting residents in homes that may be developed over the plume in the future.

RESPONSE 58: See Response to Comment 19 above.

COMMENT 59: The amount of soil proposed to be removed and disposed offsite will require a considerable number of trucks to traverse our community during the removal. A comparable number of trucks would be required to import backfill for the excavation areas. The Department must confirm that a mandatory truck route will be established that does not pass through residential areas. The Department must also confirm that appropriate measures will be in place (truck wash, covers, dust monitoring and control measures, etc.) to ensure that our community is not impacted by fugitive dust from either the excavation areas or the trucks.

RESPONSE 59: See Responses to Comments 33 and 34 above.

COMMENT 60: Drawing 2A of the July 2009 Supplemental PDI Report, which shows the onsite soil removal areas, appears to include soil removal in large areas that do not exceed applicable Department guidance (e.g. locations SP-32-98, SBPD-153, SP-29-98, SBPD-17, SP-21-98, SP-15-98, SBPD-151, SBPD-35, SP-16-98, SBPD-29, SBPD-30, and others). It is not clear why removal of this soil is required. Removal of soil that already meets applicable guidance does not make sense and will increase both project costs and impacts on our community. Please explain why removal in these areas is needed.

RESPONSE 60: The soil excavation limits depicted include the few samples identified in the comment that did not exhibit contaminant levels in excess of the SCOs. The reason for this is that based on the nature of contaminants and the means by which the contaminants were dispersed at the lumber yard, the distribution of contaminants in shallow soil across the lumber yard is not uniform. It was not feasible to collect a sufficient number of remedial investigation/PDI sample points to justify omitting the relatively small areas where contaminant concentrations in soil may comply with the SCOs, without leaving some soil behind that exceed the SCOs. This condition was more pronounced with the Part 375 groundwater protection levels. In summary, the Department believes the proposed expanded excavation limits provides a better, conservative remedial design approach for the site.

COMMENT 61: Soil at off-site location SP-25-98 (northeast of site) does not meet applicable guidance; however, no removal is planned according to Drawing 2A within the July 2009 Supplemental PDI Report. Removal of all off-site soil that does not meet applicable guidance must be performed.

RESPONSE 61: The Department concurs that sample result for location SP-25-98 exceeds the SCO for the site. The location was inadvertently omitted when the excavation limits were expanded to meet the Part 375 Unrestricted Use SCO for off-site properties (sample result complied with the original ROD). Drawing 2A of the July 2009 Supplemental PDI Report and Figure 2 within this Amended Record of Decision have been modified accordingly to show the planned excavation of soil from this sample location.

COMMENT 62: Soil at off-site locations along both the east and west sides of the Speonk-Riverhead Road is impacted with chromium and/or arsenic and is targeted for removal. These roadsides are public property maintained by the Town of Southampton. Furthermore, the Department should be aware that the Town has advised the SRCA that it plans to repave Speonk-Riverhead Road in 2009, including installation of bike lanes. This Town road work will involve contacting, grading, and/or removal of soil along both roadsides by Town and/or contractor personnel, and will most likely disturb the impacted soil targeted for removal. Furthermore, paving personnel may come into contact with this contaminated soil during the course of their work. The Department should immediately advise the Town of this condition in the form of a site HASP such that appropriate personal protective measures can be implemented for the workers and the soil targeted for removal may be properly managed during this work.

RESPONSE 62: The Department had not been notified by the Town of Southampton regarding proposed road work along Speonk-Riverhead Road in the vicinity of the site. However, based upon comments received, the Department contacted the Town of Southampton to discuss the scope and schedule to perform the road work in more detail. According to the highway superintendent, the Town of Southampton has not started paving yet but plans to later in the Fall 2009. Those plans will be reviewed by the Department to evaluate any potential concerns.

COMMENT 63: The Department should advise the Town of Southampton that the planned remediation will include excavation of a seven-foot wide five-foot-deep trench across the Speonk-Riverhead road to remove impacted materials associated with the drainage pipe.

RESPONSE 63: See Response to Comment 62 above. Additionally, the selected remedial contractor will be required to work with the Town of Southampton for the culvert replacement work in the area of the site. A copy of the remedial action contract documents, including the technical specifications and contract drawings associated with this work, will be provided to the Town of Southampton once they have been finalized by the project engineer.

COMMENT 64: Based upon review of figures provided by the Department within the July 2009 Supplemental PDI Report it appears that soil on five tax lots for a distance of approximately 600 feet to the west of the Speonk-Riverhead Road is impacted with arsenic and/or chromium in excess of applicable guidance and is targeted for removal. As shown on Drawing 2B and as observed by SRCA personnel, the impacted soil on at least one of these lots has already been disturbed by construction activities conducted in 2008. At least one additional lot is posted as being for sale and a large subdivision is planned nearby. The Department should contact the owners of these properties to advise them of the presence of impacted soil such the owners may be aware of this condition and the need for no further disturbance until the impacted soils are remediated. The Town of Southampton, which issues building permits, should also be made aware of these conditions such that appropriate measures may be taken in the event that the owner of an affected lot proposes land clearing or construction

RESPONSE 64: The owners of the parcels in question were notified in writing by the Department regarding our concerns over the construction activities observed in the area of the drainage swale. Follow-up conversations and field visits by Department representatives also insured that known impacted soil in those areas was not disturbed. Also see response to Comment 19 above.

COMMENT 65: It should be noted that the full depth of arsenic and/or chromium impact has not been delineated at a number of locations (e.g., SBPD-01, SBPD-108, SBPD-43, SRR-6, SP-34-98, etc.). We understand that post-remediation sampling will be conducted to verify that all of the impacted soil has been removed; sampling should clearly include those areas where vertical delineation has not been completed.

RESPONSE 65: Excavation floor sampling will be conducted to confirm the removal of the vertical extent of impacted soil in all the excavation areas.

COMMENT 66: Groundwater impacted with chromium and arsenic exceeding Department groundwater standards is now found at least 4,000 feet south of the site (intersection of Speonk-Riverhead Road and Old Country Road) where it is present at the most elevated concentrations at the deepest interval sampled (120 to 130 feet below grade). The lateral and vertical limits of this plume have not been identified along Old Country Road (particularly along the apparent centerline of the plume), nor has any sampling been conducted to the south where the plume presumably extends beneath residential areas and a farm with an apparent active irrigation well. An immediate priority of this remedial program must be to install a monitoring network that completely delineates the plume. Provision for expanding this monitoring network must also be made as the plume continues to migrate downgradient. Confirmation of the presence and depth of the Gardiners Clay is also required if it is to be assumed that this unit will restrict further downward migration of the plume.

RESPONSE 66: The sentinel groundwater monitoring well network for the site was recently expanded by the Department with the installation of 12 additional wells. Specifically, 4 multi-level well clusters have been recently installed just south of Old Country Road toward the Montauk Highway in the direction of the site contaminant plume. Monitoring well depths range from the top of the water table to approximately 130 feet below ground surface. Sampling of these new wells and select existing site sentinel wells for metals and volatile organic compounds occurred in October 2009. The necessity for installing additional sentinel wells downgradient of the site and to investigate deeper into the aquifer will be considered as noted following review of that data.

COMMENT 67: All existing water supply wells in the plume vicinity should be identified and sampled. While supply well sampling appears to have been conducted north of Old Country Road, older homes that may also have water supply wells are present to the south in the path of the plume. A farm with at least one operational irrigation well is also present immediately south of Old Country Road. We recommend that the Department work with the SCDHS to identify and sample all water supply wells in the path of the plume between Old Country Road and Montauk Highway such that provisions may be made, if necessary, to provide public water to any additional affected parties. As the SCDHS has already been conducting such sampling with respect to the nearby Speonk Solvent Plume, existing water supply data may already be available through this agency.

RESPONSE 67: The Department is committed to continue to work with the SCDHS on this project as part of long term site management activities. As provided in the amended remedy for the site, remaining private water supply wells in the vicinity of the plume will be incorporated into the SMP for long term monitoring. Based upon data generated during site management, the necessity to provide an AWS at a particular location will be evaluated on a case by case basis with the assistance of the NYSDOH and SCDHS in accordance with existing Department guidance policy.

COMMENT 68: The SRCA is aware of at least one proposed rezoning/subdivision project presently contemplated in the vicinity of the plume. As part of the approval process, the Town of Southampton can impose restrictions on such projects, including a prohibition against use of groundwater, if it is made aware of the plume. The Department should provide the Town with sufficient information regarding the plume location, extent, and anticipated migration path such that the Town has the opportunity to impose groundwater-use restrictions on properties in the path of the plume during the project-approval process. This will help prevent future exposure.

RESPONSE 68: See response to Comment 19 above. To date, the Department has not been contacted by the Town of Southampton regarding any proposed rezoning/subdivision project in the site area.

COMMENT 69: The community should be updated on project progress on at least an annual basis, particularly with respect to offsite issues that affect the community but for which no controls (groundwater-use restrictions, soil cover, etc.) are presently in place. This will enable to community to identify potential concerns as they arise rather than react to them after the fact.

RESPONSE 69: See Responses to Comments 7, 12, 19 and 51 above.

APPENDIX B

Administrative Record

ADMINISTRATIVE RECORD

BB&S Treated Lumber Corporation Site

Site No. 1-52-123

1. Letter from Robert J. Mozer and Suzanne T. Collins, Speonk-Remsenburg Civic Association, Inc., to David Chiusano, New York State Department of Environmental Conservation, August 29, 2009. Comments on the June 2009 BB&S Treated Lumber Corporation Inactive Hazardous Waste Site Proposed Amendment to the Record of Decision.

2. " Supplemental Pre-Design Investigation Report", Volume 1 of 1, July 2009, prepared by AECOM Environment.

3. "Fact Sheet - Proposed Record of Decision Amendment for the BB&S Treated Lumber Corporation Inactive Hazardous Waste Site", dated June 2009, prepared by the New York State Department of Environmental Conservation.

4. Proposed Amendment to the Record of Decision for the BB&S Treated Lumber Corporation site, dated June 2009, prepared by the New York State Department of Environmental Conservation.

5. "Fact Sheet – Design of Cleanup Begins at the BB&S Treated Lumber Corporation Inactive Hazardous Waste Site", dated March 2008, prepared by the New York State Department of Environmental Conservation.

6. " Remedial Design Work Plan, BB&S Treated Lumber Site 1-52-123", Volume 1 of 1, November 2007, prepared by Earth-Tech Northeast, Inc.

7. " Pre-Design Investigation Report", Volume 1 of 1, March 2007, prepared by Earth-Tech Northeast, Inc.

8. "Pre-Design Study Work Plan (Amendment No. 1), BB&S Treated Lumber Corporation Inactive Hazardous Waste Site 1-52-123", Volume 1 of 1, June 2005, prepared by Earth-Tech Northeast, Inc.

9. "Pre-Design Study Work Plan, BB&S Treated Lumber Site 1-52-123", Volume 1 of 1, January 2001, prepared by Earth-Tech Northeast, Inc.

10. Letter from Fred W. Thiele, Jr., Member of NYS Assembly, to Kathleen McCue, New York State Department of Environmental Conservation, October 12, 1999. Comments on the Proposed Remedial Action Plan (PRAP) for the BB&S Treated Lumber Corporation Site.

11. Letter from Frances Genovese, Association of Southampton Neighborhoods, to Kathleen McCue, New York State Department of Environmental Conservation, October 6,1999. Comments on the BB&S Treated Lumber Corporation Inactive Hazardous Waste Site PRAP.

12. Letter from Mr. and Mrs. Robert Caccavalla to Kathleen McCue, New York State Department of Environmental Conservation, October 6, 1999. Comments on the BB&S Treated Lumber Corporation Inactive Hazardous Waste Site PRAP.

13. Letter from Julie McConnell to Kathleen McCue, New York State Department of Environmental Conservation, October 6, 1999. Comments on the BB&S Treated Lumber Corporation Inactive Hazardous Waste Site PRAP.

14. Letter from Ralph Schiano, South Fork Groundwater Task Force, to Kathleen McCue, New York State Department of Environmental Conservation, October *5,* 1999. Comments on the BB&S Treated Lumber Corporation Inactive Hazardous Waste Site PRAP.

15. Letter from Ramon D. Thome to Kathleen McCue, New York State Department of Environmental Conservation, September 27, 1999. Comments on the BB&S Treated Lumber Corporation Inactive Hazardous Waste Site PRAP.

16. Letter from James Pendleton to Kathleen McCue, New York State Department of Environmental Conservation, September 27, 1999. Comments on the BB&S Treated Lumber Corporation Inactive Hazardous Waste Site PRAP.

17. Letter from Peggy Thome to Kathleen McCue, New York State Department of Environmental Conservation, September 27, 1999. Comments on the BB&S Treated Lumber Corporation Inactive Hazardous Waste Site PRAP.

18. Letter from Marybeth Greene to Kathleen McCue, New York State Department of Environmental Conservation, September 22, 1999. Comments on the BB&S Treated Lumber Corporation Inactive Hazardous Waste Site PRAP.

19. Letter from Heide Leofken to Kathleen McCue, New York State Department of Environmental Conservation, September 22, 1999. Comments on the BB&S Treated Lumber Corporation Inactive Hazardous Waste Site PRAP.

20. Letter from Steven Biasetti, Group for the South Fork, to Kathleen McCue, New York State Department of Environmental Conservation, September 21,1999. Comments on the BB&S Treated Lumber Corporation Inactive Hazardous Waste Site PRAP.

21. Letter from Sy Robbins, Suffolk County Department of Health Services (SCDHS) to Kathleen McCue, New York State Department of Environmental Conservation, September 1999. Comments on the BB&S Treated Lumber Corporation Inactive Hazardous Waste Site PRAP.

22. "Fact Sheet - Public Meeting Invitation: Remedial Action Proposed for the BB&S Treated Lumber Corporation Site," dated September 1999, prepared by the New York State Department of Environmental Conservation.

23. Proposed Remedial Action Plan for the BB&S Treated Lumber Corporation Site, dated August 1999, prepared by the New York State Department of Environmental Conservation.

24. New York State Department of Environmental Conservation, August 6, 1999. Mass Loading1 Removal of Arsenic and Chromium, BB&S Treated Lumber; Site No. 152123 (table and chart), dated August 6, 1999, prepared by the New York State Department of Environmental Conservation.

25. Engineering Feasibility Study, BB&S Treated Lumber Site. Volume includes results of private well sampling by the SCDHS in December 1998-January 1999, dated August 1999, prepared by Malcolm Pirnie, Inc.

26. Remedial Investigation Report, BB&S Treated Lumber Site, dated June 1998, prepared by Malcolm Pirnie, Inc.

27. Remedial Investigation/Feasibility Study Work Plan Amendment, dated November 1997, prepared by Malcolm Pirnie, Inc.

28. BB&S Treated Lumber Corporation Inactive Hazardous Waste Site: Fact Sheet No. 2, dated November 1996, prepared by the New York State Department of Environmental Conservation.

29. Private well sampling results in the vicinity of the BB&S Site, dated May 1996, prepared by the SCDHS.

30. Remedial Investigation/Feasibility Study Work Plan. Volume also includes Citizen Participation Plan and Health and Safety Plan, dated February 1996, prepared by Malcolm Pirnie, Inc.

31. BB&S Treated Lumber Corporation Inactive Hazardous Waste Site: Fact Sheet No. 1, dated January 1996, prepared by the New York State Department of Environmental Conservation.

32. Letter from Robert L. Marino, New York State Department of Environmental Conservation, to BB&S Creosol Lumber: Thomas Samuels: Kenneth Thommen, Town of Southampton clerk and Edward P. Romain, county of Suffolk; March 31, 1993. Designation of BB&S Site as a "Class 2" inactive hazardous waste site.

33. Project Update for the BB&S Treated Lumber Corporation Site, July - September 1988, dated November 4, 1988, prepared by Groundwater Technology, Inc.

34. Groundwater Technology, Inc., Subsurface Investigation Project Update for BB&S Treated Lumber Corporation, dated March 1986, prepared by Groundwater Technology, Inc.

35. Letter from Martin Trent, SCDHS, to BB&S, May 17, 1985. Advisory of chromium and arsenic in a supply well at the BB&S Site.

B

Environmental Easement and Final Property Survey

RECEIPT
Suffolk County Clerk
JUDITH A. PASCALE
County Clerk

Receipt Number : 13-0061747
Payor Name : FRONTIER ABSTRACT & RESEARCH SERVICES

DESCRIPTION	TRANS AMOUNT
Type of Instrument: AGREEMENT	
Page/Filing	$30.00
Handling	$20.00
COE	$5.00
NYS SRCHG	$15.00
Affidavit	$0.00
TP-584	$0.00
Notation	$0.00
Cert.Copies	$7.50
RPT	$60.00
Fees Paid	$137.50
LIBER	D00012730
PAGE	664
DATE: 05/23/2013 TIME: 09:18:13 AM	
RECEIPT TOTAL	$137.50
CHECK AMT PAID	$200.00
TOTAL AMOUNT PAID	$200.00
CHECK REFUND	$62.50

COMMENTS

CC # : C13-22163

COUNTY CLERK'S OFFICE

STATE OF NEW YORK
COUNTY OF SUFFOLK

I, JUDITH A. PASCALE, Clerk of the County of Suffolk and the Court of Record thereof do hereby certify that I have compared the annexed with the original **AGREEMENT** recorded in my office on **05/23/2013** under Liber **D00012730** and Page **664** and, that the same is a true copy thereof, and of the whole of such original.

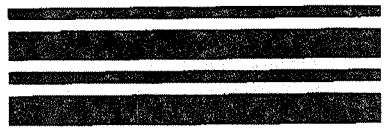
In Testimony Whereof, I have hereunto set my hand and affixed the seal of said County and Court this **05/23/2013** .

SUFFOLK COUNTY CLERK

Judith A. Pascale

JUDITH A. PASCALE

SEAL



SUFFOLK COUNTY CLERK
RECORDS OFFICE
RECORDING PAGE

Type of Instrument: AGREEMENT
Number of Pages: 6
Receipt Number : 13-0061747

Recorded: 05/23/2013
At: 09:18:13 AM

LIBER: D00012730
PAGE: 664

District:	Section:	Block:	Lot:
0900	303.00	01.00	002.008

EXAMINED AND CHARGED AS FOLLOWS

Received the Following Fees For Above Instrument

		Exempt			Exempt
Page/Filing	$30.00	NO	Handling	$20.00	NO
COE	$5.00	NO	NYS SRCHG	$15.00	NO
Affidavit	$0.00	NO	TP-584	$0.00	NO
Notation	$0.00	NO	Cert.Copies	$7.50	NO
RPT	$60.00	NO			
			Fees Paid	$137.50	

THIS PAGE IS A PART OF THE INSTRUMENT
THIS IS NOT A BILL

JUDITH A. PASCALE
County Clerk, Suffolk County

1 | 2

Number of pages 6

This document will be public record. Please remove all Social Security Numbers prior to recording.

RECORDED
2013 May 23 09:18:13 AM
JUDITH A. PASCALE
CLERK OF
SUFFOLK COUNTY
L D00012730
P 664

Deed / Mortgage Instrument	Deed / Mortgage Tax Stamp	Recording / Filing Stamps

3 FEES

Page / Filing Fee	30.00		
Handling	20.00		
TP-584			
Notation			
EA-52 17 (County)		Sub Total	50.00
EA-5217 (State)			
R.P.T.S.A.	60.00		
Comm. of Ed.	5.00		
Affidavit			
Certified Copy	7.50		
NYS Surcharge	15.00	Sub Total	87.50
Other		Grand Total	137.50

Mortgage Amt. _____
1. Basic Tax _____
2. Additional Tax _____
Sub Total _____
Spec./Assit.
or
Spec. /Add. _____
TOT. MTG. TAX _____
Dual Town _____ Dual County _____
Held for Appointment _____
Transfer Tax _____
Mansion Tax _____

The property covered by this mortgage is or will be improved by a one or two family dwelling only.
YES _____ or NO _____
If NO, see appropriate tax clause on page # _____ of this instrument.

4 Dist 01 2476346 0900 30300 0100 002008 .008

Real Property Tax Service Agency Verification — PTS RPA 03-MAY-13

5 **Community Preservation Fund**
Consideration Amount $ _____
CPF Tax Due $ _____

6 Satisfactions/Discharges/Releases List Property Owners Mailing Address
RECORD & RETURN TO:

Frontier Abstract
30 West Broad St., Suite 100
Rochester, NY 14614

Improved _____
Vacant Land _____
TD _____
TD _____
TD _____

Mail to: Judith A. Pascale, Suffolk County Clerk
310 Center Drive, Riverhead, NY 11901
www.suffolkcountyny.gov/clerk

7 **Title Company Information**
Co. Name
Title # FRO 13-517659

8 Suffolk County Recording & Endorsement Page

This page forms part of the attached Environmental Notice made by:
(SPECIFY TYPE OF INSTRUMENT)

New York State Department of Environmental Conservation

TO

The premises herein is situated in
SUFFOLK COUNTY, NEW YORK.

In the TOWN of Southampton
In the VILLAGE
or HAMLET of _____

BOXES 6 THRU 8 MUST BE TYPED OR PRINTED IN BLACK INK ONLY PRIOR TO RECORDING OR FILING.

12-0104...10/08kk

(over)

BBS Treated Lumber Corporation Site
Site No. 152123
1348 Speonk-Riverhead Road
Suffolk County, NY
Tax Map ID: Section 303.10, Block 01.00, Lot 002.008

ENVIRONMENTAL NOTICE

THIS ENVIRONMENTAL NOTICE is made the 25th day of April 2013, by the New York State Department of Environmental Conservation (Department), having an office for the transaction of business at 625 Broadway, Albany, New York 12233.

WHEREAS, a parcel of real property located at the address of 1348 Speonk-Riverhead Road in the Town of Southampton, County of Suffolk and State of New York, known and designated on the tax map of the County Clerk of Suffolk as tax map parcel numbers: Section 303.00 Block 01.00 Lot 002.008, being the same as that property conveyed to Grantor by deed(s) dated January 30, 1984 recorded in Liber 9516 at page 241; deed dated June 14, 1983 recorded in Liber 9376 at page 156; deed dated December 15, 1976 recorded in Liber 8166 at page 590 and deed dated March 17, 1976 recorded in Liber 8018 at page 101 in Suffolk County Clerk's Office, comprising approximately 9.992 ± acres, and hereinafter more fully described in the Land Title Survey dated May 9, 2012 prepared by L. K. McLean Associates, P.C., and being more particularly described in Appendix "A," attached to this notice and made a part hereof, and hereinafter referred to as "the Property" is the subject of a remedial program performed by the Department; and

WHEREAS, the Department approved a cleanup to address contamination disposed at the Property and such cleanup was conditioned upon certain limitations.

NOW, THEREFORE, the Department provides notice that:

FIRST, the part of lands subject to this Environmental Notice is as shown on a map attached to this Notice as Appendix "B" and made a part hereof.

SECOND, unless prior written approval by the Department or, if the Department shall no longer exist, any New York State agency or agencies subsequently created to protect the environment of the State and the health of the State's citizens, hereinafter referred to as "the Relevant Agency," is first obtained, where contamination remains at the Property subject to the provisions of the Site Management Plan ("SMP"), there shall be no disturbance or excavation of the Property which threatens the integrity of the engineering controls or which results or may result in a significantly increased threat of harm or damage at any site as a result of exposure to soils. A violation of this provision is a violation of 6 NYCRR 375-1.1 1(b)(2).

THIRD, no person shall disturb, remove, or otherwise interfere with the installation, use, operation, and maintenance of engineering controls required for the Remedy, including but not limited to those engineering controls (ECs) described in the SMP and listed below, unless in each instance they first obtain a written waiver of such prohibition from the Department or Relevant Agency. The SMP can be obtained from NYS Department of Environmental Conservation, Division of Environmental Remediation, Site Control Section, 625 Broadway, Albany, NY 12233 or at derweb@gw.dec.state.ny.us .

IN WITNESS WHEREOF, the undersigned has executed this instrument the day written below.

THIS ENVIRONMENTAL NOTICE IS HEREBY ACCEPTED BY THE PEOPLE OF THE STATE OF NEW YORK, Acting By and Through the Department of Environmental Conservation as Designee of the Commissioner,

By: _____
Robert W. Schick, P.E., Director
Division of Environmental Remediation

Grantor's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF)

On the 25th day of April, in the year 2013, before me, the undersigned, personally appeared Robert W. Schick, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

_____
Notary Public - State of New York

David J. Chiusano
Notary Public, State of New York
No. 01CH5082146
Qualified in Schenectady County
Commission Expires August 22, 2014

BBS Treated Lumber Corporation Site
Site No. 152123
1348 Speonk-Riverhead Road
Suffolk County, NY
Tax Map ID: Section 303.10, Block 01.00, Lot 002.008

SCHEDULE "A" PROPERTY DESCRIPTION

DESCRIPTION OF PROPERTY

December 30, 2011

All that certain plot, piece, or parcel of land known as lot 10 and lot 11 on map entitled "2nd Map of Agricultural City Co.", filed July 13, 1896 in the Suffolk County Clerk's Office as file map no. 606; said parcel situate, lying and being at Speonk, Town of Southampton, County of Suffolk, State of New York as shown on a map prepared by L.K. McLean Associates, P.C. dated December 30, 2011. Said parcel being more particularly bounded and described as follows:

Beginning at a point on the easterly boundary line of Speonk-Riverhead Road, also known as Evergreen Avenue, at the southwest corner of the aforementioned lot 10; said point of beginning being 3915.84 feet northerly along said easterly boundary line of Speonk-Riverhead Road from a concrete monument found at the intersection of said boundary line with the northerly boundary line of Old Country Road;

Thence, from said point of beginning, North 08°37'30" East, along said easterly boundary line of Speonk-Riverhead Road, a distance of 921.00 feet to a point on the northerly boundary line of the aforementioned lot 11, also being on the division line between the subject parcel on the south and land now or formerly of Thomas and Anita Samuels Family Partnership, L.P. and Charles and Deborah Guilloz Family Partnership, L.P. on the north;

Thence, South 81°22'49" East, along said northerly boundary line and said division line, a distance of 472.56 feet to a point on the easterly line of said lot 11, also being on the division line between the subject parcel on the west and land now or formerly of Frank Grasso, Jr. on the east;

Thence, South 08°37'11" West, along said easterly line of lot 11 and said division line, and continuing along the easterly line of lot 10 and said division line, a distance of 921.00 feet to a point on the first mentioned southerly boundary line of lot 10, also being on the division line between the subject parcel on the north and land now or formerly of Edward Broidy on the south;

Thence, North 81°22'49" West, along said southerly boundary line of lot 10 and said division line, a distance of 472.65 feet (472.64 feet deed) to the point or place of beginning.

Being 435,271 square feet or 9.992 acres more or less.

entitled "2nd Map of Agricultural City Co.", filed July 13, 1896 in the Suffolk County Clerk's Office as file map no. 606; said parcel situate, lying and being at Speonk, Town of Southampton, County of Suffolk, State of New York as shown on a map prepared by L.K. McLean Associates, P.C. dated July 25, 2012. Said parcel being more particularly bounded and described as follows:

Beginning at a point on the easterly boundary line of Speonk-Riverhead Road, also known as Evergreen Avenue, at the southwest corner of the aforementioned lot 10, said point of beginning being 3913.84 feet northerly along said easterly boundary line of Speonk-Riverhead Road from a concrete monument found at the intersection of said boundary line with the northerly boundary line of Old Country Road;

Thence, from said point of beginning, North 08°37'30" East, along said easterly boundary line of Speonk-Riverhead Road, a distance of 921.00 feet to a point on the northerly boundary line of the aforementioned lot 11, also being on the division line between the subject parcel on the south and land now or formerly of Thomas and Anita Samuels Family Partnership, L.P. and Charles and Deborah GuMez Family Partnership, L.P. on the north;

Thence, South 81°22'49" East, along said northerly boundary line and said division line, a distance of 472.56 feet to a point on the easterly line of said lot 11, also being on the division line between the subject parcel on the west and land now or formerly of Frank Grasso, Jr. on the east;

Thence, South 08°37'11" West, along said easterly line of lot 11 and said division line, and continuing along the easterly line of lot 10 and said division line, a distance of 921.00 feet to a point on the first mentioned southerly boundary line of lot 10, also being on the division line between the subject parcel on the north and land now or formerly of Edward Brody on the south;

Thence, North 81°22'49" West, along said southerly boundary line of lot 10 and said division line, a distance of 472.65 feet (472.64 feet deed) to the point or place of beginning.

Being 435,371 square feet or 9.992 acres more or less.

NOTES

1. MEASUREMENTS ARE IN ACCORDANCE WITH U.S. STANDARDS.
2. UNAUTHORIZED ALTERATION OR ADDITION TO A SURVEY MAP BEARING A LICENSED LAND SURVEYOR'S SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.
3. ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MARKED WITH AN ORIGINAL OF THE LAND SURVEYOR'S "EMBOSSED" OR "INKED" SEAL SHALL BE CONSIDERED TO BE VALID TRUE COPIES.
4. CERTIFICATIONS INDICATED HEREON SIGNIFY THAT THIS SURVEY WAS PREPARED IN ACCORDANCE WITH THE EXISTING CODE OF PRACTICE FOR LAND SURVEYORS ADOPTED BY THE NEW YORK STATE ASSOCIATION OF PROFESSIONAL LAND SURVEYORS. SAID CERTIFICATIONS SHALL RUN ONLY TO THE PERSON FOR WHOM THE SURVEY IS PREPARED AND ON HIS BEHALF TO THE TITLE COMPANY, GOVERNMENTAL AGENCY AND LENDING INSTITUTION LISTED HEREON AND TO THE ASSIGNEES OF THE LENDING INSTITUTION. CERTIFICATIONS ARE NOT TRANSFERABLE TO ADDITIONAL INSTITUTIONS OR SUBSEQUENT OWNERS.
5. RIGHTS-OF-WAY NOT SHOWN ARE NOT CERTIFIED.
6. LOCATIONS OF UNDERGROUND UTILITIES OR IMPROVEMENTS, IF THEY EXIST, ARE NOT A PART OF THIS SURVEY.
7. TITLE REPORT, COMMITMENT NO. 5022113, WAS PREPARED BY FRONTIER ABSTRACT AND RESEARCH SERVICES, INC., LAST REVISED JUNE 5, 2012.
8. PROPERTY IS SUBJECT TO COVENANTS AND RESTRICTIONS LISTED IN THE DECLARATION OF COVENANTS RECORDED JULY 15, 1996 IN LIBER 11783 OF DEEDS AT PAGE 145.
9. PROPERTY IS SUBJECT TO AN EASEMENT AND CONDITIONS OVER A 25 FOOT WIDE DIRT ROADWAY LOCATED NEAR THE SOUTHERLY BOUNDARY OF THE PARCEL AS DESCRIBED IN LIBER 9376 OF DEEDS AT PAGE 156.
10. THE SURVEY CLOSES MATHEMATICALLY.
11. A SEPARATE ENVIRONMENTAL EASEMENT WILL BE REQUIRED FOR THOSE AREAS OF RESIDUAL CONTAMINATION THAT REMAIN IN THE RIGHT OF WAY. THE ENVIRONMENTAL EASEMENT WILL BE WITH THE TOWN OF SOUTHAMPTON.

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 the 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 may 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@gw.dec.state.ny.us.

ENGINEERING AND INSTITUTIONAL CONTROLS

1. LAND USE - THE USE AND DEVELOPMENT OF THE SITE IS LIMITED TO COMMERCIAL AND INDUSTRIAL USES ONLY.
2. MAINTAIN SITE SECURITY (SITE FENCING AND ACCESS CONTROLS) AND PROTECTION OF REMEDIATION SYSTEMS FOR THE ENTIRE PARCEL.
3. GROUNDWATER RESTRICTION COVERS THE ENTIRE PARCEL.
4. RESTRICTED RESIDENTIAL USE COVERS THE ENTIRE PARCEL. THE BB&S PROPERTY MAY BE USED FOR COMMERCIAL/INDUSTRIAL USE, PROVIDED LONG-TERM ENGINEERING AND INSTITUTIONAL CONTROLS IN THE SMP REMAIN IN USE. THE PROPERTY MAY NOT BE USED FOR LESS RESTRICTIVE USE, SUCH AS UNRESTRICTIVE RESIDENTIAL USE WITHOUT ADDITIONAL REMEDIATION AND AMENDMENT OF THE ENVIRONMENTAL EASEMENT BY THE COMMISSIONER OF NYSDEC.
5. RESTRICTED SOILS MANAGEMENT AND EXCAVATION COVERS THE HAZARDOUS SOILS BOUNDARY THAT REMAINS AS SHOWN IN THE LEGEND.
6. THE POTENTIAL FOR SOIL VAPOR INTRUSION MUST BE EVALUATED FOR ANY EXISTING BUILDINGS, NEW BUILDINGS, AND ANY POTENTIAL IMPACTS THAT ARE IDENTIFIED MUST BE MITIGATED.
7. MANAGEMENT OF SOILS REMAINING WITHIN THE HAZARDOUS WASTE BOUNDARY ARE TO BE HANDLED IN ACCORDANCE WITH THE SMP. REFERENCE TO THE SMP IS NEEDED WHEN WORKING IN THE HAZARDOUS WASTE AREAS.
8. ENGINEERING CONTROLS LEGEND
   - HAZARDOUS WASTE REMAINING BOUNDARY-B.B.&S. PROPERTY
   - HAZARDOUS WASTE REMAINING BOUNDARY-TOWN OF SOUTHAMPTON RIGHT OF WAY (R.O.W.)
   - CHAINLINK FENCE ACCESS GATE
9. MAP SYMBOLS LEGEND
   - MONITORING WELL
   - UTILITY MANHOLE
   - ELECTRIC METER
   - UTILITY POLE WITH LIGHT
   - UTILITY POLE
   - OVERHEAD WIRES
   - CATCH BASIN
   - DROP INLET
   - OVERHEAD ROOF LINE
   - PROPERTY LINE
   - MONUMENT (For Property Line)

ENVIRONMENTAL EASEMENT AREA ACCESS

THE NYSDEC OR THEIR AGENT MAY ACCESS THE ENVIRONMENTAL EASEMENT AREA AS SHOWN HEREON THROUGH ANY EXISTING STREET ACCESS OR BUILDING INGRESS/EGRESS ACCESS POINT

MADE BY: TLS/LHY DATE: 7/25/2012
CHECKED BY: RRF DATE: 7/25/2012

Jul 25, 2012 - 02:30pm P:\10060.000 (BB&S Site Remediation - Survey & Mapping Services)\Dwg\10060ALTASurvey.dwg

REMAINING BOUNDARY - B.B.&S. TREATED LUMBER SITE

All that certain plot, piece, or parcel of land considered to be the boundary of hazardous waste remaining on property known as part of lot 10 and lot 11 on map entitled "2nd Map of Agricultural City Co.", filed July 13, 1896 in the Suffolk County Clerk's Office as file map no. 606, said parcel situate, lying and being at Speonk, Town of Southampton, County of Suffolk, State of New York as shown on a map prepared by L.K. McLean Associates, P.C. dated July 25, 2012. Said parcel being more particularly bounded and described as follows:

Beginning at a point on the easterly boundary line of Speonk-Riverhead Road, also known as Evergreen Avenue, said point of beginning being 4280.22 feet northerly along said easterly boundary line of Speonk-Riverhead Road from a concrete monument found at the intersection of said boundary line with the northerly boundary line of Old Country Road.

Thence, from said point of beginning, North 08°37'30" East, along said easterly boundary line of Speonk-Riverhead Road, a distance of 354.47 feet to a point,

Thence, through said property, the following fourteen (14) courses and distances:

1) South 80°23'43" East, a distance of 77.08 feet to a point; thence
2) South 37°28'55" West, distance of 34.03 feet to a point; thence
3) South 82°02'03" East, a distance of 48.54 feet to a point; thence
4) South 08°19'56" West, a distance of 51.50 feet to a point; thence
5) South 79°48'14" East, a distance of 7.94 feet to a point; thence
6) South 08°57'53" West, a distance of 16.11 feet to a point; thence
7) South 52°16'45" East, a distance of 23.65 feet to a point; thence
8) South 08°30'02" West, a distance of 199.73 feet to a point; thence
9) South 77°53'43" West, a distance of 47.91 feet to a point; thence
10) South 08°58'44" West, a distance of 69.71 feet to a point; thence
11) North 81°21'02" West, a distance of 40.35 feet to a point; thence
12) South 64°47'44" West, a distance of 33.16 feet to a point; thence
13) North 82°25'57" West, a distance of 28.02 feet to a point; thence
14) North 17°41'38" West, a distance of 94.12 feet to the point or place of beginning.

Being 54,872 square feet or 1.260 acres more or less.

DEED(S) REFERENCES:

Bearings shown are from deed compilations and are the same properties (or a portion of that property) described in Deeds from Armand Sposato to B.B.&S. Treated Lumber Corporation, recorded on February 22, 1984 at Liber 9518 on page 241, and from Joseph Frederick Gazza to B.B.&S. Creosote Lumber Company, Inc., recorded on April 14, 1978 at Liber 8016 on page 101; and from Joseph Frederick Gazza to B.B.&S. Creosote Lumber Co., Inc., recorded on December 29, 1978 at Liber 8168 on page 590; and from Frederick Lawrence Schuster to B.B.&S. Treated Lumber Corp., recorded on June 21, 1983 at Liber 9375 on page 156 as all can be found in the Suffolk County Clerk's Office.

DESCRIPTION OF HAZARDOUS WASTE REMAINING BOUNDARY - TOWN OF SOUTHAMPTON RIGHT OF WAY

All that certain plot, piece, or parcel of land considered to be the boundary of hazardous waste remaining in the right of way of Speonk-Riverhead Road, also known as Evergreen Avenue; said parcel situate, lying and being at Speonk, Town of Southampton, County of Suffolk, State of New York as shown on a map prepared by L.K. McLean Associates, P.C. dated July 25, 2012. Said parcel being more particularly bounded and described as follows:

Beginning at a point on the easterly boundary line of the aforementioned Speonk-Riverhead Road, said point of beginning being 4620.24 feet northerly along said easterly boundary line of said Speonk-Riverhead Road from a concrete monument found at the intersection of said boundary line with the northerly boundary line of Old Country Road;

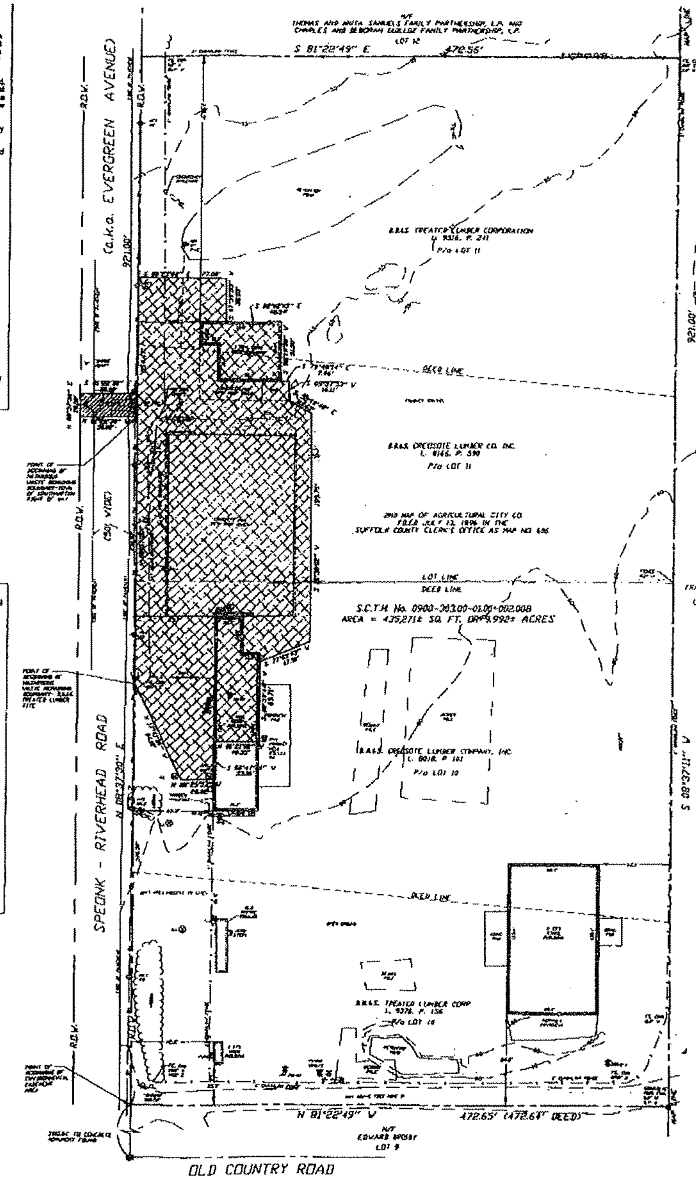
Thence, from said point of beginning, North 81°22'30" West, through the right of way of said Speonk-Riverhead Road, a distance of 50.00 feet to a point on the westerly boundary line of said Speonk-Riverhead Road.

Thence, North 08°27'30" East, along said westerly boundary line of Speonk-Riverhead Road, a distance of 20.00 feet to a point,

Thence, South 81°22'30" East, through the said right of way of Speonk-Riverhead Road, a distance of 50.00 feet to a point on the first mentioned easterly boundary line of said Speonk-Riverhead Road;

Thence, South 08°27'30" West, along said easterly boundary line of Speonk-Riverhead Road, a distance of 20.00 feet to the point or place of beginning.

Being 1,000 square feet or 0.023 acre more or less.



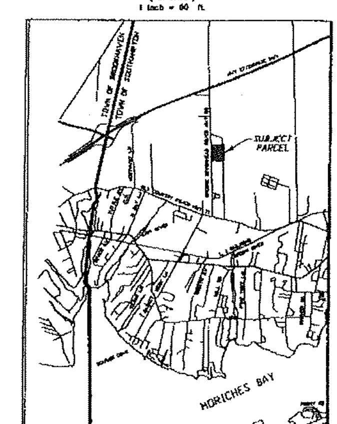
ALTA/ACSM LAND TITLE SURVEY OF PROPERTY OF B.B.&S. TREATED LUMBER CORPORATION; B.B.&S. TREATED LUMBER CORP.; B.B.&S. CREOSOTE LUMBER COMPANY, INC.; AND B.B.&S. CREOSOTE LUMBER CO., INC.

2ND MAP OF AGRICULTURAL CITY CO.
FILED: JULY 13, 1896 AS MAP NO. 606
LOT 10 & LOT 11
SITUATED AT
1348 SPEONK-RIVERHEAD ROAD
SPEONK
TOWN OF SOUTHAMPTON
SUFFOLK COUNTY, NEW YORK
JULY 25, 2012

B.B.&S. TREATED LUMBER SITE - NYSDEC SITE NO. 152123

This Survey has been revised with the benefit of Title Report Commitment No. 5022113, dated April 2, 2012 and last revised June 5, 2012.

GRAPHIC SCALE
(IN FEET)
1 inch = 60 ft.



KEY MAP
NO SCALE

SURVEYOR'S CERTIFICATION:

Certified to: (1) The People of the State of New York acting through their Commissioner of the Department of Environmental Conservation, (2) Owners: B.B.&S. Treated Lumber Corporation; B.B.&S. Treated Lumber Corp.; B.B.&S. Creosote Lumber Company, Inc.; B.B.&S. Creosote Lumber Co., Inc., and (3) Frontier Abstract and Research Services, Inc.

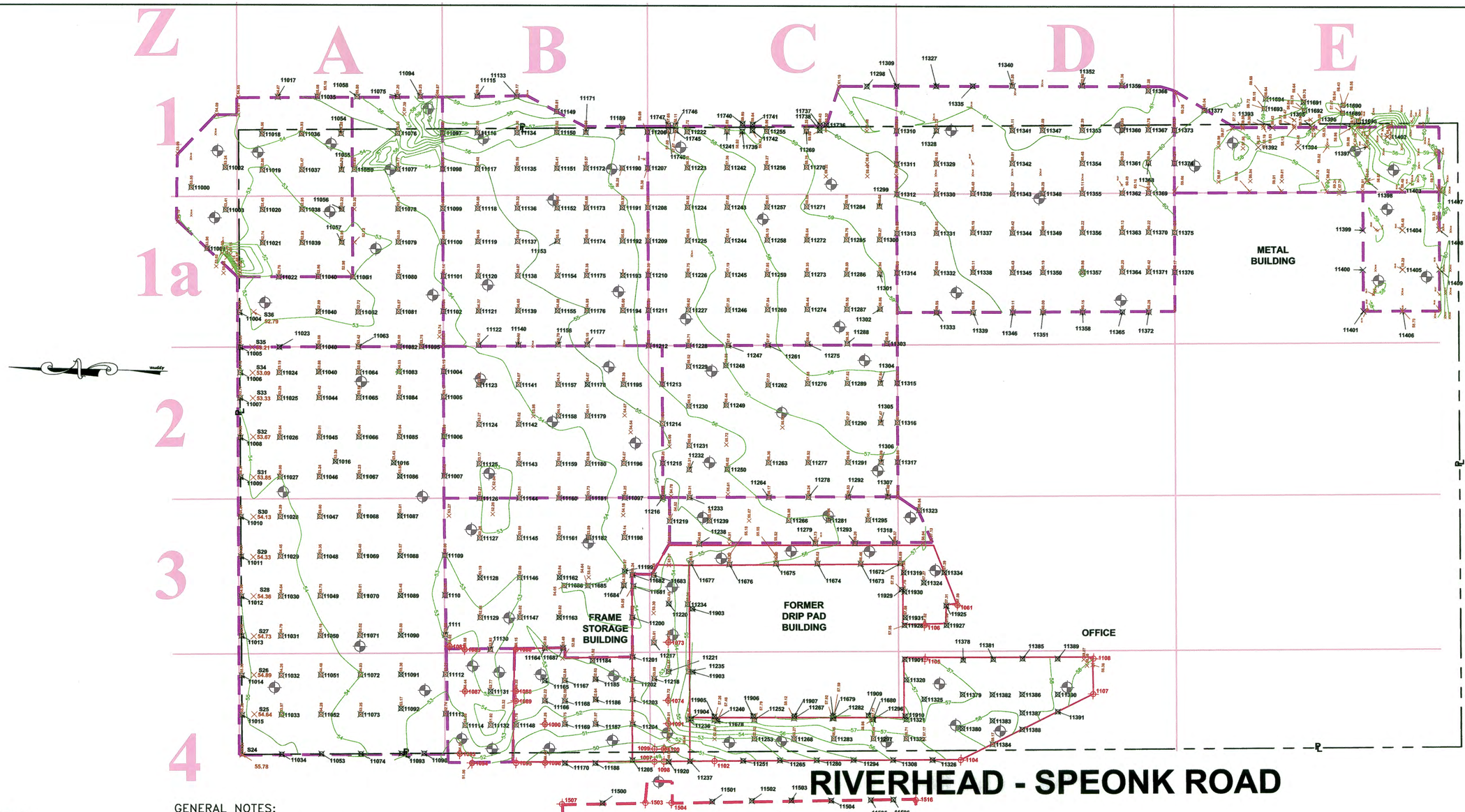
This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2011 Minimum Standard Detail Requirements for ALTA/ACSM Land Title Surveys, jointly established and adopted by ALTA and NSPS, and does not include any optional items of Table A. Pursuant to the accuracy standards as adopted by ALTA and NSPS and in effect on the date of this certification, undersigned further certifies that in my professional opinion, as a land surveyor registered in the state of New York, the relative positional accuracy of this survey does not exceed that which is specified therein.

I hereby certify that this map was made from an actual survey completed by me on 05/08/2012.

ROY R. FULKERSON, P.L.S.
NYSPLS No. 49050

L. K. McLEAN ASSOCIATES, P.C.
CONSULTING ENGINEERS & SURVEYORS
437 SOUTH COUNTRY ROAD
BROOKHAVEN, NEW YORK 11719
(631)286-8668

C Surveys and Site Drawings



LEGEND

SYMBOL	DESCRIPTION
— ℄ —	Approx. Property Line (from August 2010 Plans)
	Composite Soil Sample Location
	Excavation Areas
	Area of Hazardous Cell
	Hazardous Soil Boundary
11000	Set Confirmatory Sampling Point
1500	Excavation Node (Preset Confirmatory Sampling Point)
50.00	Existing Spot Elevation (Prior to Excavation)
60	Excavation Elevation Contour (1' C.I.)

GENERAL NOTES:

1. MEASUREMENTS ARE IN ACCORDANCE WITH U.S. STANDARDS.
2. PROJECT HORIZONTAL DATUM IS NAD 1927, VERTICAL DATUM IS NAVD 88 (RTK GPS).
3. SOIL SAMPLE LOCATIONS FROM AUGUST 2010 PLANS BY ENVIRONMENTAL QUALITY COMPANY – EQ NORTHEAST INC. (FIGURES 4A, 4B, 4C & 4D) FOR THE NYSDEC.
4. NTSDEC SITE ID 1-52-123.
5. END POINT SAMPLING ELEVATIONS FROM FIELD SURVEYS OF OCT. 28, 29, & NOV. 1, 2, 3, 12, 15, 16, 19 & 30, & DEC. 1, 2, 6, 7, 8, 9, 10, 13, 16, 17, & 20, AND JAN. 6, 7, 10, 11, 13, 17, 19, & 20, AND APRIL 18, 20, & 28, 2011 BY L.K. McLEAN ASSOC., P.C.
6. APPROXIMATE PROPERTY LINE AND MAPPING BASED ON SURVEYS BY JOHN C. EHLERS , LAND SURVEYOR, 6 MAIN STREET RIVERHEAD, NY 11901 AND WENDEL SURVEYORS, 7405 CANAL ROAD LOCKPORT, NY 14095.
7. UNAUTHORIZED ALTERATION OR ADDITION TO A SURVEY MAP BEARING A LICENSED LAND SURVEYOR'S SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.
8. ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MARKED WITH AN ORIGINAL OF THE LAND SURVEYOR'S "EMBOSSED" SEAL OR "INKED" SEAL SHALL BE CONSIDERED TO BE VALID TRUE COPIES.

SUFFOLK CO. REAL PROPERTY TAX MAP NUMBER
DISTRICT #900
SECTION #303
BLOCK #1
LOT #2.8

GRAPHIC SCALE 1 INCH = 40 FT. (IN FEET)

FINAL

DATE	BY	DESCRIPTION	APPROV. BY
REVISIONS			

LIKMA

B.B.&S. TREATED LUMBER CORP.
SOUTHAMPTON, SUFFOLK COUNTY, NEW YORK

1338 RIVERHEAD-SPEONK RD. SITE REMEDIATION
(Survey & Mapping Services)

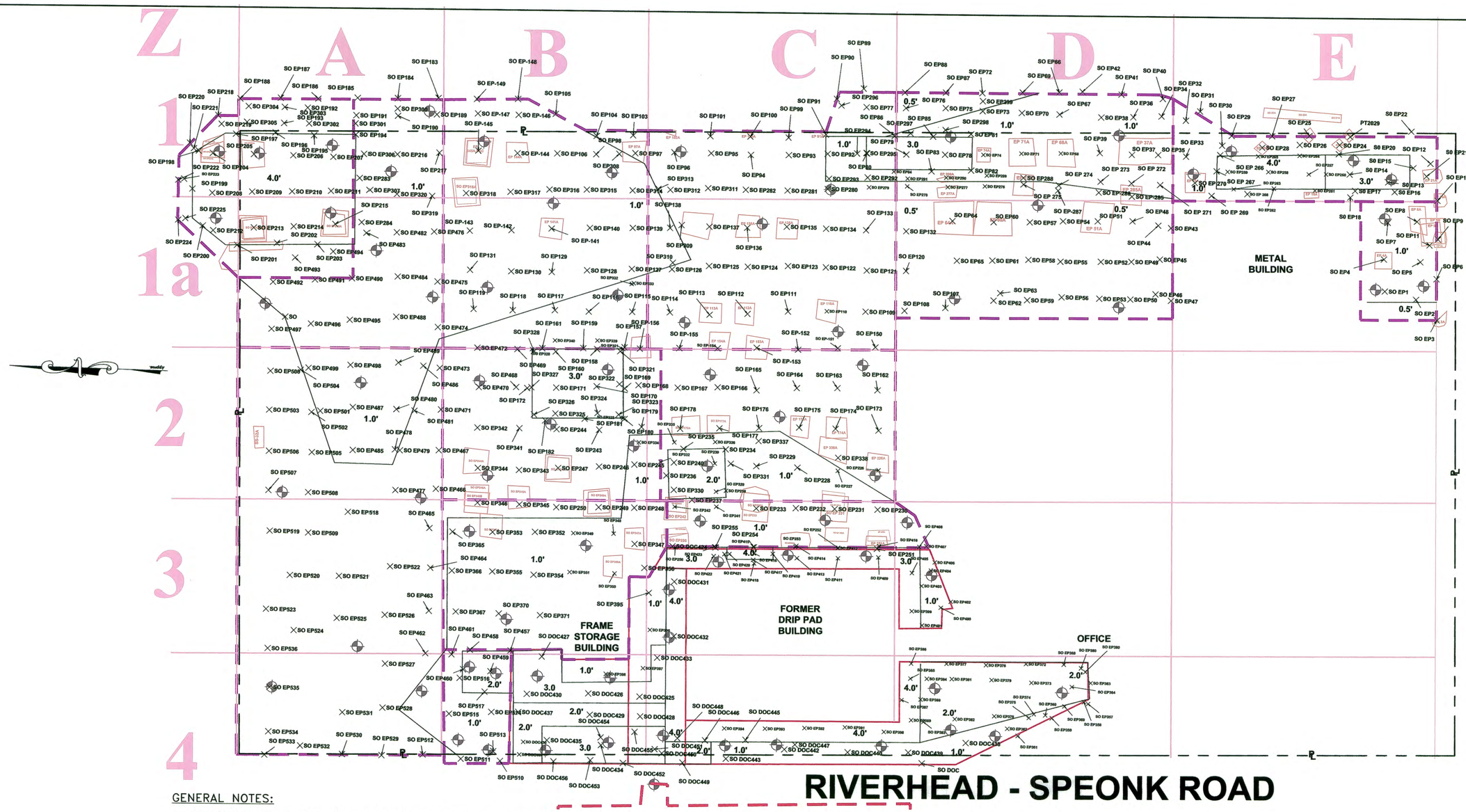
EXISTING CONDITIONS PLAN
(EAST SIDE)

L. K. McLEAN ASSOCIATES, P.C.
CONSULTING ENGINEERS
TEL. (631) 286-8668
437 SOUTH COUNTRY RD., BROOKHAVEN, NEW YORK 11719
ROY R. FULKERSON, P.L.S.

STATE OF NEW YORK · ROY R. FULKERSON · No. 049500 · LICENSED LAND SURVEYOR

Designed By: CFD	Scale: AS NOTED	DRAWING 1/9
Drawn By: TLS	Date: April 29, 2011	
Approved By: RRF	File No.: 10060.000	

Oct. 17, 2011 - 08:25am
P:\10060.000 (BB&S Site Remediation - Survey & Mapping Services)\Dwg\Final AsBuilts\1-Existing Conditions Plan-East Side.dwg



GENERAL NOTES:

1. MEASUREMENTS ARE IN ACCORDANCE WITH U.S. STANDARDS.
2. PROJECT HORIZONTAL DATUM IS NAD 1927, VERTICAL DATUM IS NAVD 88 (RTK GPS).
3. SOIL SAMPLE LOCATIONS FROM AUGUST 2010 PLANS BY ENVIRONMENTAL QUALITY COMPANY – EQ NORTHEAST INC. (FIGURES 4A, 4B, 4C & 4D) FOR THE NYSDEC.
4. NTSDEC SITE ID 1-52-123.
5. END POINT SAMPLING EXCAVATION ELEVATIONS FROM FIELD SURVEYS OF OCT. 28, NOV. 3, 12, 16, 19, 30, AND DEC. 1, 2, 6, 7, 8, 9, 13, 16, 17, 20, 22, 2010 AND JAN. 4, 5, 11, 13, 17, 19, 20, 24, 25, AND APRIL 18, 19, 20, 25, 26, 27, & MAY 5, 9, 12, 16, 18, & 23, 2011 BY L.K. McLEAN ASSOC., P.C.
6. APPROXIMATE PROPERTY LINE AND MAPPING BASED ON SURVEYS BY JOHN C. EHLERS , LAND SURVEYOR, 6 MAIN STREET RIVERHEAD, NY 11901 AND WENDEL SURVEYORS, 7405 CANAL ROAD LOCKPORT, NY 14095.
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8. ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MARKED WITH AN ORIGINAL OF THE LAND SURVEYOR'S "EMBOSSED" SEAL OR "INKED" SEAL SHALL BE CONSIDERED TO BE VALID TRUE COPIES.

LEGEND

SYMBOL	DESCRIPTION
— ℄ —	Approx. Property Line (from August 2010 Plans)
	Composite Soil Sample Location
	Excavation Areas
	Area of Hazardous Cell
	Hazardous Soil Boundary
SO EP11	End Point Sampling to Date
EP 155A 1.0'	Hot Spot Area
	Proposed Excavation Depth

SUFFOLK CO. REAL PROPERTY TAX MAP NUMBER
DISTRICT #900
SECTION #303
BLOCK #1
LOT #2.8

GRAPHIC SCALE (IN FEET) 1 INCH = 40 FT.

FINAL

DATE	BY	DESCRIPTION	APPROV. BY
		REVISIONS	

B.B.&S. TREATED LUMBER CORP.
SOUTHAMPTON, SUFFOLK COUNTY, NEW YORK
1338 RIVERHEAD-SPEONK RD. SITE REMEDIATION
(Survey & Mapping Services)

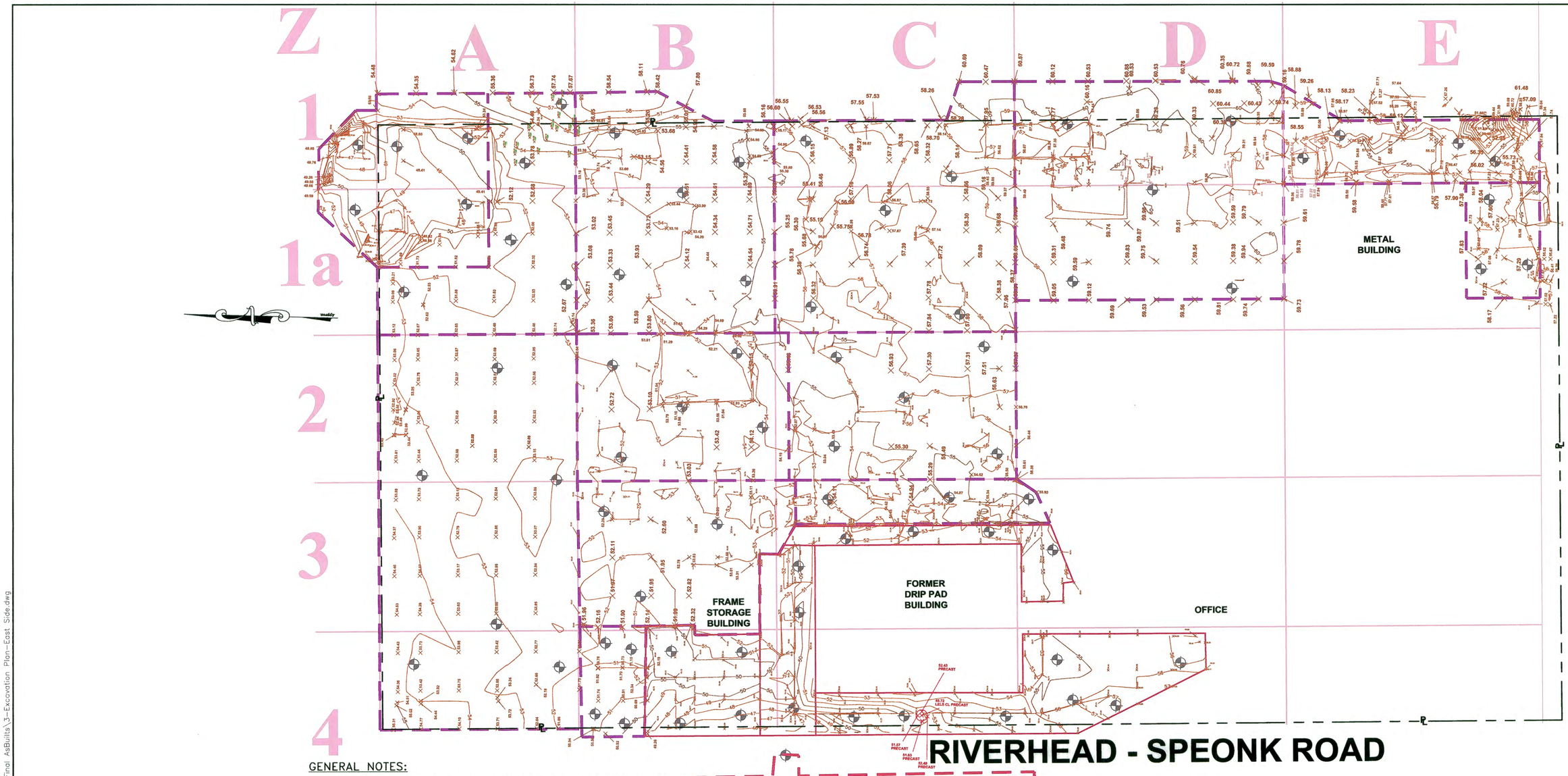
(AS-BUILT)
END POINTS PLAN (EAST SIDE)

L. K. McLEAN ASSOCIATES, P.C.
CONSULTING ENGINEERS
TEL. (631) 286-8668
437 SOUTH COUNTRY RD., BROOKHAVEN, NEW YORK 11719
ROY R. FULKERSON, P.L.S.

STATE OF NEW YORK ROY R. FULKERSON LIC. NO. 049504 LICENSED LAND SURVEYOR

Designed By: CFD	Scale: AS NOTED	DRAWING	
Drawn By: TLS/LMY	Date: May 24, 2011	2	
Approved By: RRF	File No.: 10060.000	9	

Oct 17, 2011 - 08:31am
P:\10060.000 (BB&S Site Remediation - Survey & Mapping Services)\Dwg\Final AsBuilts\2-End Points Plan-East Side.dwg



GENERAL NOTES:

1. MEASUREMENTS ARE IN ACCORDANCE WITH U.S. STANDARDS.
2. PROJECT HORIZONTAL DATUM IS NAD 1927, VERTICAL DATUM IS NAVD 88 (RTK GPS).
3. SOIL SAMPLE LOCATIONS FROM AUGUST 2010 PLANS BY ENVIRONMENTAL QUALITY COMPANY – EQ NORTHEAST INC. (FIGURES 4A, 4B, 4C & 4D) FOR THE NYSDEC.
4. NTSDEC SITE ID 1-52-123.
5. POINT EXCAVATION ELEVATIONS FROM FIELD SURVEYS OF OCT. 28, 29, & NOV. 1, 2, 3, 12, 15, 16, 19, 30, & DEC. 1, 2, 6, 7, 8, 9, 10, 13, 16, 17, 20, 22, 2010 AND JAN. 4, 5, 10, 14, 17, 18, 19, 20, 21, 24, 25, & APRIL 18, 19, 20, 25, 26, 27 28, & MAY 5, 6, 9, 12, 13, 16, 18, 20, 23 & 24, 2011 BY L.K. McLEAN ASSOC., P.C..
6. APPROXIMATE PROPERTY LINE AND MAPPING BASED ON SURVEYS BY JOHN C. EHLERS , LAND SURVEYOR, 6 MAIN STREET RIVERHEAD, NY 11901 AND WENDEL SURVEYORS, 7405 CANAL ROAD LOCKPORT, NY 14095.
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8. ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MARKED WITH AN ORIGINAL OF THE LAND SURVEYOR'S "EMBOSSED" SEAL OR "INKED" SEAL SHALL BE CONSIDERED TO BE VALID TRUE COPIES.

LEGEND

SYMBOL	DESCRIPTION
—℄—	Approx. Property Line (from August 2010 Plans)
	Composite Soil Sample Location
	Excavation Areas
	Area of Hazardous Cell
	Hazardous Soil Boundary
60.00	Excavated Ground Elevation

Site Volume Table: Unadjusted

Site	Stratum	Surf1	Surf2	Cut yards	Fill yards	Net yards	Method
10060.000 (BB&S Site Remediati							
				10905	8	10897 (C)	Grid
				10972	9	10964 (C)	Composite
				11116	10	11106 (C)	Prismoidal

Hazardous Cell Area Only (East & North of Bldg.)

hazard cell excav-28 april 2011	existing to 29 april 2011	hazard cell excav to 28 april 2011	
2726	0	2726 (C)	Grid
2816	0	2816 (C)	Composite

SUFFOLK CO. REAL PROPERTY TAX MAP NUMBER
DISTRICT #900
SECTION #303
BLOCK #1
LOT #2.8

GRAPHIC SCALE 1 INCH = 40 FT. (IN FEET)

FINAL

DATE	BY	DESCRIPTION	APPROV. BY
		REVISIONS	

B.B.&S. TREATED LUMBER CORP.
SOUTHAMPTON, SUFFOLK COUNTY, NEW YORK
1338 RIVERHEAD-SPEONK RD. SITE REMEDIATION
(Survey & Mapping Services)

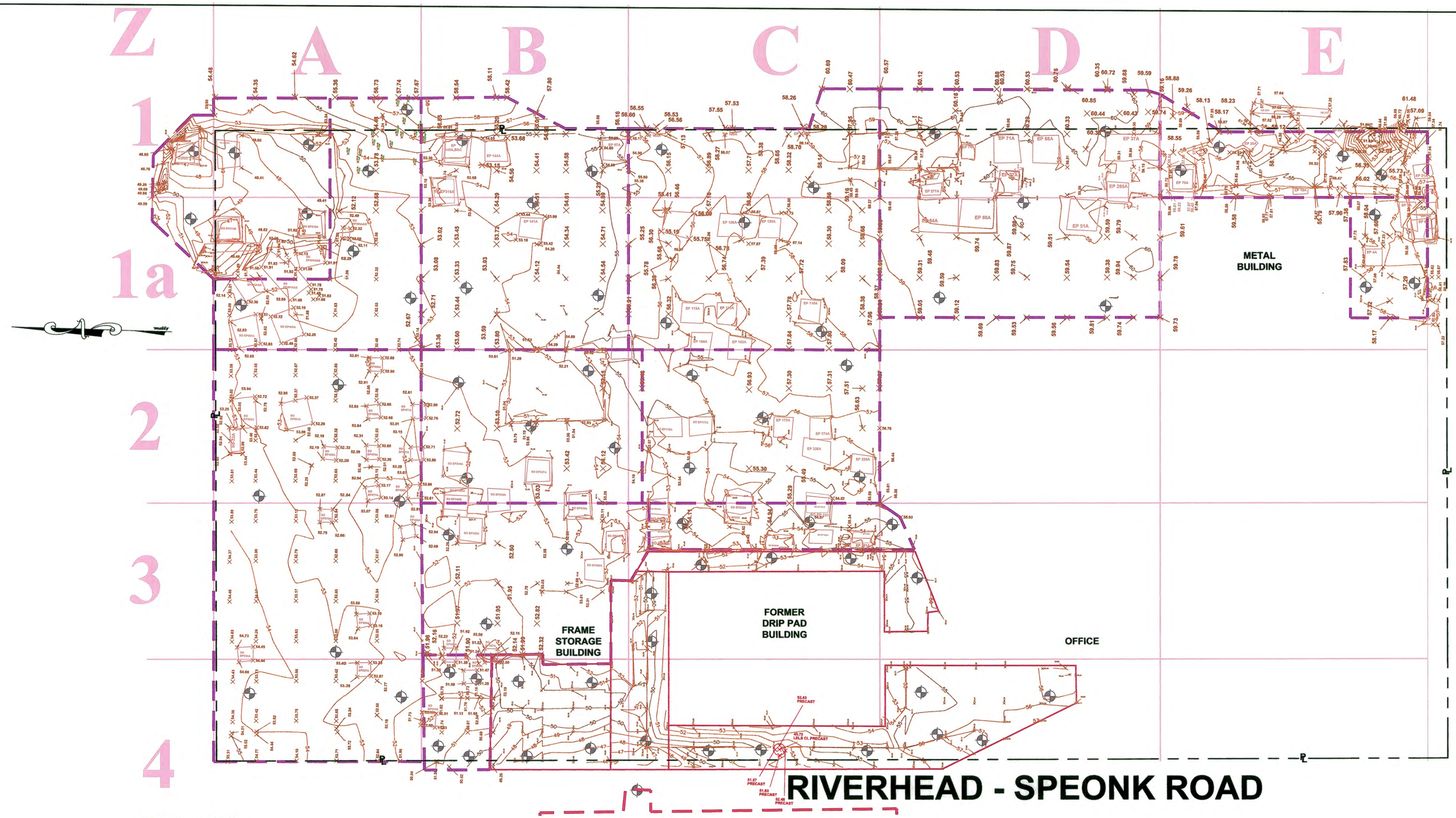
(AS-BUILT) EXCAVATION PLAN (EAST SIDE)

L. K. McLEAN ASSOCIATES, P.C.
CONSULTING ENGINEERS
TEL. (631) 286-8668
437 SOUTH COUNTRY RD., BROOKHAVEN, NEW YORK 11719
ROY R. FULKERSON, P.L.S.

Designed By: CFD	Scale: AS NOTED	DRAWING 3/9
Drawn By: TLS/LMY	Date: June 10, 2011	
Approved By: RRF	File No.: 10060.000	

STATE OF NEW YORK — ROY R. FULKERSON — No. 049500 — LICENSED LAND SURVEYOR

Oct 17, 2011 - 08:41am
P:\10060.000 (BB&S Site Remediation - Survey & Mapping Services)\Dwg\Final AsBuilts\3-Excavation Plan-East Side.dwg



LEGEND

SYMBOL	DESCRIPTION
— —℄— —	Approx. Property Line (from August 2010 Plans)
	Composite Soil Sample Location
	Excavation Areas
	Area of Hazardous Cell
	Hazardous Soil Boundary
60	Excavation Elevation Contour (1' C.I.)
	Hot Spot Area
×60.00	PRE REDIG Elevation

GENERAL NOTES:

1. MEASUREMENTS ARE IN ACCORDANCE WITH U.S. STANDARDS.
2. PROJECT HORIZONTAL DATUM IS NAD 1927, VERTICAL DATUM IS NAVD 88 (RTK GPS).
3. SOIL SAMPLE LOCATIONS FROM AUGUST 2010 PLANS BY ENVIRONMENTAL QUALITY COMPANY – EQ NORTHEAST INC. (FIGURES 4A, 4B, 4C & 4D) FOR THE NYSDEC.
4. NTSDEC SITE ID 1-52-123.
5. POINT EXCAVATION ELEVATIONS FROM FIELD SURVEYS OF OCT. 28, 29, & NOV. 1, 2, 3, 12, 15, 16, 19, 30, & DEC. 1, 2, 6, 7, 8, 9, 10, 13, 16, 17, 20, 22, 2010 AND JAN. 4, 5, 10, 14, 17, 18, 19, 20, 21, 24, 25, & APRIL 18, 19, 20, 25, 26, 27 28, & MAY 5, 6, 9, 12, 13, 16, 18, 20, 23, & 24 AND JUNE 9, & 28, 2011 BY L.K. McLEAN ASSOC., P.C.
6. APPROXIMATE PROPERTY LINE AND MAPPING BASED ON SURVEYS BY JOHN C. EHLERS , LAND SURVEYOR, 6 MAIN STREET RIVERHEAD, NY 11901 AND WENDEL SURVEYORS, 7405 CANAL ROAD LOCKPORT, NY 14095.
7. UNAUTHORIZED ALTERATION OR ADDITION TO A SURVEY MAP BEARING A LICENSED LAND SURVEYOR'S SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.
8. ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MARKED WITH AN ORIGINAL OF THE LAND SURVEYOR'S "EMBOSSED" SEAL OR "INKED" SEAL SHALL BE CONSIDERED TO BE VALID TRUE COPIES.

SUFFOLK CO. REAL PROPERTY TAX MAP NUMBER
DISTRICT #900
SECTION #303
BLOCK #1
LOT #2.8

GRAPHIC SCALE 1 INCH = 40 FT. (IN FEET)

FINAL

DATE	BY	DESCRIPTION	APPROV. BY
REVISIONS			

LKMA

B.B.&S. TREATED LUMBER CORP.
SOUTHAMPTON, SUFFOLK COUNTY, NEW YORK
1338 RIVERHEAD-SPEONK RD. SITE REMEDIATION
(Survey & Mapping Services)

(AS-BUILT)
PRE REDIG PLAN (EAST SIDE)

L. K. McLEAN ASSOCIATES, P.C.
CONSULTING ENGINEERS
TEL. (631) 286-8668
437 SOUTH COUNTRY RD., BROOKHAVEN, NEW YORK 11719
ROY R. FULKERSON, P.L.S.

STATE OF NEW YORK · ROY R. FULKERSON · No. 049500 · LICENSED LAND SURVEYOR

Designed By: CFD	Scale: AS NOTED	DRAWING 4/9
Drawn By: TLS/LMY	Date: July 5, 2011	
Approved By: RRF	File No.: 10060.000	

Oct 17, 2011 - 08:47am
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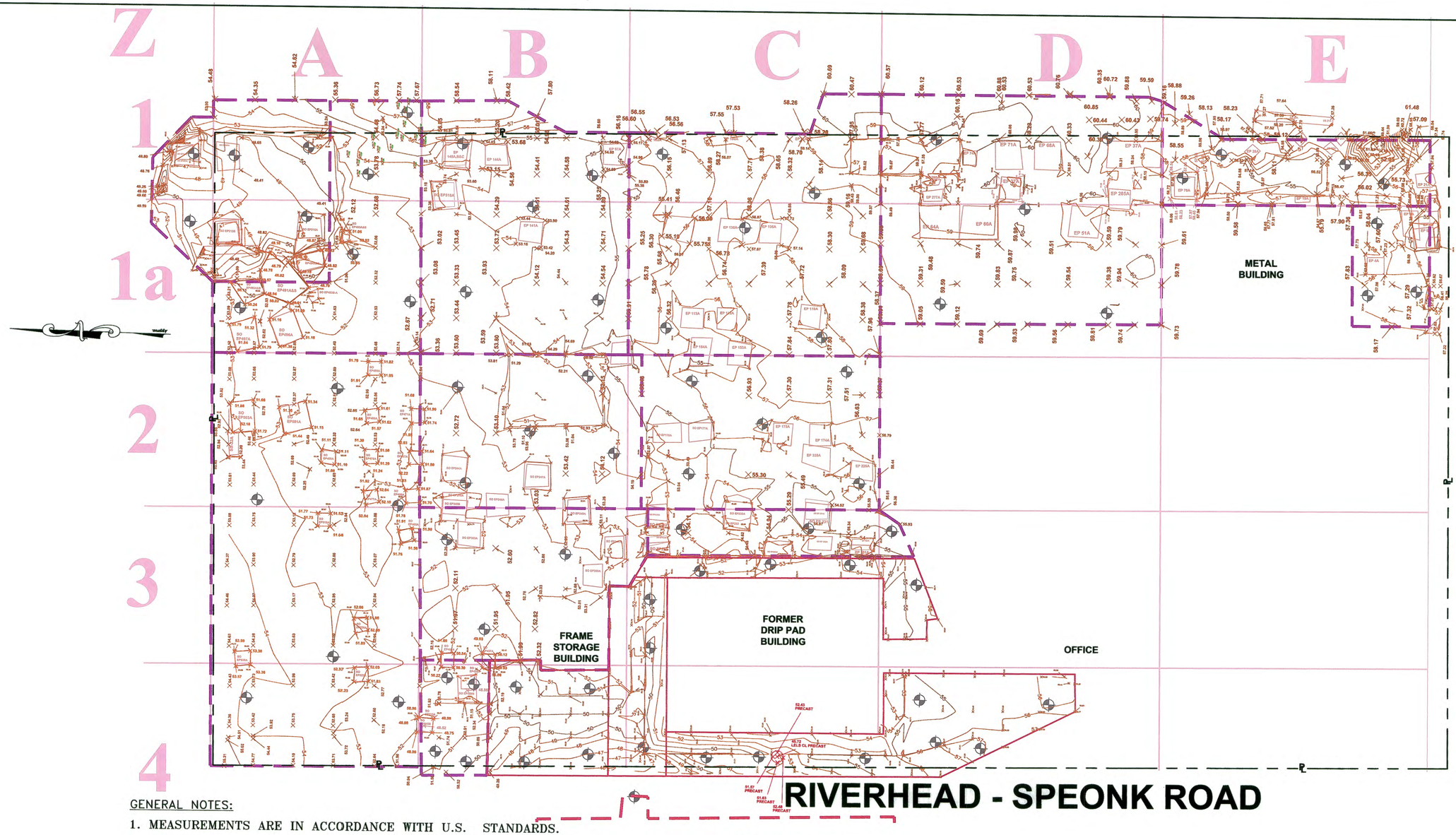


GENERAL NOTES:

1. MEASUREMENTS ARE IN ACCORDANCE WITH U.S. STANDARDS.
2. PROJECT HORIZONTAL DATUM IS NAD 1927, VERTICAL DATUM IS NAVD 88 (RTK GPS).
3. SOIL SAMPLE LOCATIONS FROM AUGUST 2010 PLANS BY ENVIRONMENTAL QUALITY COMPANY - EQ NORTHEAST INC. (FIGURES 4A, 4B, 4C & 4D) FOR THE NYSDEC.
4. NTSDEC SITE ID 1-52-123.
5. POINT EXCAVATION ELEVATIONS FROM FIELD SURVEYS OF OCT. 28, 29, & NOV. 1, 2, 3, 12, 15, 16, 19, 30, & DEC. 1, 2, 6, 7, 8, 9, 10, 13, 16, 17, 20, 22, 2010 AND JAN. 4, 5, 10, 14, 17, 18, 19, 20, 21, 24, 25, & APRIL 18, 19, 20, 25, 26, 27 28, & MAY 5, 6, 9, 12, 13, 16, 18, 20, 23, & 24 AND JUNE 9, & 28, 2011 BY L.K. McLEAN ASSOC., P.C.
6. APPROXIMATE PROPERTY LINE AND MAPPING BASED ON SURVEYS BY JOHN C. EHLERS , LAND SURVEYOR, 6 MAIN STREET RIVERHEAD, NY 11901 AND WENDEL SURVEYORS, 7405 CANAL ROAD LOCKPORT, NY 14095.
7. UNAUTHORIZED ALTERATION OR ADDITION TO A SURVEY MAP BEARING A LICENSED LAND SURVEYOR'S SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.
8. ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MARKED WITH AN ORIGINAL OF THE LAND SURVEYOR'S "EMBOSSED" SEAL OR "INKED" SEAL SHALL BE CONSIDERED TO BE VALID TRUE COPIES.

LEGEND

SYMBOL	DESCRIPTION
— -℄- —	Approx. Property Line (from August 2010 Plans)
	Composite Soil Sample Location
	Excavation Areas
	Area of Hazardous Cell
	Hazardous Soil Boundary
60	Excavation Elevation Contour (1' C.I.)
	Hot Spot Area
×60.00	**Excavation Elevation**
×59.50	**REDIG Excavation Elevation**

Site Volume Table: Unadjusted

Site	Stratum	Surf1	Surf2	Cut yards	Fill yards	Net yards	Method
Redig							
	28 june 2011-redig	pre redig-28 june 2011		360	3	357 (C)	Grid
				361	4	357 (C)	Composite
				363	5	358 (C)	End area
		redig excav-28 june 2011		362	7	355 (C)	Prismoidal

SUFFOLK CO. REAL PROPERTY TAX MAP NUMBER
DISTRICT #900
SECTION #303
BLOCK #1
LOT #2.8

GRAPHIC SCALE (IN FEET) 1 INCH = 40 FT.

FINAL

DATE	BY	DESCRIPTION	APPROV. BY
REVISIONS			

LKMA

B.B.&S. TREATED LUMBER CORP.
SOUTHAMPTON, SUFFOLK COUNTY, NEW YORK
1338 RIVERHEAD-SPEONK RD. SITE REMEDIATION
(Survey & Mapping Services)

(AS-BUILT) REDIG EXCAVATION PLAN (EAST SIDE)

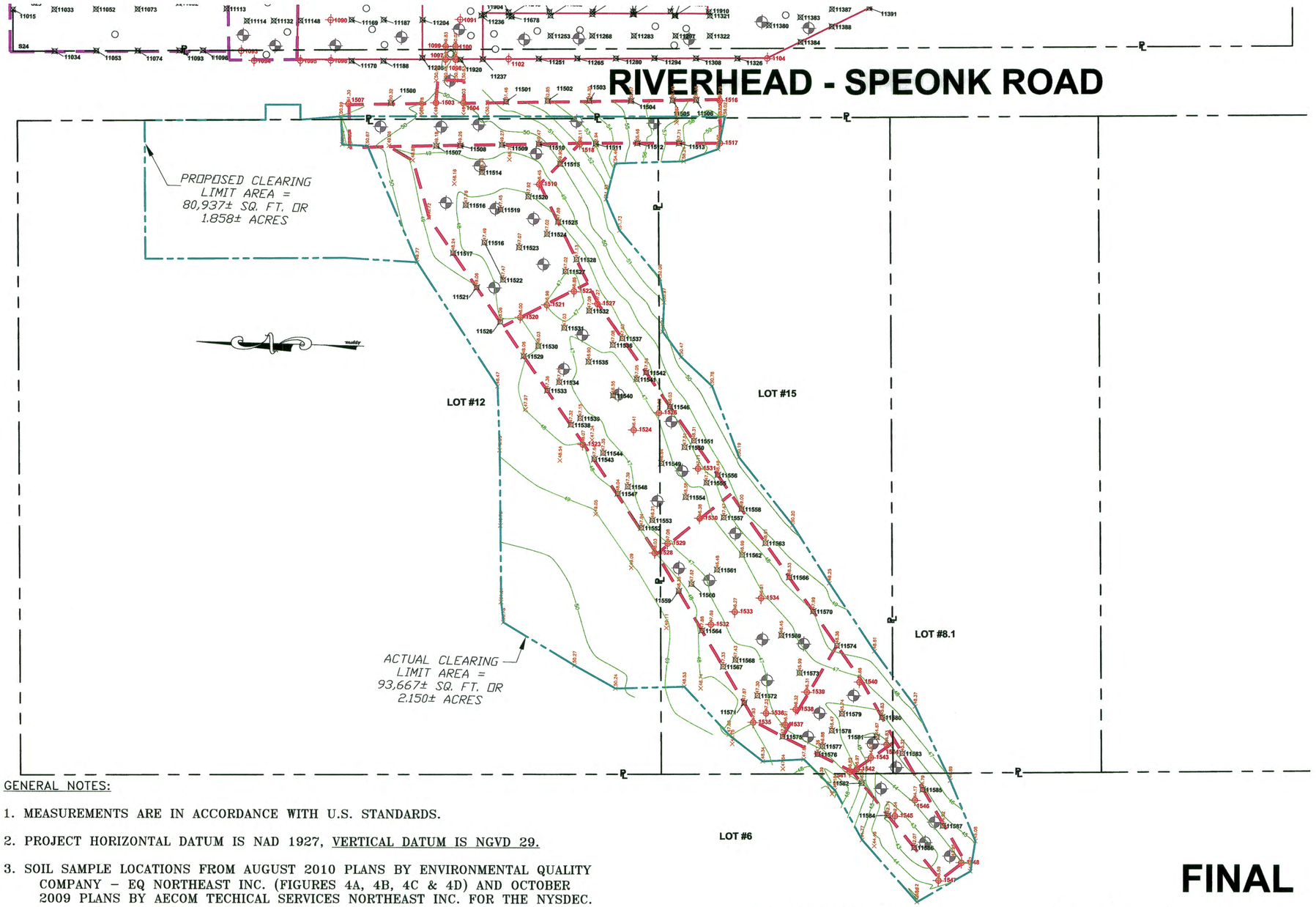
L. K. McLEAN ASSOCIATES, P.C.
CONSULTING ENGINEERS
TEL. (631) 286-8668
437 SOUTH COUNTRY RD., BROOKHAVEN, NEW YORK 11719
ROY R. FULKERSON, P.L.S.

STATE OF NEW YORK ROY R. FULKERSON LICENSED LAND SURVEYOR

Designed By: CFD	Scale: AS NOTED	DRAWING	
Drawn By: TLS/LMY	Date: July 5, 2011	5	9
Approved By: RRF	File No.: 10060.000		

Oct 17, 2011 - 08:52am
P:\10060.000 (B&S Site Remediation - Survey & Mapping Services)\Dwg\Final AsBuilts\5-Redig Excavation Plan-East Side.dwg

RIVERHEAD - SPEONK ROAD



GENERAL NOTES:

1. MEASUREMENTS ARE IN ACCORDANCE WITH U.S. STANDARDS.
2. PROJECT HORIZONTAL DATUM IS NAD 1927, VERTICAL DATUM IS NGVD 29.
3. SOIL SAMPLE LOCATIONS FROM AUGUST 2010 PLANS BY ENVIRONMENTAL QUALITY COMPANY – EQ NORTHEAST INC. (FIGURES 4A, 4B, 4C & 4D) AND OCTOBER 2009 PLANS BY AECOM TECHICAL SERVICES NORTHEAST INC. FOR THE NYSDEC.
4. NTSDEC SITE ID 1-52-123.
5. EXISTING POINT SPOT ELEVATIONS FROM FIELD SURVEY OF JUNE 24, 2011 BY L.K. McLEAN ASSOC., P.C.
6. APPROXIMATE PROPERTY LINE AND MAPPING BASED ON SURVEYS BY JOHN C. EHLERS , LAND SURVEYOR, 6 MAIN STREET RIVERHEAD, NY 11901 AND WENDEL SURVEYORS, 7405 CANAL ROAD LOCKPORT, NY 14095.
7. UNAUTHORIZED ALTERATION OR ADDITION TO A SURVEY MAP BEARING A LICENSED LAND SURVEYOR'S SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.
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LEGEND

SYMBOL	DESCRIPTION
—P—	Approx. Property Line from Oct. 2009 Plans
	Composite Soil Sample Location
	Excavation Areas
	Area of Hazardous Cell
	Hazardous Soil Boundary
11000	Set Confirmatory Sampling Point
1500	Excavation Node (Preset Confirmatory Sampling Point)
50.50	Existing Pre-Excavation Point (Spot Elevation)
60	Existing Elevation Contour (1' C.I.)

SUFFOLK CO. REAL PROPERTY TAX MAP NUMBER
DISTRICT #900
SECTION #301
BLOCK #2
LOT #12 & #15
AND
SECTION #326
BLOCK #1
LOT #6 & #8.1

GRAPHIC SCALE 1 INCH = 40 FT. (IN FEET)

FINAL

DATE	BY	DESCRIPTION	APPROV. BY
		REVISIONS	

LKMA

B.B.&S. TREATED LUMBER CORP.
SOUTHAMPTON, SUFFOLK COUNTY, NEW YORK
1338 RIVERHEAD-SPEONK RD. SITE REMEDIATION
(Survey & Mapping Services)

EXISTING CONDITIONS PLAN (WEST SIDE)

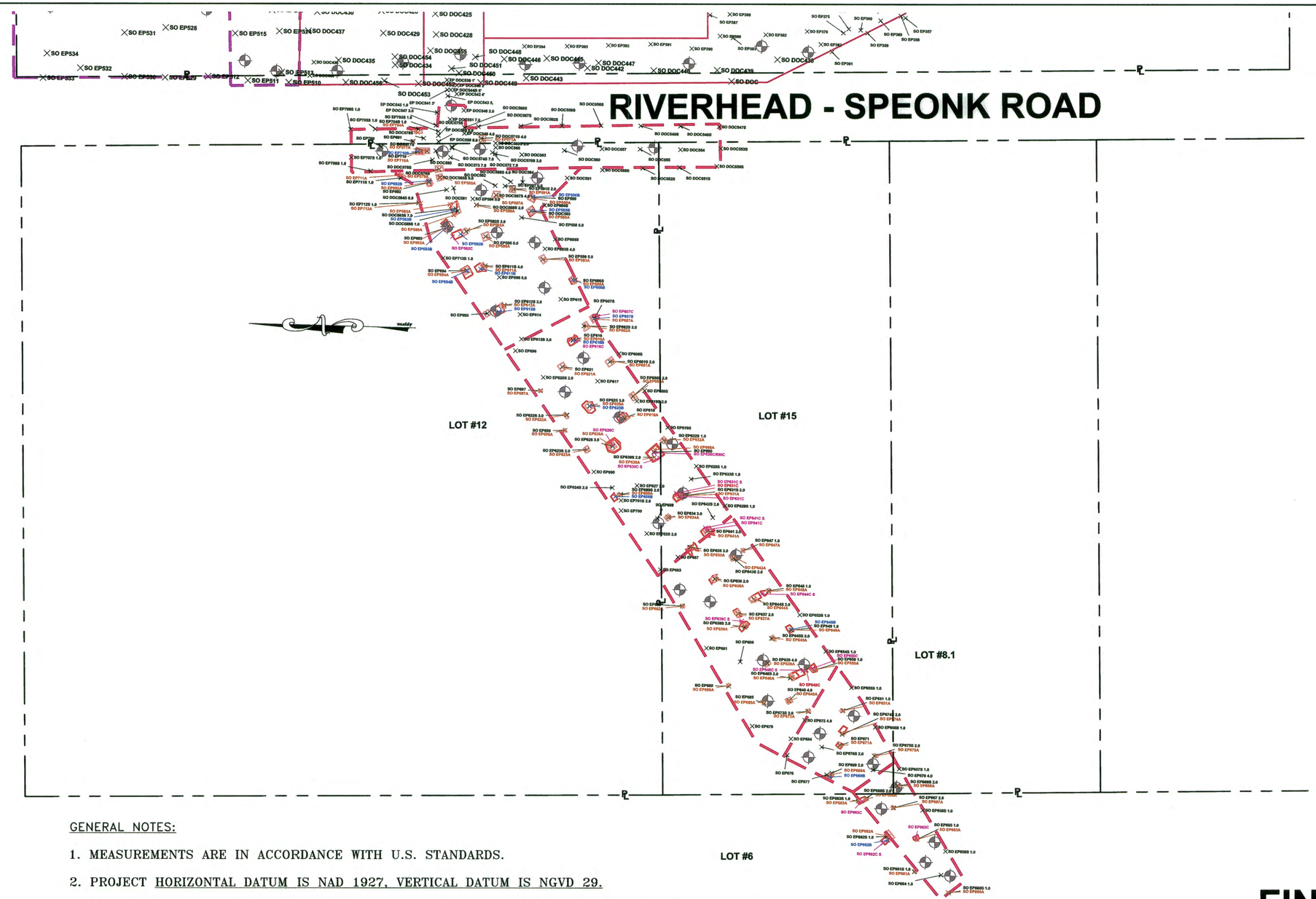
L. K. McLEAN ASSOCIATES, P.C.
CONSULTING ENGINEERS 437 SOUTH COUNTRY RD., BROOKHAVEN, NEW YORK 11719
TEL. (631) 286-8668 ROY R. FULKERSON, P.L.S.

STATE OF NEW YORK ROY R. FULKERSON No. 049508 LICENSED LAND SURVEYOR

Designed By: CFD		Scale: AS NOTED	DRAWING 6/9
Drawn By: TLS/LMY		Date: June 24, 2011	
Approved By: RRF		File No.: 10060.000	

Oct 17, 2011 - 09:01am
P:\10060.000 (BB&S Site Remediation - Survey & Mapping Services)\Dwg\Final AsBuilts\6-Ex Conditions Plan-West Side.dwg

RIVERHEAD - SPEONK ROAD



LEGEND

SYMBOL	DESCRIPTION
— ℄ —	Approx. Property Line from Oct. 2009 Plans
	Composite Soil Sample Location
	Excavation Areas
	Area of Hazardous Cell
	Hazardous Soil Boundary
SO EP11	End Point Sampling to Date
	Hot Spot Area
	Redig Area

GENERAL NOTES:

1. MEASUREMENTS ARE IN ACCORDANCE WITH U.S. STANDARDS.
2. PROJECT HORIZONTAL DATUM IS NAD 1927, VERTICAL DATUM IS NGVD 29.
3. SOIL SAMPLE LOCATIONS FROM AUGUST 2010 PLANS BY ENVIRONMENTAL QUALITY COMPANY – EQ NORTHEAST INC. (FIGURES 4A, 4B, 4C & 4D) AND OCTOBER 2009 PLANS BY AECOM TECHICAL SERVICES NORTHEAST INC. FOR THE NYSDEC.
4. NTSDEC SITE ID 1-52-123.
5. END POINT SAMPLING EXCAVATION ELEVATIONS FROM FIELD SURVEYS OF JUNE 16, 23, 24, 27, 29, & 30 AND JULY 1, & 7, 27, 28, & 29 AND AUGUST 1, 5, 12, & 25, 2011 BY L.K. McLEAN ASSOC., P.C.
6. APPROXIMATE PROPERTY LINE AND MAPPING BASED ON SURVEYS BY JOHN C. EHLERS , LAND SURVEYOR, 6 MAIN STREET RIVERHEAD, NY 11901 AND WENDEL SURVEYORS, 7405 CANAL ROAD LOCKPORT, NY 14095.
7. UNAUTHORIZED ALTERATION OR ADDITION TO A SURVEY MAP BEARING A LICENSED LAND SURVEYOR'S SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.
8. ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MARKED WITH AN ORIGINAL OF THE LAND SURVEYOR'S "EMBOSSED" SEAL OR "INKED" SEAL SHALL BE CONSIDERED TO BE VALID TRUE COPIES.

SUFFOLK CO. REAL PROPERTY TAX MAP NUMBER
DISTRICT #900
SECTION #301
BLOCK #2
LOT #12 & #15
AND
SECTION #326
BLOCK #1
LOT #6 & #8.1

GRAPHIC SCALE 40 0 20 40 80 160 (IN FEET) 1 INCH = 40 FT.

FINAL

DATE	BY	DESCRIPTION	APPROV. BY
		REVISIONS	

LKMA

B.B.&S. TREATED LUMBER CORP.
SOUTHAMPTON, SUFFOLK COUNTY, NEW YORK
1338 RIVERHEAD-SPEONK RD. SITE REMEDIATION
(Survey & Mapping Services)

(AS-BUILT) END POINTS PLAN (WEST SIDE)

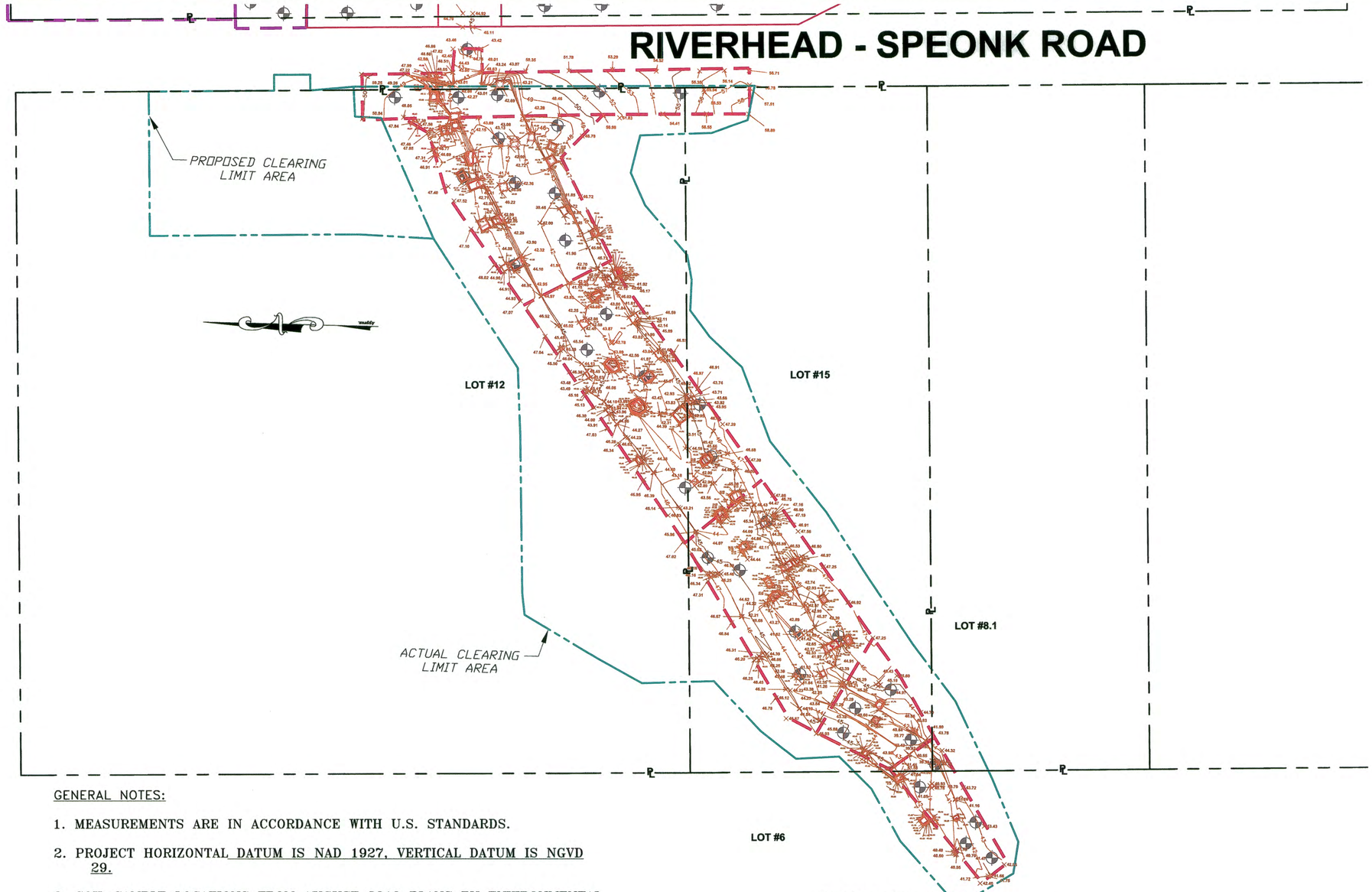
L. K. McLEAN ASSOCIATES, P.C.
CONSULTING ENGINEERS 437 SOUTH COUNTRY RD., BROOKHAVEN, NEW YORK 11719
TEL. (631) 286-8668 ROY R. FULKERSON, P.L.S.

STATE OF NEW YORK ROY R. FULKERSON No. 049500 LICENSED LAND SURVEYOR

Designed By: CFD	Scale: AS NOTED	DRAWING	
Drawn By: TLS/LMY	Date: Sept. 6, 2011	7 / 9	
Approved By: RRF	File No.: 10060.000		

Oct 17, 2011 - 09:04am
P:\10060.000 (BB&S Site Remediation - Survey & Mapping Services)\Dwg\Final AsBuilts\7-End Points Plan-West Side.dwg

RIVERHEAD - SPEONK ROAD



GENERAL NOTES:

1. MEASUREMENTS ARE IN ACCORDANCE WITH U.S. STANDARDS.
2. PROJECT HORIZONTAL DATUM IS NAD 1927, VERTICAL DATUM IS NGVD 29.
3. SOIL SAMPLE LOCATIONS FROM AUGUST 2010 PLANS BY ENVIRONMENTAL QUALITY COMPANY – EQ NORTHEAST INC. (FIGURES 4A, 4B, 4C & 4D) AND OCTOBER 2009 PLANS BY AECOM TECHICAL SERVICES NORTHEAST INC. FOR THE NYSDEC.
4. NTSDEC SITE ID 1-52-123.
5. POINT EXCAVATION ELEVATIONS FROM FIELD SURVEYS OF JUNE 16, 21, 23, 24, & 30, AND JULY 1, 7, 27, 28, & 29 AND AUGUST 1, 5, 12, & 25, 2011 BY L.K. McLEAN ASSOC., P.C.
6. APPROXIMATE PROPERTY LINE AND MAPPING BASED ON SURVEYS BY JOHN C. EHLERS , LAND SURVEYOR, 6 MAIN STREET RIVERHEAD, NY 11901 AND WENDEL SURVEYORS, 7405 CANAL ROAD LOCKPORT, NY 14095.
7. UNAUTHORIZED ALTERATION OR ADDITION TO A SURVEY MAP BEARING A LICENSED LAND SURVEYOR'S SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.
8. ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MARKED WITH AN ORIGINAL OF THE LAND SURVEYOR'S "EMBOSSED" SEAL OR "INKED" SEAL SHALL BE CONSIDERED TO BE VALID TRUE COPIES.

LEGEND

SYMBOL	DESCRIPTION
—P—	Approx. Property Line from Oct. 2009 Plans
⊕	Composite Soil Sample Location
	Excavation Areas
	Area of Hazardous Cell
	Hazardous Soil Boundary
60	Excavation Elevation Contour (1' C.I.)
	Hot Spot
	Redig Area
×60.00	**Excavation Elevation**

Site Volume Table: Unadjusted

Site	Stratum	Surf1	Surf2	Cut yards	Fill yards	Net yards	Method
Westside							
excav to 25 aug 2011	excond	Excav to 25 Aug 2011					
				4822	0	4822 (C)	Grid
				4874	0	4874 (C)	Composite
				4910	0	4910 (C)	End area

SUFFOLK CO. REAL PROPERTY TAX MAP NUMBER
DISTRICT #900
SECTION #301
BLOCK #2
LOT #12 & #15
AND
SECTION #326
BLOCK #1
LOT #6 & #8.1

GRAPHIC SCALE 1 INCH = 40 FT. (IN FEET)

FINAL

DATE	BY	DESCRIPTION	APPROV. BY
		REVISIONS	

LIKMA

B.B.&S. TREATED LUMBER CORP.
SOUTHAMPTON, SUFFOLK COUNTY, NEW YORK
1338 RIVERHEAD-SPEONK RD. SITE REMEDIATION
(Survey & Mapping Services)

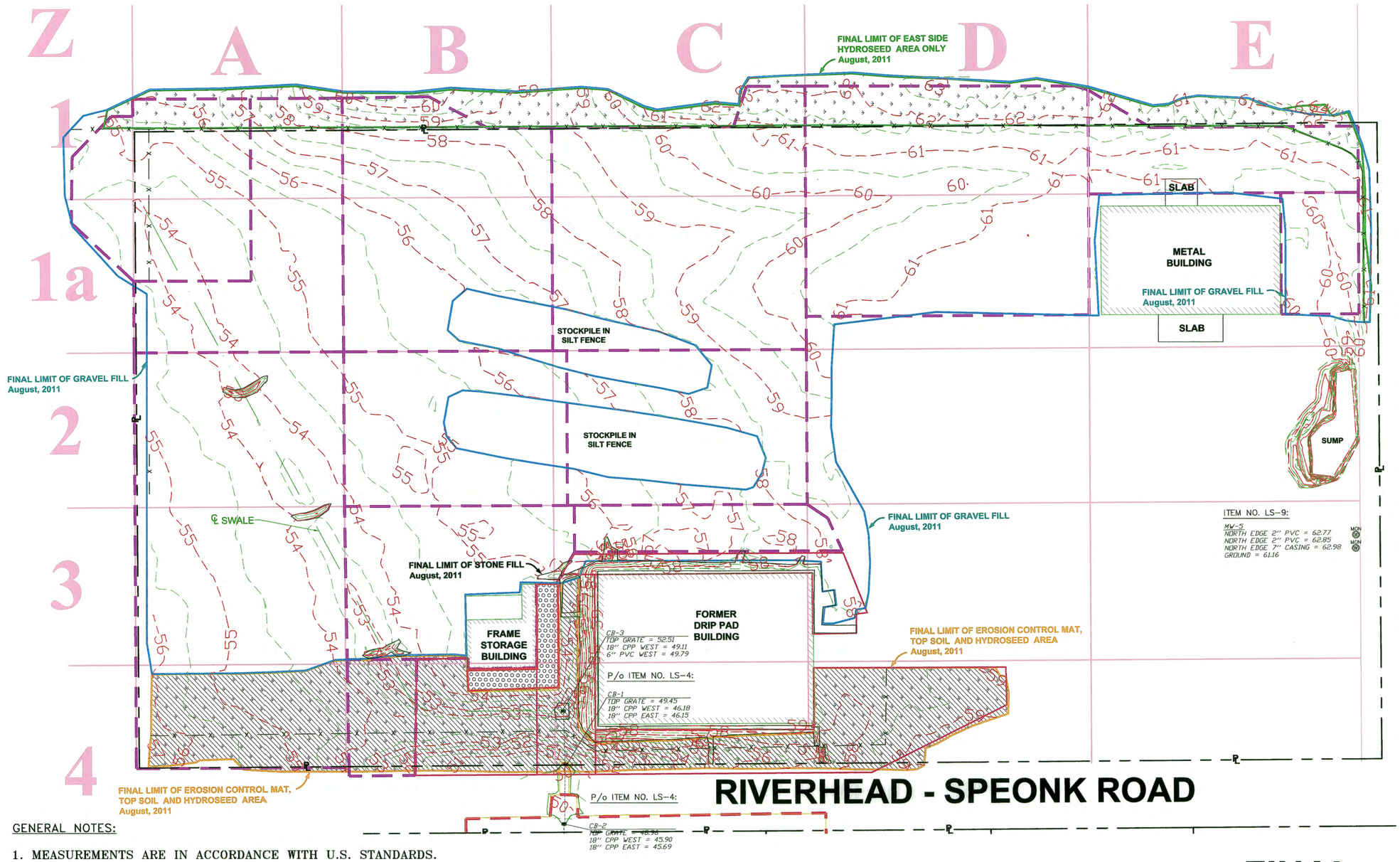
(AS-BUILT) EXCAVATION PLAN (WEST SIDE)

L. K. McLEAN ASSOCIATES, P.C.
CONSULTING ENGINEERS
TEL. (631) 286-8668
437 SOUTH COUNTRY RD., BROOKHAVEN, NEW YORK 11719
ROY R. FULKERSON, P.L.S.

STATE OF NEW YORK · ROY R. FULKERSON · No. 049021 · LICENSED LAND SURVEYOR

Designed By: CFD	Scale: AS NOTED	DRAWING	8/9
Drawn By: LMY	Date: Sept. 2, 2011		
Approved By: RRF	File No.: 10060.000		

Oct 17, 2011 - 09:09am
P:\10060.000 (BB&S Site Remediation - Survey & Mapping Services)\Dwg\Final AsBuilts\8-Excavation Plan-West Side.dwg



ITEM NO. LS-9:

MW-5
NORTH EDGE 2" PVC = 62.77
NORTH EDGE 2" PVC = 62.85
NORTH EDGE 7" CASING = 62.98
GROUND = 61.16

LEGEND

SYMBOL	DESCRIPTION
	Final Limit of Gravel Fill
	Final Limit of Top Soil
	Final Limit of Hydroseed
	Final Limit of Concrete
	Final Limit of Pavement
	Final Limit of Stone
	Excavation Areas
	Area of Hazardous Cell
	Hazardous Soil Boundary
—60—	Final Contour (1' C.I.)
—x—	Final Chainlink Fence
—℄—	Approx. Property Line from August 2010 Plans

GENERAL NOTES:

1. MEASUREMENTS ARE IN ACCORDANCE WITH U.S. STANDARDS.
2. PROJECT HORIZONTAL DATUM IS NAD 1927, VERTICAL DATUM IS NGVD 29.
3. NTSDEC SITE ID 1-52-123.
4. BASE MAPPING FROM AUGUST 2010 PLANS BY ENVIRONMENTAL QUALITY COMPANY - EQ NORTHEAST INC. (FIGURES 4A, 4B, 4C & 4D) FOR THE NYSDEC.
5. FINAL LIMITS DETERMINED FROM FIELD SURVEYS DATED JULY 7, 2011 TO AUGUST 25, 2011 BY L.K. McLEAN ASSOC., P.C.
6. APPROXIMATE PROPERTY LINE AND MAPPING BASED ON SURVEYS BY JOHN C. EHLERS , LAND SURVEYOR, 6 MAIN STREET RIVERHEAD, NY 11901 AND WENDEL SURVEYORS, 7405 CANAL ROAD LOCKPORT, NY 14095.
7. UNAUTHORIZED ALTERATION OR ADDITION TO A SURVEY MAP BEARING A LICENSED LAND SURVEYOR'S SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.
8. ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MARKED WITH AN ORIGINAL OF THE LAND SURVEYOR'S "EMBOSSED" SEAL OR "INKED" SEAL SHALL BE CONSIDERED TO BE VALID TRUE COPIES.

FINAL LIMIT AREAS:

ITEM NO. UC-6:	COMMON FILL -	9,567 cu.yds.
ITEM NO. UC-7:	TOP SOIL -	738 cu.yds.
ITEM NO. UC-10:	GRAVEL -	26,903 sq.yds.
ITEM NO. UC-11:	HYDROSEED -	6,867 sq.yds.
ITEM NO. UC-12:	EROSION CONTROL MAT -	4,104 sq.yds.
ITEM NO. UC-13:	STONE -	109 cu.yds.
ITEM NO. UC-14:	CHAIN LINK FENCE -	1,829 L.f.
P/o ITEM NO. LS-4:	PAVEMENT -	630 sq.ft. or 70 sq.yds.
P/o ITEM NO. LS-8:	CONCRETE -	1,972 sq.ft. or 219 sq.yds.

SUFFOLK CO. REAL PROPERTY TAX MAP NUMBER
DISTRICT #900
SECTION #303
BLOCK #1
LOT #2.8

0 40 20 40 80 160
GRAPHIC SCALE
1 INCH = 40 FT.

FINAL

DATE	BY	DESCRIPTION	APPROV. BY
REVISIONS			

LKMA

B.B.&S. TREATED LUMBER CORP.
SOUTHAMPTON, SUFFOLK COUNTY, NEW YORK
1338 RIVERHEAD-SPEONK RD. SITE REMEDIATION
(Survey & Mapping Services)

FINAL AS-BUILT SURVEY
(EAST SIDE)

STATE OF NEW YORK ROY R. FULKERSON No. 049500 LICENSED LAND SURVEYOR

L. K. McLEAN ASSOCIATES, P.C.
CONSULTING ENGINEERS
TEL. (631) 286-8668
437 SOUTH COUNTRY RD., BROOKHAVEN, NEW YORK 11719
ROY R. FULKERSON, P.L.S.

Designed By: CFD	Scale: AS NOTED	DRAWING 9/9
Drawn By: TLS/LMY	Date: August 30, 2011	
Approved By: RRF	File No.: 10060.000	

Oct. 17, 2011 - 09:14am
P:\10060.000 (BB&S Site Remediation - Survey & Mapping Services)\Dwg\Final AsBuilts\9-Final As-built Survey-East Side.dwg

D

Surface Water and Sediment Sampling Work Plan

Surface Water and Sediments Sampling Plan
BB&S Treated Lumber Corporation Site
NYSDEC Site No. 152123

Southampton, New York
April 2014

Prepared by: Jessica Wood, Ecology and Environment Engineering, P.C.

Reviewed by: Mike Steffan, EEEPC Work Assignment Project Manager - BB&S

Accepted for Use:

Revisions:

Dated:	Revisions:	By:
6/11/13	Updated Figure 1	M. Steffan
4/17/14	Revisions to Sampling Methodology, Sample Packaging and Shipping, and Report sections; addition of Table 2; addition of new Attachment B; updated Figure 1	J. Pristach

1.0 Objective

This sampling plan was designed to identify the source(s) of chromated copper arsenate (CCA) contamination in surface water / surface water runoff (referred to herein as precipitation/surface-water runoff) collected at the BB&S Treated Lumber Corporation site, located at 1348 Speonk-Riverhead Road in the town of Southampton, Suffolk County, New York. Sediment samples will also be collected at the same time as surface water samples.

The field effort includes sampling for the following:

- Total Chromium
- Hexavalent Chromium
- Arsenic

The New York State Department of Environmental Conservation (NYSDEC) may compare the data obtained from this surface water study to the remedial goals set forth in the Amended Record of Decision (AROD) for the BB&S Site to identify potential future modifications of the AROD. In addition, the data may be used to justify any future Intermediate Remedial Measure (IRM) or other remedial actions at the site, if deemed necessary by the NYSDEC.

2.0 Approach

During a storm event precipitation collects in the drainage swale to the north of the former drip pad building (between the former drip pad building and the former frame storage building), the retention pond in the southeastern corner of the property, and the retention pond along the northern boundary of the property. The southern retention pond

relies on percolation and evaporation to remove water from the retention pond. The northern retention pond discharges water through its outlet catch basin, CB-3b, through a 6" PVC pipe to a catch basin (CB-3), which is part of the catch basin/culvert system on the western boundary of the BB&S site. The drainage swale to the north of the former drip pad building also discharges into the catch basin/culvert system on the western boundary of the BB&S site, which ultimately enters the drainage swale west of Speonk-Riverhead Rd. Sediments will also collect in the sumps of the catch basins over time.

The surface water runoff sampling program will comprise semi-annual sampling events, with sampling at nine locations (plus collection of quality assurance/quality control [QA/QC] samples) during each sampling event. The samples will be analyzed for chromium, hexavalent chromium, and arsenic. The collection of samples from additional locations and media (i.e., wipe samples, soils, and/or sediments) may be required by NYSDEC based on the analytical data obtained during the specific Surface Water Program.

The sediment sampling program will comprise semi-annual sampling events, with sampling at five locations. Sediment sampling will occur at the same time as surface water sampling.

In addition to the collection of surface water samples, the consultant will collect field measurements (pipe slope, roughness, wetted perimeter, and velocity) to estimate the flow rate of surface water runoff from the catch basin inflow or exit locations using the Manning Equation. Additional reference guidance documents for measuring stream velocity and flow calculations include the following:

- U. S. Department of the Interior (U.S. DOI). 1981. *Water Measurement Manual*, 2nd Edition. Bureau of Reclamation.

- ISCO, Inc. 2006. *ISCO Open Channel Flow Measurement Handbook*, 6th Edition, Lincoln, Nebraska.

- U.S. Environmental Protection Agency (EPA). 1992. *NPDES Storm Water Sampling Guidance Document*. Office of Water. EPA Document 833-8-92-001. July 1992.

- Chanson, H. 2004. *The Hydraulics of Open Channel Flow*, 2nd Edition, Oxford, UK.

- Hardy, Thomas; Palavi Panja; and Dean Mathias. 2005 WinXSPRO, A Channel Cross Section Analyzer, User's Manual, Version 3.0. Gen. Tech. Rep. RMRS-GTR-147. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 94 p.

- Yen, Ben Chie, ed. (1991) "Channel Flow Resistance: Centennial of Manning's Formula," Water Resources Publications, Littleton, CO.

3.0 Surface Water and Sediment Sampling Locations

The surface water sampling locations are as follows (see Figure 1):

- One sample from each of the three catch basins to the west of Speonk-Riverhead Rd.;
- One sample from the effluent line below the three catch basins;
- One sample from the drainage swale to the north of the former drip pad building (between the former drip pad building and the former frame storage building);
- One sample from the upstream influent to the retention pond in the southeast corner of the property to the east of the metal storage building;
- One sample from the retention pond in the southeast corner of the property to the east of the metal storage building;
- One sample from the upstream influent to the retention pond on the northern boundary of the property to the north of the frame storage building; and
- One sample from the retention pond on the northern boundary of the property to the north of the frame storage building.

Where surface waters are flowing during the sampling event additional locations as selected by the NYSDEC representative may be performed.

Sediment samples will be collected at a minimum from the follows locations at the same time surface water samples are taken (see Figure 1):

- One sample from each of the three catch basins to the west of Speonk-Riverhead Rd.; and
- One sample from the northern retention pond outlet catch basin, CB-3b.
- One sample from the south retention pond

3.1 Surface Water and Sediment Sampling Location Inspection

During the sampling of each surface water and sediment sampling location, an inspection of the sampling point's physical condition will be performed to ensure their suitability for sample collection (i.e., have sufficient flow and sediment buildup). Observations regarding sampling points will be noted on the Surface Water and Sediment Inspection Checklist (see Attachment A).

4.0 Sampling Methodology

Sampling events are performed with limited notice of a storm event. The sampling team should review and track potential rain events on either the Weather Channel Web site or local weather band channels. The Weather Channel link for Southampton, New York, is:

http://www.weather.com/weather/today/Southampton+NY+USNY1377:1:US

The consultant's field personnel shall sign in at the BB&S reception area in the BB&S main building (see Figure 1) before accessing the site, and they shall sign out before leaving the site for the day. Adequate protective clothing (e.g., gloves, rain boots, rain suits, safety goggles, reflective vests, etc.) will be used during the sampling events in accordance with the generic Health and Safety Plan (see Appendix L of the Site Management Plan).

The surface water sampling will be conducted in accordance with the EPA's *NPDES Storm Water Sampling Guidance Document* (EPA 1992). Unfiltered samples will be collected from under the water, with the sample bottles/collecting devices facing upstream. Sample bottles/collection devices will be positioned upstream of the collector, and disturbance of the substrate will be avoided.

One 1-L poly bottle for arsenic and chromium and one 1-L poly bottle for hexavalent chromium will be filled at each surface water sampling location, either directly or by using a dedicated sample collection device. When the depth of flow and the shape of the bottle do not prevent it, samples for arsenic, chromium, and hexavalent chromium will be taken with the sample bottle itself and not the sample collection device as per the *NPDES Storm Water Sampling Guidance Document*. This surface water sampling effort shall include the collection of one field duplicate sample (FDUP) for quality control, one matrix spike (MS), and one matrix spike duplicate (MSD). Selection of a location for these FDUP, MS, and MSD samples shall be determined by the field personnel during sampling. Collection of a rinsate sample is not required since the sampling bottles will be filled either directly or by the use of a dedicated sample collection device for each sampling location.

One 4-oz glass jar will be filled with sediment from each sediment sample location. A sample may not be attainable from the outlet catch basin from the northern retention pond if the water level is too high. Table 1 provides a summary of the sample collection bottles required for surface water and sediment sampling.

Sample nomenclature will be as printed on the chain-of-custody form. The sample nomenclature to be used is provided in Attachment B. The samples will be submitted to a laboratory for the following analyses:

- Arsenic
- Total chromium
- Hexavalent chromium
- Mercury

The approved analytical methods and volume requirements for surface water samples and sediment samples are provided in Tables 1 and 2, respectively.

Precautions should be taken to prevent cross-contamination during the sampling program, including the labeling of all containers and the use of new gloves at each sampling location. To prevent cross-contamination of samples, surface water sampling will proceed in general from the location of the lowest historical concentration to the location of the highest concentration, as established by the results of previous storm water

sampling events. As described earlier, efforts will first be made to collect samples on-site, but in order based on historical concentration.

Field information from the sampling event will be logged into the project log book by the Field Team Leader. All surface water and sediment samples will be analyzed at the approved laboratory within a turnaround times of 14 calendar days following receipt of the samples.

5.0 Quality Assurance

There are no specific QA activities that apply to the implementation of this sampling procedure. However, the following general QA procedures apply:

- All data must be documented on field data sheets or within field or site logbooks;
- All instrumentation must be operated in accordance with operating instructions as supplied by the manufacturer unless otherwise specified in the work plan;
- Equipment checkout and calibration activities must occur prior to sampling or operation and must be documented; and
- All deliverables will receive independent data validation and consultant peer review prior to release.

6.0 Project Logbook and Photo Documentation

The consultant will document the details of each site visit in a daily report. When photos of the site and/or sampling location conditions are taken they will be included in the daily and final reports. A logbook will be maintained to record any on-site activities. Data from each surface water sampling event will be forwarded to NYSDEC and summarized in a letter report.

7.0 Sample Packaging and Shipping

Sample containers will be placed inside sealed plastic bags as a precaution against cross-contamination caused by leakage or breakage. The bags will be placed in coolers with inert packaging such as bubble wrap in such a manner as to minimize the chance of breakage during shipment. Ice in plastic bags will be placed in the coolers to chill the samples with the goal of achieving 4 ±2 degrees Celsius (°C) throughout shipment (see Attachment C).

Sample shipment will be performed in strict accordance with all applicable U.S. Department of Transportation regulations. The samples will be shipped to a laboratory certified by the New York State Department of Health's Environmental Laboratory Approval Program.

8.0 Investigation-Derived Waste Disposal

At least two waste stream types of IDW will be generated: decontamination waters and personal protective equipment (PPE). Waste could also include accumulated debris or sediment removed from the surface water runoff collection system during maintenance or other operations. NYSDEC will determine, on a case by case basis, what other wastes will require disposal. Waste streams will be segregated and not mixed. Existing data indicates that there are no direct contact exposure concerns, so decontamination waters will be disposed of by discharging onto the ground in an unpaved area. In the event that evidence of significant contamination is present (e.g. strong odors, sheen, product), the

waste will be containerized in steel drums and stored on site pending analysis and potential off-site disposal. All expendable materials generated during the investigation (including, but not limited to, gloves and plastic sheeting) will be bagged and disposed of off-site as non-regulated solid waste.

9.0 Generic Health and Safety Plan

A site-specific health and safety plan (sHASP) should be prepared for long-term groundwater monitoring and reporting, operations & maintenance (O&M), and surface water/stormwater study. A copy of a generic HASP is provided as Appendix L of the Site Management Plan. As conditions of the work assignment change over the time, the sHASP will be evaluated and amended by the consultant's work assignment project manager.

10.0 Report

The consultant will provide a summary report that outlines the methodology used for measuring and calculating flows, laboratory results and plots of sampling results, and comparisons of the results to earlier sampling events performed by a previous consultant. A laboratory analytical report, a local climate report, the chain-of-custody forms, a data usability summary report or independent data validation report, photo-documentation, and a sample location diagram will be included as appendices to the report. Surface water and sediment sampling results electronic data must be provided in accordance with the most recent version of NYSDEC standardized electronic data deliverable (EDD) format. Naming conventions and standard submittal formats for the BB&S site are provided in Attachment B. Further information on EDD is available at the website http://www.dec.ny.gov/chemical/62440.html.

11.0 Schedule

Surface water runoff samples will be collected on a semi-annual basis—two during consecutive spring storm events, and two during consecutive fall storm events. Surface water samples will be collected at the same time as the sediment samples.

The collected samples will be shipped to the laboratory being utilized for this specific task. Independent analytical data validation review will be performed by the consultant upon receipt of the analytical results from the laboratory. The data usability summary report will be available for use in the reports.

12.0 References

ISCO, Inc. 2006. ISCO Open Channel Flow Measurement Handbook, 6th Edition, Lincoln, Nebraska.

Chanson, H. 2004. The Hydraulics of Open Channel Flow, 2nd Edition, Oxford, UK.

Hardy, Thomas; Palavi Panja; and Dean Mathias. 2005 WinXSPRO, A Channel Cross Section Analyzer, User's Manual, Version 3.0. Gen. Tech. Rep. RMRS-GTR-147. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 94 p.

U.S. Department of the Interior (U.S. DOI). 1981. *Water Measurement Manual*, 2nd Edition. Bureau of Reclamation.

U.S. Environmental Protection Agency (EPA). 1992. *NPDES Storm Water Sampling Guidance Document*. Office of Water. EPA Document 833-8-92-001.

Yen, Ben Chie, ed. (1991) "Channel Flow Resistance: Centennial of Manning's Formula," Water Resources Publications, Littleton, CO.

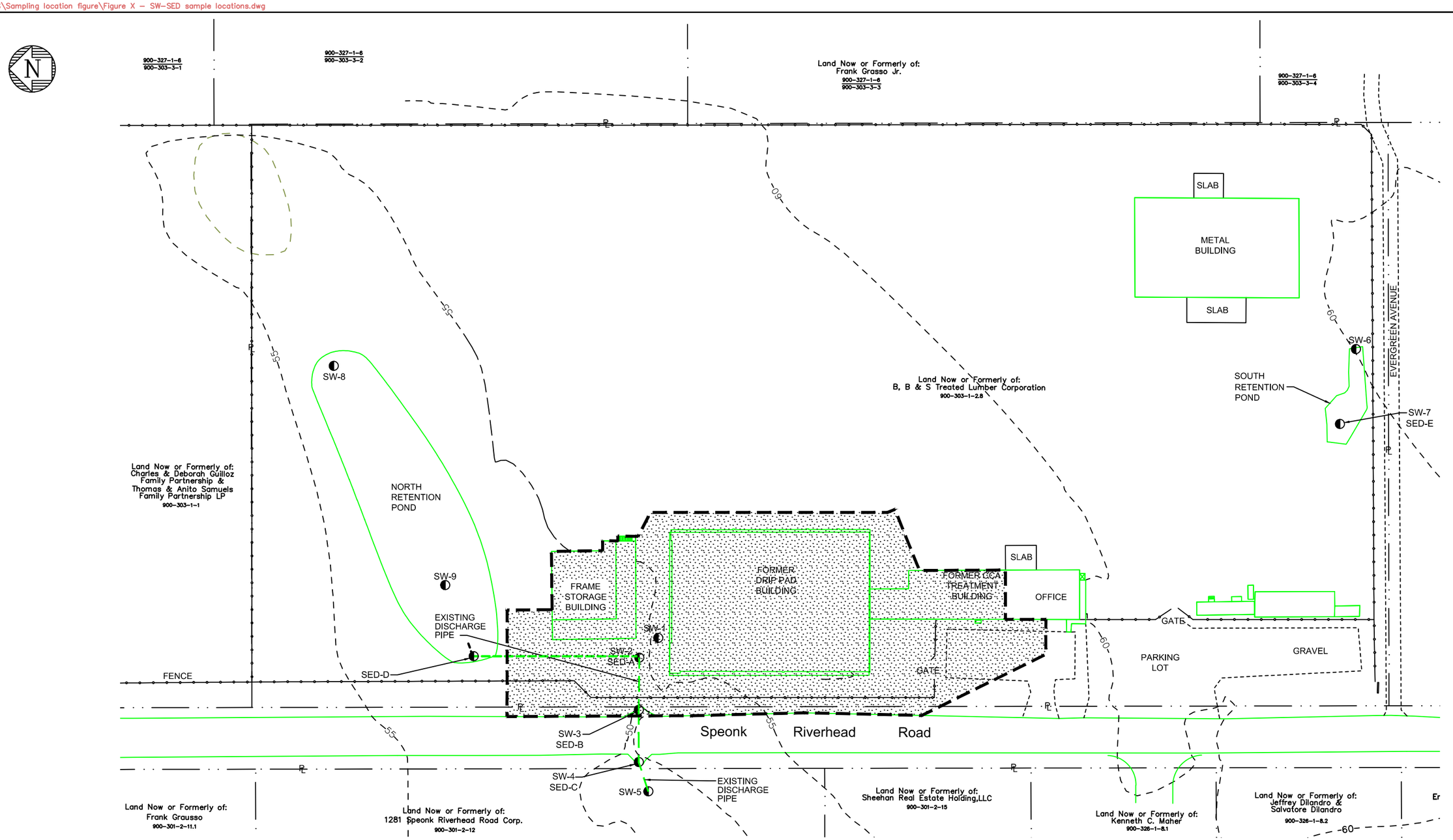
Table 1 – BB&S Sample Bottles[1], Volumes, and Preservatives (Surface Water)						
Analytical Parameter per Matrix	**Bottles Type**	**Sample Volume Needed**	**Sample Holding Time**	**Preservatives**	**Analysis**	**Turnaround Time**
Target Analyte List Metals	1-L poly bottle	1 bottle x 9 samples (plus 3 QC samples), 12 liters	6 months from date sampled	Add HN03 until pH <2 and ice to 4°C	SW-846 EPA Method 6010	14 days
Hexavalent chromium	1-L poly bottle	1 bottle x 9 samples (plus 3 QC samples), 12 liters	30 days from the date sampled	Add NaOH until pH >12 and ice to 4°C	SW-846 EPA Method 7196A	14 days
Mercury	Paired with Target Analyte List Metals	Paired with Target Analyte List Metals	30 days from the date sampled	None	SW-846 EPA Method 7470A	14 days

Note:
[1] Certified pre-cleaned bottles and containers.

Table 2 – BB&S Sample Bottles[1], Volumes, and Preservatives (Sediments)						
Analytical Parameter per Matrix	**Bottles Type**	**Sample Volume Needed**	**Sample Holding Time**	**Preservatives**	**Analysis**	**Turnaround Time**
Arsenic and chromium	4 oz glass jar	1 jar x 4 samples, 16 ounces	30 days from the date sampled	None	SW-846 EPA Method 6010	14 days
Hexavalent chromium	4 oz glass jar	1 jar x 4 samples, 16 ounces	30 days from the date sampled	None	SW-846 EPA Method 7196A	14 days
Mercury	4 oz glass jar	1 jar x 4 samples, 16 ounces	30 days from the date sampled	None	SW-846 EPA Method 7470A	14 days

Note:
[1] Certified pre-cleaned bottles and containers.

F:\BB+S\Sampling location figure\Figure X – SW-SED sample locations.dwg



SCALE IN FEET

0 80 160 240

LEGEND

- ROAD
- APPROXIMATE PROPERTY BOUNDARY
- FENCE LINE
- –55– TOPOGRAPHIC SURFACE CONTOUR (1 FT.)
- SW-1 STORMWATER/SEDIMENT SAMPLE LOCATION
- HAZARDOUS WASTE BOUNDARY AREA

NOTES

1. ORIGINAL MAPPING BASED ON SURVEYS BY JOHN C. EHLERS , LAND SURVEYOR, 6 MAIN STREET RIVERHEAD, NY 11901 AND WENDEL SURVEYORS, 7405 CANAL ROAD LOCKPORT, NY 14095. ADDITIONAL INFORMATION WAS ADDED BY AECOM FROM FIELD SURVEY AND OBSERVATIONS. CAD FILE 97347-DESIGN-R1.DWG WAS PROVIDED BY AECOM (OCTOBER 2009) AND IS THE DRAWING USED TO CREATE THIS FIGURE.
2. VERTICAL DATUM: NAVD 1988
   HORIZONTAL DATUM: NAD 1927

ecology and environment

FIGURE 1 SURFACE WATER-SEDIMENT SAMPLE LOCATIONS
BB&S TREATED LUMBER CORPORATION SITE
TOWN OF SOUTHAMPTON, SUFFOLK COUNTY, NY

Attachment A

Surface Water and Sediment Sampling Inspection Checklist

Surface Water and Sediment Sampling Inspection Checklist
BB&S Treated Lumber Corp. -- Southampton, NY
NYSDEC Site No 152123

Sampling Point	Inspection Date	Sampling Point Description	Suffiecient Flow (Y/N)	Sediment Buildup Depth (in)	Comments/Observations

Attachment B

Surface Water and Sediment Sample Naming Conventions

Surface Water and Sediment Sample Naming Conventions
BB&S Treated Lumber Corp. -- Southampton, NY
NYSDEC Site No. 1-52-123

Location Name	Location Description	COC Sample ID[1]	COC Sample Date & Time	COC Analysis Requested
Catch Basin/Pond "Sediment" Samples				
SED-A	Catch Basin 1 near NE corner of Former Drip Pad Bldg	**SED-A-EventX**	mm/dd/yyyy hh:mm:ss	**6010C + 7470A; 7196A**
SED-B	Catch Basin 2 on east side of Speonk-Riverhead Rd	**SED-B-EventX**	mm/dd/yyyy hh:mm:ss	**6010C + 7470A; 7196A**
SED-C	Catch Basin 3 on west side of Speonk-Riverhead Rd	**SED-C-EventX**	mm/dd/yyyy hh:mm:ss	**6010C + 7470A; 7196A**
SED-D	Catch Basin at west end of North Retention Pond	**SED-D-EventX**	mm/dd/yyyy hh:mm:ss	**6010C + 7470A; 7196A**
SED-E	Center of South Retention Pond	**SED-E-EventN**	mm/dd/yyyy hh:mm:ss	**6010C + 7470A; 7196A**
Quality Control Samples for Catch Basin/Pond "Sediment" Samples				
Field Duplicate #1[2]		**LocName-EventX-FD**	mm/dd/yyyy hh:mm:ss	**6010C + 7470A; 7196A**
Matrix Spike #1[3]		**LocName-EventX-MS**	mm/dd/yyyy hh:mm:ss	**6010C + 7470A; 7196A**
Matrix Spike Duplicate #1[3]		**LocName-EventX-SD**	mm/dd/yyyy hh:mm:ss	**6010C + 7470A; 7196A**
Catch Basin/Pond Water Samples				
SW-1	Between Frame and Drip Pad buildings	**SW-1-EventX**	mm/dd/yyyy hh:mm:ss	**6010C + 7470A; 7196A**
SW-2	Catch Basin 1 near NE corner of Former Drip Pad Bldg	**SW-2-EventX**	mm/dd/yyyy hh:mm:ss	**6010C + 7470A; 7196A**
SW-3	Catch Basin 2 on east side of Speonk-Riverhead Rd	**SW-3-EventX**	mm/dd/yyyy hh:mm:ss	**6010C + 7470A; 7196A**
SW-4	Catch Basin 3 on west side of Speonk-Riverhead Rd	**SW-4-EventX**	mm/dd/yyyy hh:mm:ss	**6010C + 7470A; 7196A**
SW-5	Outfall to swale on west side of Speonk-Riverhead Rd	**SW-5-EventX**	mm/dd/yyyy hh:mm:ss	**6010C + 7470A; 7196A**
SW-6	Inlet to South Retention Pond	**SW-6-EventX**	mm/dd/yyyy hh:mm:ss	**6010C + 7470A; 7196A**
SW-7	Outlet of South Retention Pond	**SW-7-EventX**	mm/dd/yyyy hh:mm:ss	**6010C + 7470A; 7196A**
SW-8	Inlet to North Retention Pond	**SW-8-EventX**	mm/dd/yyyy hh:mm:ss	**6010C + 7470A; 7196A**
SW-9	Outlet of North Retention Pond	**SW-9-EventX**	mm/dd/yyyy hh:mm:ss	**6010C + 7470A; 7196A**
Quality Control Samples for Catch Basin/Pond Water Samples				
Field Duplicate #1[2]		**LocName-EventX-FD**	mm/dd/yyyy hh:mm:ss	**6010C + 7470A; 7196A**
Matrix Spike #1[3]		**LocName-EventX-MS**	mm/dd/yyyy hh:mm:ss	**6010C + 7470A; 7196A**
Matrix Spike Duplicate #1[3]		**LocName-EventX-SD**	mm/dd/yyyy hh:mm:ss	**6010C + 7470A; 7196A**
Trip Blank #1		**TB-mmddyyyy**	mm/dd/yyyy hh:mm:ss	**6010C + 7470A; 7196A**
Trip Blank #2, etc.		**TB-mmddyyyy**	mm/dd/yyyy hh:mm:ss	**6010C + 7470A; 7196A**

Notes:

1 "X" refers to Sample Event #. If the sample is collected during Monitoring Event #5, the sample ID will read '**MW-20S-Event5**".

2 Field duplicate may be taken at any monitoring well sampling location. Multiple field duplicates may not be taken at one well location. At least one duplicate sample per 20 samples taken.

3 MS/MSD may be taken at any monitoring well sampling location. MS and MSD must be taken at the same location. Multiple MS/MSDs may not be taken at one well location.

Attachment C

Sample Packaging and Shipping

TABLE OF CONTENTS

1. Introduction

The U.S. Department of Transportation (DOT) has promulgated regulations for the packaging and shipping of hazardous materials, which are found in 49 CFR 170 *et seq*. DOT also has recognized the independent International Air Transport Association's (IATA's) Dangerous Goods Regulations as a suitable alternative to the DOT Hazardous Material Regulations when shipping hazardous materials by air. IATA's regulations are published annually in their *Dangerous Goods Regulations* (IATA DGR). Federal Express, E & E's shipping company of choice for samples, made a corporate-wide decision that all known or suspected hazardous materials must be shipped under the IATA's regulations instead of DOT's.

Both DOT and IATA regulations are subject to change. Changes to the DOT regulations are published in the *Federal Register*. The IATA DGR is updated and published annually.

This SOP describes procedures to be followed to comply with applicable DOT or IATA regulations when packaging and shipping samples. This document is neither designed nor intended to be used as the sole source for packaging and shipping information. Regulatory references should be consulted prior to preparing any samples for shipment. To assist in determining the appropriate packaging and shipping requirements, project sampling plans or work plans should include information on the anticipated substances in samples to be collected and shipped for analyses, the sample packaging procedures, and the sample shipping procedures, including the proper shipping name, identification number, and marking or labeling requirements.

2. Scope

This SOP describes procedures for:

- Determining whether a sample meets the established definition as a DOT hazardous material or IATA dangerous good pursuant to the applicable regulations;
- Selecting the appropriate packaging for the sample; and
- Identifying the sample properly for shipment.

This SOP also contains information on the packaging and shipment of substances containing or suspected of containing polychlorinated biphenyls (PCBs).

3. Hazardous Material Determination

It is the responsibility of the shipper to determine whether the substance to be sampled and shipped meets the definition of a hazardous material as defined by DOT (49 CFR 173) or a dangerous good as defined by IATA (IATA DGR Section 3) before the sample is packaged and shipped. Information on the characteristics of the material to be sampled can be obtained in several ways as discussed in Section 3.2.

3.1 Hazardous Material Classes

In general, an environmental sample is a hazardous material or dangerous good if it exhibits any of the characteristics of the following classes as defined by DOT or IATA:

- Class 1 - Explosive
- Class 2 - Gases
- Class 3 - Flammable Liquids
- Class 4 - Flammable Solids
- Class 5 - Oxidizing Substance and Organic Peroxides
- Class 6 - Poisonous and Infectious Substances
- Class 7 - Radioactive Materials
- Class 8 - Corrosives
- Class 9 - Miscellaneous Hazardous Material (DOT)
  Miscellaneous Dangerous Goods (IATA)

Under the definition of Class 9, a sample may be considered a hazardous material/dangerous good even if it does not meet the criteria as defined in classes 1 through 8. Two examples of this are:

- Under both DOT and IATA regulations, if a substance or article has an anesthetic, noxious, or other similar property that could cause extreme annoyance or discomfort to passengers or flight crew members; or
- Under DOT regulations, if a substance meets the definition of hazardous substance as specified in 49 CFR 171.8 and the substance is in a quantity, in one package, that equals or exceeds its reportable quantity (RQ).

Samples of hazardous waste being transported to a laboratory for analyses are specifically exempt from the DOT hazardous materials regulations. IATA does not have this exemption; therefore, the samples must be treated as any other substance in determining if they meet the established definitions of a dangerous good.

In addition, samples *known or suspected* of containing PCBs in *any concentration* will only be accepted FOR SHIPMENT when packaged in a 4G container under the provisions of FM-06 of IATA.

3.2 Basis for Hazardous Material/Dangerous Goods Determination

Information on a sample's characteristics can be obtained through several means as identified below.

Personal Knowledge

Personal knowledge can be based on a familiarity with the process producing the material being sampled, familiarity with previous on-site investigative work including previous sampling analyses, or other information known to you.

Qualitative Tests

Qualitative tests include in-field organic vapor analyzer (OVA/HNu) measurements, in-field tests for Resource Conservation and Recovery Act (RCRA) characteristics (Hazardous Characterization), or in-field tests for PCBs, etc.

Other Information

This includes information that can be derived from drum labels, shipping papers, material safety data sheets (MSDs), or other means.

In instances where sufficient information is not available to make a definitive determination that a sample is a hazardous material but it is suspected that it may be, the sample should be assumed to be a hazardous material and subject to DOT/IATA requirements. If a sample is not a hazardous material, it is not subject to DOT/IATA regulations.

4. Sample Packaging Procedures

4.1 Nonhazardous Liquid Sample Packaging Procedures

Environmental water samples that do not meet the criteria of a DOT hazardous material or an IATA dangerous good should be collected and preserved as outlined in the *Procedures for Surface Water Sampling and for Groundwater Well Sampling*. If called for, include a temperature blank.

Environmental water samples may be shipped using an 80-quart cooler or an outer package consisting of either a 1A2 steel or 1B2 aluminum drum. Because the steel or aluminum drums provide little insulating capability, they should be used only for short duration shipping times.

Packaging Environmental Water Samples Using The 80-Quart Cooler

- Label and seal all water sample containers according to SOPs;
- Place two large plastic bags inside an 80-quart cooler;
- Place the foam insert cut inside plastic bags;
- Place each amber bottle and poly bottle in small plastic bags, secure bags, and place bottles in foam;
- Place each volatile organic analysis (VOA) bottle inside a sealable baggie and insert in foam. Mark temperature blank VOA baggie for identification;

- Fill void spaces with bagged ice to within 4 inches of the top of the cooler;
- Place Chain-of-Custody (C-O-C) in a sealable baggie and tape to the inside of the cooler lid; and
- Secure the cooler with strapping tape and custody seal.

Alternate Packaging Using 1A2/1B2 Drum

- Label and seal all water sample containers according to procedures;
- Prepare samples for shipment by placing them in plastic bags as indicated above;
- Place 3 inches of inert absorbent material (vermiculite) in the bottom of the drum;
- Line the drum with two plastic garbage bags;
- Place the samples in a plastic garbage bag, seal the bag, and place it in the drum;
- Fill the space around the bagged samples with a layer of bagged ice, seal the two garbage bags lining the drum, then fill the remaining space around the bags with vermiculite to the top of the drum;
- Place the C-O-C form in a sealable baggie and tape to the inside of the drum lid; and
- Seal the drum and apply custody seals. Cover the seals with clear tape.

4.2 Nonhazardous Soil/Sediment Sample Packaging Procedures

Environmental soil/sediment samples that do not meet the criteria of a DOT hazardous material or an IATA dangerous good should be collected and preserved as outlined in the *Procedures for Soil Sampling and for Sediment Sampling*. Environmental soil/sediment samples may be shipped using an 80-quart cooler or an outer package consisting of either a 1A2 steel or 1B2 aluminum drum. Because the steel or aluminum drums provide little insulating capability, they should be used only for short duration shipping times.

Packaging Environmental Water Samples Using the 80-Quart Cooler

- Label and seal each sample container according to SOPs;
- Place each bottle inside a sealable baggie and place in original shipping box or in individual fiberboard boxes;
- Secure original shipping box with strapping tape, place shipping box in a plastic bag, and secure plastic bag;
- Place bubble pack or similar material on the bottom and sides of an 80-quart cooler;
- Place bagged shipping boxes in cooler with a layer of bubble pack between each shipping box;

- Fill void spaces with "blue ice" or ice in baggies to within 4 inches of the top of the cooler;
- Place the C-O-C form in a sealable baggie and tape to the inside of the cooler lid; and
- Secure the cooler with strapping tape and custody seal.

Alternate Packaging Using 1A2/1B2 Drum

- Label and seal each soil/sediment sample container according to SOPs;
- Prepare samples for shipment by placing them in plastic bags and shipping boxes as indicated above;
- Place 3 inches of inert absorbent material (vermiculite) in the bottom of the drum;
- Line the drum with two plastic garbage bags;
- Place the samples in a plastic garbage bag, seal the bag, and place it in the drum;
- Fill the space around the bagged samples with a layer of bagged ice, seal the two garbage bags lining the drum, then fill the remaining space around the bags with vermiculite to the top of the drum;
- Place the C-O-C form in a sealable baggie and tape to the inside of the drum lid;
- Seal the drum and apply custody seals. Cover the seals with clear tape; and
- Secure the cooler with strapping tape and custody seals.

4.3 Hazardous Liquids Sample Packaging Procedures (Except Radioactive)

The packaging requirement for hazardous liquid samples will depend on the characteristics of the material (i.e., whether it is flammable liquid, a corrosive liquid, an oxidizer, etc.). The characteristics will be used to determine the proper shipping name and the packaging requirements for the liquids. The packaging requirements for each hazardous material can be determined by checking 49 CFR 172.101 for DOT or the Dangerous Goods List in Section 4 for IATA. If the 80-quart cooler is used, the liquid samples must be placed in paint cans or other packages that meet the specific requirements for an outer container because the cooler is not an approved package for hazardous materials shipment and is used as an *overpack*. To comply with shipping requirements for hazardous materials, the paint cans *must* be either stamped 1A2 or 1B2 or a letter from the manufacturer must accompany the shipping papers attesting that the paint cans comply with the DOT specifications for 1A2/1B2 containers. The notation "Inside Containers Comply with Prescribed Specifications" must appear on the outside of the cooler.

Hazardous liquid samples should not be iced unless specified in the sample or work plan. They should be placed in 8-ounce, wide-mouth glass jars. Hazardous liquid samples should be packaged as follows:

Combination Packaging Using 1A2/1B2 Drum

- Label and seal each sample bottle according to SOPs;
- Place each wide-mouth jar in a sealable baggie and secure the bag;
- Place 3 inches of inert absorbent material (vermiculite) in the bottom of the drum;
- Place the samples in a plastic garbage bag, seal the bag, and place it in the drum;
- Fill the space around the bagged samples with vermiculite to the top of the drum;
- Place the C-O-C form in a sealable baggie and tape it to the inside of the drum lid; and
- Seal the drum and apply custody seals. Cover seals with clear tape.

Combination Packaging Using the 80-Quart Cooler

NOTE: Paint cans must be identified as 1A2/1B2, either by a stamp on the can or by an accompanying letter from the manufacturer.

- Label and seal each sample container according to SOPs;
- Label each paint can with the appropriate DOT/IATA label, the proper shipping name, the IATA orientation label ("UP"), and the address of the shipper and the laboratory;
- Place each wide-mouth jar inside a sealable baggie and secure the bag;
- Place each wide-mouth in jar a half-gallon paint can;
- Fill void spaces inside cans with vermiculite to the top of the paint can;
- Secure paint can lids in place with four paint can clips;
- Place paint cans in the 80-quart cooler and fill void spaces with vermiculite or other approved packing material to the top of the cooler;
- Place the C-O-C form in a sealable baggie and tape it to the inside of the cooler lid; and
- Secure the cooler with strapping tape and custody seals.

4.4 Hazardous Solid/Sludge Sample Packaging Procedures (Except Radioactive)

The packaging requirement for hazardous solid/sludge samples will depend on the characteristics of the material (i.e., whether it is a flammable solid, a corrosive solid, an oxidizer, etc.). The characteristics will be used to determine the proper shipping name and the packaging requirements for the material. The packaging requirements for each hazardous material can be determined by checking 49 CFR 172.101 for DOT or the Dangerous Goods List in Section 4 for IATA. If the 80-quart cooler is used, the samples must be placed in paint cans or other packages that meet the specific requirements for an outer container

because the cooler is not an approved package for hazardous materials shipment and is used as an overpack. To comply with shipping requirements for hazardous materials, the paint cans *must* be either stamped 1A2 or 1B2, or a letter from the manufacturer must accompany the shipping papers attesting that the paint cans comply with the DOT specifications for 1A2/1B2 containers. The notation "Inside Containers Comply with Prescribed Specifications" must appear on the outside of the cooler. Samples should be collected as outlined in the *Procedures for Soil Sampling and for Sediment Sampling*.

Hazardous solid/sludge samples should not be iced. They should be placed in 8-ounce, wide-mouth glass jars. Hazardous solid/sludge samples should be packaged as follows:

Combination Packaging Using 1A2/1B2 Drum

- Label and seal each sample bottle according to SOPs;
- Place each wide-mouth jar inside a sealable baggie and secure bag;
- Place 3 inches of inert absorbent material (vermiculite) in the bottom of the drum;
- Place the samples in a plastic garbage bag, seal the bag, and place it in the drum;
- Fill the space around the bagged samples with vermiculite to the top of the drum;
- Place the C-O-C form in a sealable baggie and tape it to the inside of the drum lid; and
- Seal the drum and apply custody seals. Cover the seals with clear tape.

Combination Packaging Using the 80-Quart Cooler

NOTE: Paint cans must be identified as 1A2/1B2 either by a stamp on the can or by an accompanying letter from the manufacturer.

- Label and seal each sample container according to SOPs;
- Label each paint can with the appropriate DOT/IATA label, the proper shipping name, the IATA orientation label ("UP"), and the address of the shipper and the laboratory;
- Place each wide-mouth jar inside a sealable baggie and secure the bag;
- Place each wide-mouth jar a half-gallon paint can;
- Fill void spaces inside cans with vermiculite to the top of the paint can;
- Secure paint can lids in place with four paint can clips;
- Place paint cans in an 80-quart cooler and fill void spaces with vermiculite or other approved packing material to the top of the cooler;
- Place the C-O-C form in a sealable baggie and tape it to the inside of the cooler lid; and
- Secure the cooler with strapping tape and custody seals.

5. Sample Shipping Procedures

5.1 Nonhazardous Sample Shipping Procedures

The cooler or drum should be marked and labeled as follows:

- The words "Environmental Samples" should be written on the top of the cooler or drum;
- Label the outside of the cooler or drum in indelible ink with the proper laboratory address, and cover the label with clear tape;
- Apply package orientation ("UP") labels on two opposite sides of the cooler or drum;
- Apply "Fragile" labels on two opposite sides of the cooler or drum.
- Ship the cooler or drum.

5.2 Hazardous Sample Shipping Procedures

The packaging requirement for hazardous samples will depend on the characteristics of the material (i.e., whether it is a flammable, a corrosive, an oxidizer, etc.). The characteristics will be used to determine the proper shipping name and the packaging requirements for the materials. The packaging requirements for each hazardous material are listed under the proper shipping name entries in 49 CFR 172.101 for DOT or the Dangerous Goods List in Section 4 for IATA.

Proper shipping names are determined by the hazards associated with the material. The most frequently used hazard classes for known hazard samples are "Flammable Liquids, N.O.S.," "Corrosive Liquids, N.O.S.," "Other Regulated Substances," and "Flammable Solids, N.O.S." Note that many generic or N.O.S. proper shipping names require the addition of the technical name in brackets immediately following the letters "N.O.S.". If the technical (chemical) name of the contaminant is known or can be accurately deduced from available data, then it should be used. If the chemical contaminant cannot be credibly identified, qualitative field tests will indicate if the material is ignitable, corrosive, reactive, or EP toxic. Until IATA promulgates a definitive technical name for use with samples, U.S. Environmental Protection Agency (EPA) characteristics may be used in place of the technical name **only** for shipments between points in the U.S. If multiple hazards are identified with a particular substance, the primary and secondary hazards are identified both in the proper shipping name and in the labeling required. When EPA characteristics are used for the technical name, provide additional identifying information (i.e., "EPA CORROSIVE pH < 2," "EP TOXIC CYANIDE," etc.). The following illustrative examples of proper shipping names were taken from IATA Section 4:

- FLAMMABLE LIQUID, N.O.S (EPA IGNITABLE), UN 1993 (Sample meets the definition of EPA ignitability)
- FLAMMABLE SOLID, ORGANIC, N.O.S.(EPA IGNITABLE), UN 1325 (Sample is an organic compound and meets definition of EPA ignitability)

- CORROSIVE LIQUID, OXIDIZER, N.O.S. (EPA CORROSIVE-pH <2 or >12, EPA REACTIVE), UN 3093 (Sample meets the EPA definitions of corrosivity and reactivity; corrosivity determined to be primary hazard)

It is the shipper's responsibility to select the appropriate shipping name and to package the material in accordance with the packaging requirements specified for the material in the DOT or IATA tables. Maximum allowable net quantities per package for passenger or cargo-only aircraft must be determined based upon the proper shipping name selected. It is important to note that the derived proper shipping names do not always accurately describe the actual contents. Because the sample constituents are usually an unknown mixture, the flowchart uses any known information to subsequently identify an appropriate hazard class and required shipping specifications. If paint cans and coolers are used to ship the sample jars, the paint cans should be marked as follows:

NOTE: Paint cans, if used, must be identified as 1A2/1B2 either by a stamp on the can or by an accompanying letter from the manufacturer.

- Apply IATA orientation label ("UP") on side of can;
- Apply appropriate DOT/IATA hazard class labels on the side of can;
- Write the proper shipping name and UN/ID number next to the DOT/IATA label; and
- Apply address label to top of container.

The cooler or drum should be marked and labeled as follows:

- Apply IATA orientation label ("UP") on two opposite sides of the cooler or drum;
- Apply the appropriate DOT/IATA hazard class labels on two opposite sides and top of the cooler or drum;
- Write the proper shipping name and UN/ID number next to the DOT/IATA label indicating the primary hazard class;
- Label the outside of the cooler or drum in indelible ink with the proper laboratory address and cover the label with clear tape;
- *If coolers are used*, they must be labeled "Inside Container Complies With Prescribed Specifications" on two opposite sides and the top of the cooler. *THIS IS NOT USED FOR DRUM SHIPMENTS*.
- Apply "**Danger**" label if the net quantity of samples in the cooler or drum exceeds the net quantity allowed on passenger aircraft.

If the cooler is used, the airbill should have the notation "Overpack Used" in the "Additional Handling Information" section. Under "Quantity and Type of packing", indicate the number of individual containers in the cooler or shipping container (i.e. "20 Fiberboard Boxes Containing 0.8 kg net").

E

Groundwater Monitoring Well Sampling Procedures Work Plan

Groundwater Monitoring Well Sampling Procedures
Work Plan for the
BB&S - NYSDEC Site No. 152123

Southampton, New York
April 2014

Prepared by: Jessica Wood, Ecology and Environment Engineering, P.C. (EEEPC)

Reviewed by: Mike Steffan, EEEPC Work Assignment Project Manager

Accepted for Use:

Revisions:

Dated:	Revisions:	By:
12/16/2012	Addition of Flow-cell Sampling Procedure	B. Cole; R. Watt
6/11/2013	Revision of Sampling Plan and Drawing	M. Steffan, X. Xue
4/10/2014	Revision of Sampling Plan, addition of Attachment C	M. Steffan, J. Pristach

1 Objective

To perform a sampling/ analytical program to evaluate trends in groundwater concentrations of volatile organic compounds (VOCs), total (unfiltered) metals including mercury, and hexavalent chromium at the site. Specific analytical methods are found in Section 4.1, Analytical Plan. The BB&S Site is located at 1348 Speonk-Riverhead Road in Southampton, NY. It is a light industrial property known as the Former BB&S Treated Lumber Site (see Figure 1).

2 Site Access and Coordination

2.1 Access to BB&S Property

Prior to a sampling event, the sampling team and/or the work assignment Project Manager will call at least one week in advance to notify the owner and any tenants, if applicable, of the Former BB&S facility of the date of groundwater monitor well sampling. Access requirements, including the areas of the site and building, will be discussed with the owner and tenants, if any. The site owner as of the date of this plan is the BB&S Treated Lumber Corporation. All sampling will be coordinated with the NYSDEC Division of Environmental Remediation at 518-402-9814.

2.2 Access to Off-Site Properties

Prior to a sampling event, the sampling team and/or the work assignment Project Manager will call at least one week in advance to notify the owner and any tenants, if applicable, of the off-site

properties of the date of groundwater monitor well sampling. Access requirements will be discussed with the owner and tenants, if any. All sampling will be coordinated with the NYSDEC Division of Environmental Remediation at 518-402-9814.

2.3 NYSDEC Coordination

The NYSDEC Project Manager should be informed of all sampling events at the former BB&S site and can be contacted at NYSDEC's central office in Albany, NY at 518-402-9814.

3 Site Monitoring Wells

3.1 Monitoring Well Description

There are a total of 37 active groundwater monitoring well locations on the BB&S Treated Lumber site property and off-site, including private residential and business properties. These shallow, intermediate, and deep wells allow observation of the local groundwater contaminant trends. Available well logs of the groundwater monitoring wells are provided in Appendix J of the SMP.

The groundwater monitoring wells shall be sampled semiannually. Twelve of these monitoring well locations are located on the BB&S property, and nine are located off-site. The locations of the groundwater monitoring wells on-site are shown on Figure 2, while Figure 3 shows the off-site monitoring well locations. With the exception of MW-13, the off-site monitoring well locations depicted on these figures each represent a single outer well casing each containing three monitoring wells at shallow, intermediate, and deep depths. This results in a total number of 25 off-site monitoring wells to be sampled during each sampling event; therefore, including the 12 on-site wells, the total number of wells available to be sampled during each semiannual sampling event is 37. Table 1 presents a list of the on-site and off-site wells. A summary of well construction information is provided as Table 2.

3.2 Monitoring Well Inspection

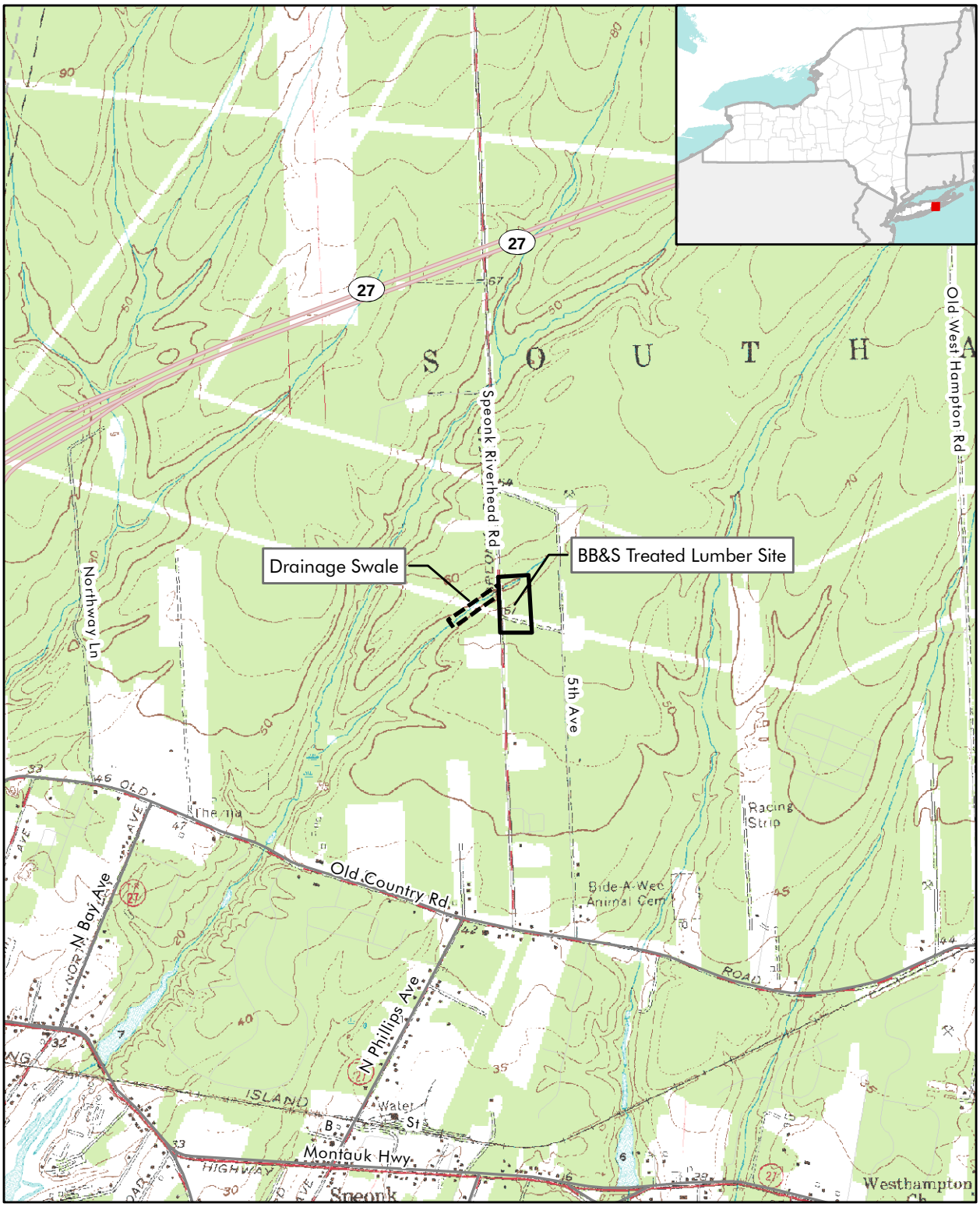
During the sampling of each monitoring well, an inspection of the well's physical condition shall be performed. Minor well repairs, including well labeling and replacing missing well flush-mount cover bolts, will be made as needed. The need for more extensive repairs will be noted, if necessary. More extensive well repairs will be noted on the Monitoring Well Inspection Checklist (see Attachment A). The Site Management Plan should be consulted for information regarding monitoring well decommissioning, abandonment, and repairs. The NYSDEC Project manager will approve all activities prior to implementation, as required, among other things, per the SMP.

4 Groundwater Sampling

4.1 Analytical Plan

Groundwater monitoring wells will be sampled and analyzed in accordance with NYSDEC Analytical Services Protocol for the compounds listed in Table 3. Groundwater sampling will be performed using the equipment and procedures described in Sections 4.2 and 4.3, respectively.

Path: L:\Buffalo\BBS_Treated_Lumber\Maps\MXD\MiscRequests\USGS_Topo.mxd



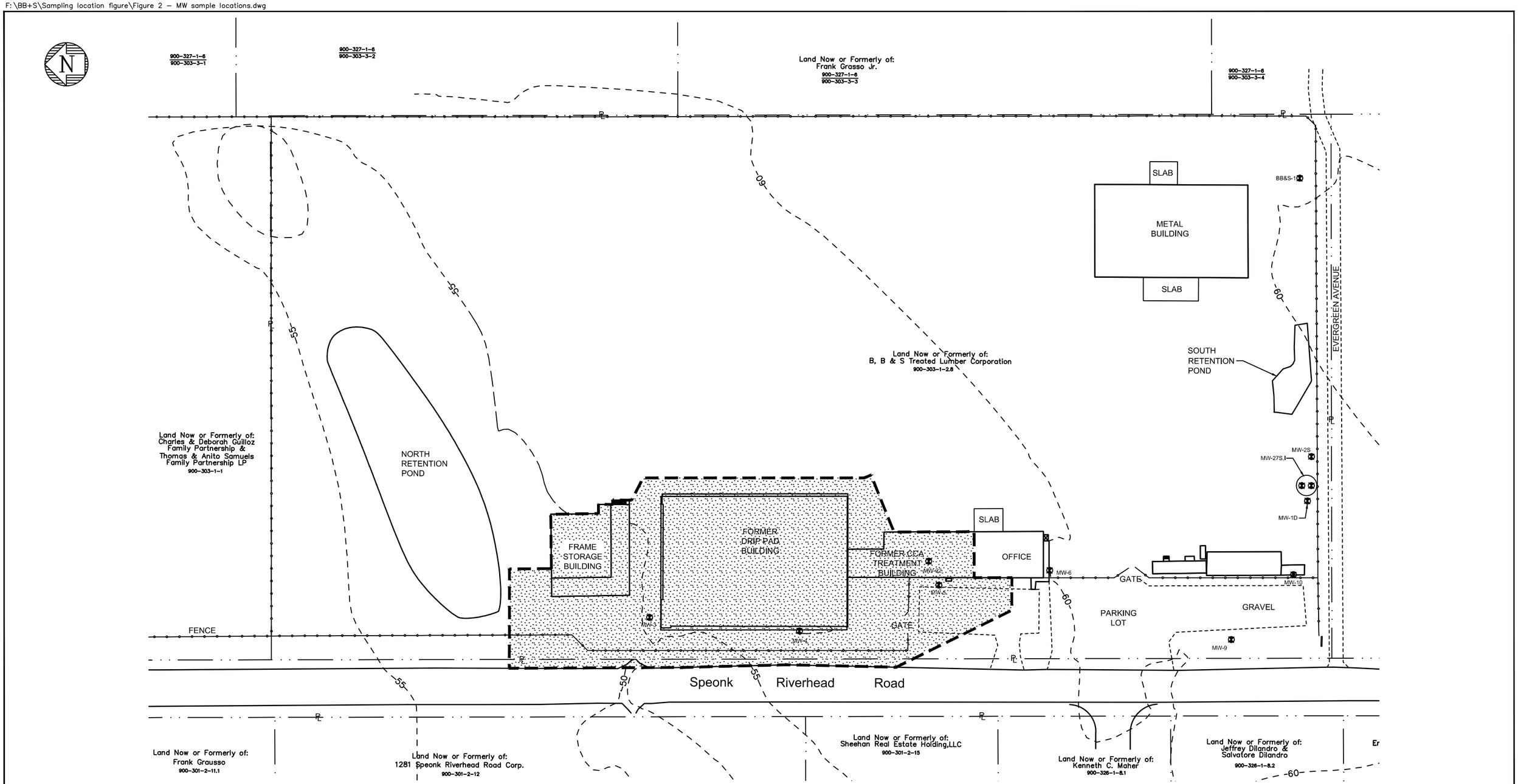
BB&S Treated Lumber Site
Drainage Swale
Secondary Road
Local Road

Figure 1
Site Location Map
BB&S Treated Lumber Site
Suffolk County, New York

NYSDEC Site # 1-52-123

0 0.125 0.25 0.5 Miles

F:\BB+S\Sampling location figure\Figure 2 – MW sample locations.dwg



SCALE IN FEET

0 80 160 240

LEGEND

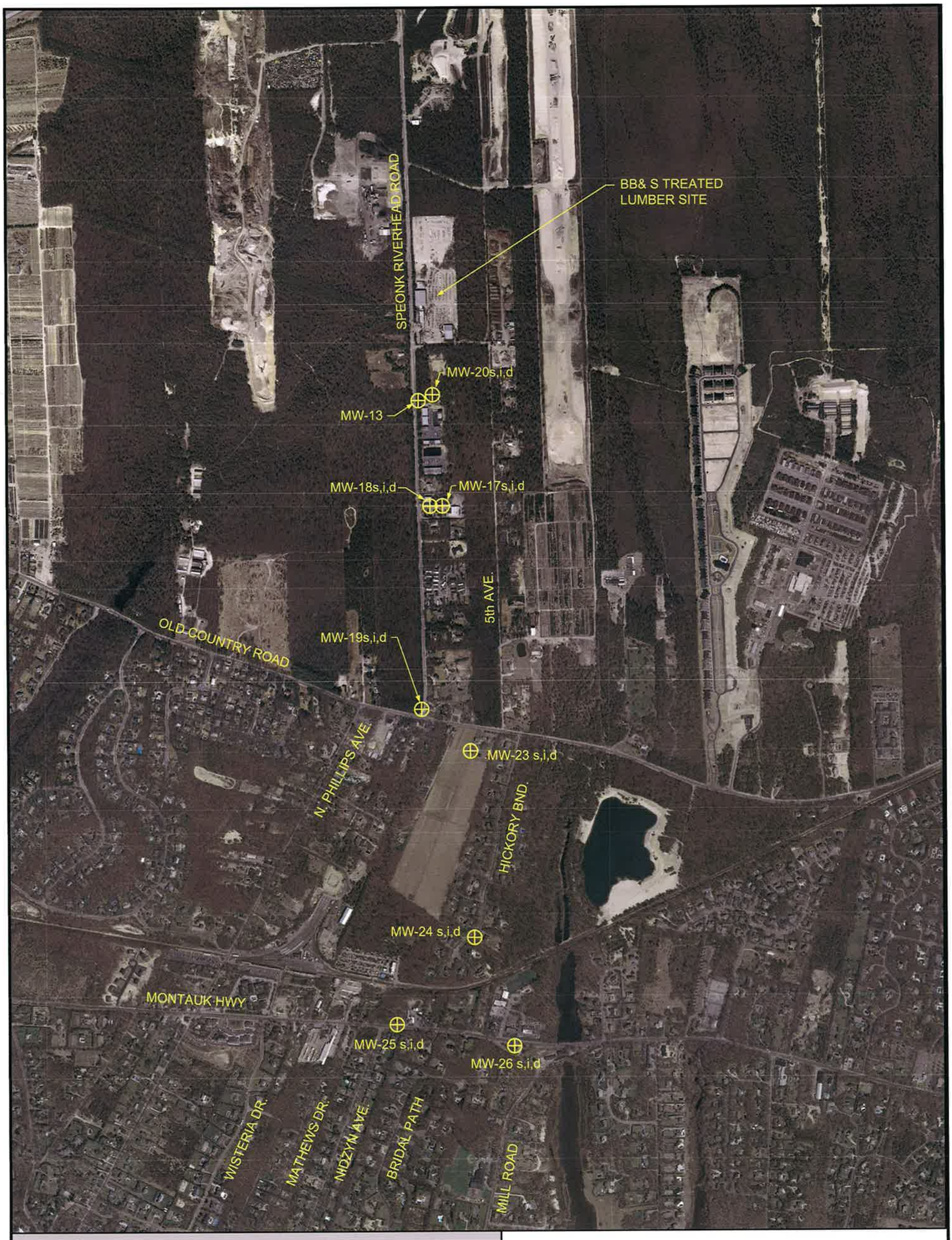
- ROAD
- BUILDING
- APPROXIMATE PROPERTY BOUNDARY
- FENCE LINE
- –55– TOPOGRAPHIC SURFACE CONTOUR (1 FT.)
- MW-9 MONITORING WELL
- HAZARDOUS ZONE - WASTE REMAINING

NOTE

1. ORIGINAL MAPPING BASED ON SURVEYS BY JOHN C. EHLERS , LAND SURVEYOR, 6 MAIN STREET RIVERHEAD, NY 11901 AND WENDEL SURVEYORS, 7405 CANAL ROAD LOCKPORT, NY 14095. ADDITIONAL INFORMATION WAS ADDED BY AECOM FROM FIELD SURVEY AND OBSERVATIONS. CAD FILE 97347-DESIGN-R1.DWG WAS PROVIDED BY AECOM (OCTOBER 2009) AND IS THE DRAWING USED TO CREATE THIS FIGURE.
2. VERTICAL DATUM: NAVD 1988
   HORIZONTAL DATUM: NAD 1927

ecology and environment

FIGURE 2 MONITORING WELL LOCATIONS
BB&S TREATED LUMBER CORPORATION SITE
TOWN OF SOUTHAMPTON, SUFFOLK COUNTY, NY



LEGEND

⊕ EXISTING BB&S OFF-SITE MONITOR WELL
(s,i,d) = SHALLOW, INTERMEDIATE, DEEP NESTED TRIPLET WELL

N

PLAN

0' 500' 1000' 2000'

AECOM

OFF-SITE MONITORING WELL LOCATION MAP

BB&S TREATED LUMBER SITE - NYSDEC SITE No. 1-52-123
TOWN OF SOUTHAMPTON, SUFFOLK COUNTY, NEW YORK

FILE NAME:	DRN	PROJECT NO.	DATE	FIGURE NO.
LIMMITED_SITE_DATA_.dwg	—	97347	OCT. 2009	1

4.2 Equipment and Supplies

- Water level indicator;
- Appropriate keys for well cap locks;
- Stopwatch, logbook, data collection forms, and calculator;
- Centrifugal pump with power source and dedicated polyethylene tubing;
- Water quality meter(s) capable of reading pH, temperature, specific conductance, dissolved oxygen (DO), oxidation-reduction potential (ORP), and turbidity;
- Decontamination supplies;
- Sample bottles, labels, custody seals, chain-of-custody forms, tape; and
- Cooler with packing material and ice.

4.3 Monitoring Well Groundwater Sampling Procedures

4.3.1 Well Purging

All wells will be purged prior to sampling using one of two methods: low-flow purging and sampling or standard purging and sampling. Prior to purging or installation of any equipment into the well, record the static depth to water and total well depth as measured from the top of inner casing to within ±0.01 foot in each well. Refer to Table 2 for existing well construction information. Calculate the volume of standing water in gallons or liters. A standard groundwater well purge form is provided in Attachment B. The preferred method of purging and sampling is to use the low-flow purging procedures as follows:

- Install sampling pump by slowly lowering the pump, tubing and electrical lines into the well to the appropriate depth. The pump intake must be kept at least 2 feet above the bottom of the well to prevent disturbance and suspension of sediment. Record the depth to which the pump is lowered.
- Before starting the pump, measure the water level again with the pump in the well. Leave the water level measuring device in the well.
- Start pumping the well at approximately 500 milliliters per minute (ml/min). Measure the flow rate using a graduated container and timepiece. The water level should be monitored approximately every 5 minutes. Ideally, a steady flow rate should be maintained that results in a stabilized water level (drawdown of 0.3 feet or less). Pumping rates should, if needed, be reduced to the minimum capabilities of the pump to ensure stabilization of the water level. The flow rate may also be increased up to 1 liter per minute (1,000 ml/min) as long as the water level stabilizes with less than 0.3 feet of drawdown. Care should be taken to maintain pump suction and to avoid entrainment of air in the tubing. Record each adjustment made to the pumping rate and the water level measured immediately after each adjustment.

- During purging of the well, monitor and record water quality parameters (turbidity, temperature, specific conductance, pH, DO, and ORP) approximately every 5 minutes. The well is considered stabilized and ready for sample collection when the indicator parameters have stabilized for three consecutive readings as follows:

    - +0.1 for pH;
    - +3% for specific conductance;
    - +10 millivolts for ORP; and
    - +10% for DO and turbidity.

Dissolved oxygen and turbidity usually require the longest time to achieve stabilization. Samples for metals analysis should not be collected until the turbidity is below 50 NTU. If all parameters are stable and the turbidity is above 50 NTU and declining, continue purging until turbidity is below 50 NTU. If turbidity stabilizes above this threshold, collect the required samples and note the conditions.

As an alternative to utilizing low-flow purging procedures, the standard purging and sampling method may also be used. The goal of purging using the standard method is the same as the low-flow method, to obtain samples of groundwater representative of existing conditions within the aquifer. The standard purging method is similar to that described above for the low-flow method and is as follows:

- Install sampling pump by slowly lowering the pump, tubing and electrical lines into the well to the appropriate depth. The pump intake must be kept at least 2 feet above the bottom of the well to prevent disturbance and suspension of sediment. Record the depth to which the pump is lowered. A bailer may also be used for purging but is not recommended for use during purging when sampling for VOCs.

- Start pumping the well at approximately 500 milliliters per minute (ml/min). Adjust the flow rate so that it will be sustainable during purging and sampling without drying out the well. Do not overpump the well such that it will become dry in less than one static volume. Measure the flow rate using a graduated container and timepiece. The water level should be monitored periodically during purging. Care should be taken to maintain pump suction and to avoid entrainment of air in the tubing. Record each adjustment made to the pumping rate and the water level measured immediately after each adjustment.

- During purging of the well, monitor and record water quality parameters (turbidity, temperature, specific conductance, and pH) at least once per well volume or more often if possible. DO and ORP measurements may also be recorded if available on the instrumentation being used, but are not a requirement of this method. A minimum of three static wells volumes of water must be purged and the water quality parameters must be stable. The well is considered stabilized and ready for sample collection when the water quality parameters have stabilized for three consecutive readings as follows:

    - +0.1 for pH;

- +3% for specific conductance; and
- +10% for turbidity.

- If the water quality parameters are not stable after purging three well volumes, or if the turbidity is above 50 NTU and continues to decline, then continue purging until five static well volumes have been purged.

4.3.2 Sample Collection

For the low-flow purging method, the pump must not be removed from the well between purging and sampling. Collect samples at a flow rate between 100 and 250 ml/min. For the standard purging method, the pump should also not be removed; however, the pump may be removed if a bailer is being used to collect the samples. VOC samples must be collected first and directly into sample containers (see below). All sample containers should be filled with minimal turbulence by allowing the ground water to flow from the tubing gently down the inside of the container. In the case of a bailer, it must be lowered very slowly into the water column and to the depth of the screen for sample collection. Fill sample bottles leaving little or no headspace depending on analysis.

Proper collection of a sample for dissolved VOCs requires minimal disturbance of the sample to limit volatilization and subsequent loss of volatiles from the sample. Bottles for VOC analysis may or may not include chemical preservative (hydrochloric acid [HCl]) depending on whether the laboratory can meet the applicable holding time (7 days from collection without preservative or 14 days from collection with preservative). If using chemical preservative, the vials should be pre-preserved with HCL by the laboratory. The following procedures should be followed when collecting samples for VOC analysis:

- Open the vial and set the cap in a clean place. Use caution and appropriate personal protective equipment (PPE) if using pre-preserved sample containers;

- Fill the vial to the top until a convex meniscus forms on the top of the vial. Do not overfill the vial;

- Place the cap directly over the top and screw down firmly. Do not over tighten. Over tightening the sample container cap may result in cap breakage;

- Invert the vial, tap gently, and observe sample for air bubbles. If an air bubble appears, gently open the sample vial and place a small amount of additional sample inside. Use caution to avoid flushing sample (and preservative if applicable) from the vial. No entrapped air should remain in the sample vial; and

- Place the vial in a cooler with ice and appropriate packaging in accordance with Section 6.0.

After completion of sampling for VOCs, fill sample containers for remaining analyses, utilizing laboratory pre-preserved containers as appropriate. Label sample bottles as specified in Section 6. Prepare chain-of-custody documents, package samples, and store the samples under the chain-of-custody pending shipment in accordance with the procedures specified in Section 6.

5 Field Quality Control Samples

Field QC samples help determine whether project data quality objectives are being met. Analyzed in the laboratory as ordinary field samples, they are used to assess sampling and transport procedures as possible sources of sample contamination and to document overall sampling and analytical precision. The following field QC samples will be collected:

- One duplicate sample shall be collected per 20 samples per sampling round and analyzed for all parameters (VOCs and inorganics).

- Extra volume shall be collected for laboratory matrix spike/matrix spike duplicate (MS/MSD) analysis at a frequency of one set per 20 field samples per sampling round. Unless otherwise directed by the laboratory, each MS/MSD will consist of two additional sets of containers (for a total of three including the original sample) all labeled the same as the original sample.

- Trip blanks for water samples will be prepared by the laboratory, transported to the site with the laboratory bottles, and returned to the lab for analysis at the rate of one per shipping cooler containing water samples for VOC analysis; and

- Rinsate blanks will be collected from non-dedicated or non-disposable sampling equipment, including reusable submersible pumps for groundwater sampling. One rinsate blank will be collected per 20 field samples by passing organic-free and inorganic-free deionized water supplied by the laboratory or other suitable source over the decontaminated equipment and directly into pre-preserved laboratory containers;

6 Sample Containers, Labeling, Packaging and Shipping, and Custody

The volumes and containers for aqueous samples, as well as sample preservation are presented in Table 3. Pre-washed sample containers, prepared in accordance with U.S. Environmental Protection Agency (EPA) bottle washing procedures will be provided by the laboratory. Sample containers for analyses requiring chemical preservation will be pre-preserved by the laboratory.

6.1 Sample Labeling

All samples will be assigned a unique sample identifier. Labels for each sample container will contain the sample identifier, date of sample collection, analytical parameters, and type of preservation used. Any change in the label information prepared prior to the sample collection will be initialed by the sampler.

All sample identifiers for the BB&S site are presented in Attachment C, "Monitoring Well Sample Naming Conventions." These naming conventions shall be used for labeling during sampling events and for electronic data deliverable (EDD) submittals per NYSDEC requirements. Additional information on EDD submittals is presented in Section 10.

6.2 Sample Packaging and Shipping

Sample containers will be placed inside sealed plastic bags as a precaution against cross-contamination caused by leakage or breakage. The bags will be placed in coolers with inert packaging such as bubble wrap in such a manner as to minimize the chance of breakage during shipment. Ice in plastic bags will be placed in the coolers to chill the samples with the goal of achieving 4 ±2 degrees Celsius (°C) throughout shipment.

Sample shipment will be performed in strict accordance with all applicable U.S. Department of Transportation (DOT) regulations. The samples will be shipped to a laboratory certified by the New York State Department of Health's Environmental Laboratory Approval Program.

6.3 Sample Custody

A sample is considered to be in custody under the following situations:

- The sample is directly in your possession;
- The sample is clearly in your view;
- The sample is placed in a locked location; or
- The sample is in a designated secure area.

In order to demonstrate that the samples and coolers have not been tampered with during shipment, adhesive custody seals will be used. The custody seals will be placed either around the cap of each sample container or across the cooler lids in such a manner that they will be visibly disturbed upon opening of the sample container or cooler. The seals will be signed or initialed and dated by field personnel when affixed to the container and cooler.

Documentation of sample chain-of-custody is necessary to demonstrate that the integrity of the samples has not been compromised between collection and delivery to the laboratory. Each sample cooler will be accompanied by a chain-of-custody record to document the transfer of custody from the field to the laboratory. All information requested in the chain-of-custody record will be completed. A standard turnaround time will be requested for sample analysis results unless otherwise instructed by the Project Manager. One copy of the chain-of-custody form will be retained by the samplers and placed in the project records file. The original will be sealed in a plastic bag and placed inside the cooler. Upon receipt at the laboratory, the chain-of-custody documents will be completed. It is the responsibility of the laboratory to document the condition of custody seals and sample integrity upon receipt.

6.4 Turnaround Time for Analysis

All groundwater samples will be analyzed at the approved laboratory within sample holding times indicated in Table 3.

7 Health and Safety

Health and safety procedures will be as described in the site-specific Health and Safety Plan (sHASP) and its amendment for these groundwater sampling tasks. Care will be taken when opening any well to avoid inhaling vapors that may have accumulated in the headspace inside the well. Wasps/bees nesting in well casings and vehicular traffic are additional safety concerns. All work is expected to be completed in Level D personal protection.

A generic Health and Safety Plan for this work plan is provided as Appendix L of the Site Management Plan.

8 Decontamination Procedures

Sampling methods and equipment have been chosen to minimize decontamination requirements and prevent the possibility of cross-contamination. Any non-dedicated sampling equipment will be decontaminated using the following procedure:

- Initially remove all foreign matter;
- Wash in a laboratory-grade detergent solution (e.g., Alconox);
- Rinse with deionized or distilled water;
- Rinse with a 5% to 10% nitric acid solution;
- Rinse with deionized or distilled water; and
- Allow to air dry.

Fluids generated during decontamination will be handled according to the procedures outlined in Section 9.

9 Investigation-Derived Waste (IDW)

The following waste stream types of IDW are expected to be generated: groundwater from purging, decontamination fluids, sampling supplies such as tubing, and PPE. NYSDEC will determine, on a case-by-case basis, what other wastes will require disposal. Waste streams will be segregated and not mixed. Existing data indicates that there are no direct contact exposure concerns, so purge waters will be disposed of by discharging onto the ground in an unpaved area. In the event that evidence of significant contamination is present (e.g. strong odors, sheen, product), the waste will be containerized in steel drums and stored on site pending analysis and potential off-site disposal. Decontamination fluids containing detergent or acid will be disposed of in a sanitary sewer. All expendable materials generated during the investigation (including, but not limited to, gloves and plastic tubing) will be bagged and disposed of off-site as non-regulated solid waste.

10 Data Review and Report

A brief report summarizing all field activities and providing a summary of the analytical results will be provided to the NYSDEC Project Manager upon receipt and review of the analytical report from the laboratory. Analytical data review will be performed by a qualified chemist in accordance with NYSDEC Division of Environmental Remediation Guidance for Data Deliverables and the Development of Data Usability Summary Reports (in DER-10, May 2010) and appropriate USEPA Region 2 data validation standard operating procedures for the analytical methods performed (available at http://www.epa.gov/region2/qa/documents.htm). Finally, validated groundwater sampling results must be submitted to the NYSDEC Environmental Information Management System in accordance with the most recent version of the standardized electronic data deliverable (EDD) format. Naming conventions and standard submittal formats for the BB&S site are presented in Attachment C. Further information on the EDD is available at the website http://www.dec.ny.gov/chemical/62440.html.

11 Schedule

Monitoring well evaluation and sampling is expected to be performed on a semiannual basis. Sampling is to be performed in approximately June and November of each year. Efforts should be made to conduct groundwater sampling at the same time as soil sampling (Appendix F of the SMP).

12 References

AECOM Technical Services Northeast, Inc. 2009. *Supplemental Pre-Design Investigation Report.* Prepared for: New York State Department of Environmental Conservation

American Society for Testing and Material (ASTM), 1986, Standard Guide for Sampling Groundwater Monitoring Wells, D-4448-85a, Philadelphia, Pennsylvania.

Gibb, J.P., R.M. Schuller, and R.A. Griffin, 1980, *Monitoring Well Sampling and Preservation Techniques*, EPA-600/9-80-010.

Korte, N. and P. Kearl, 1985, *Procedures for the Collection and Preservation of Groundwater and Surface Water Samples and for the Installation of Monitoring Wells*, Second Edition, U.S. Department of Energy, GJ/TMC-08, Technical Measures Center, Grand Junction Projects Office.

New York State Department of Environmental Conservation (NYSDEC), 2010, *Technical Guidance for Site Investigation and Remediation* (DER-10).

U.S. Environmental Protection Agency Region II, 1998, *Ground Water Sampling Procedure Low Stress (Low Flow) Purging and Sampling.*

Table 1 On-site and Off-site Monitoring Wells at the Former BB&S Site

On-Site Monitoring Wells	Off-Site Monitoring Wells	
BB&S-1	MW-13	MW-23S
MW-3	MW-17S	MW-23I
MW-4	MW-17I	MW-23D
MW-5	MW-17D	MW-24S
MW-6	MW-18S	MW-24I
MW-9	MW-18I	MW-24D
MW-10	MW-18D	MW-25S
MW-22	MW-19S	MW-25I
MW-27I	MW-19I	MW-25D
MW-27S	MW-19D	MW-26S
MWPD-1D	MW-20S	MW-26I
MWPD-2S	MW-20I	MW-26D
	MW-20D	

Table 2 - Former BB&S Site Monitoring Well Construction Summary

Well ID	Water Depth Measured On	Total Well Depth (feet BGS)	Depth to Water (feet BGS)	Well Diameter (inches)	Top of Inner Casing Elevation (feet) [3]
MW-3	4/11/12	63.85	37.45	2.0	57.19
MW-4	4/11/12	63.85	37.45	4.0	60.20
MW-5 [2]	NA	69.23	NA	2.0	59.63
MW-6	4/9/12	69.66	41.34	4.0	61.07
MW-22	4/9/12	48.76	38.44	1.5	TBD
MW-9	4/9/12	47.89	43.76	4.0	61.89
MW-10	4/10/12	59.41	43.96	4.0	61.88
MW-27I	4/6/12	65.17	43.11	2.0	TBD
MW-27S	4/6/12	65.17	43.13	2.0	TBD
BB&S-1	4/11/12	76.05	46.90	2.0	TBD
MW-20S	4/3/12	50.09	44.30	1.5	TBD
MW-20I	4/3/12	91.95	47.60	1.5	TBD
MW-20D	4/3/12	131.79	47.40	1.5	TBD
MW-13	4/6/12	63.21	39.82	1.5	58.44
MW-18S	4/5/12	47.93	34.91	1.5	TBD
MW-18I	4/4/12	89.32	34.80	1.5	TBD
MW-18D	4/5/12	129.73	35.00	1.5	TBD
MW-17S	4/5/12	47.78	34.39	1.5	TBD
MW-17I	4/5/12	88.89	34.22	1.5	TBD
MW-17D	4/5/12	128.97	34.54	1.5	TBD
MW-19S	4/2/12	50.57	34.06	1.5	TBD
MW-19I	4/2/12	91.58	33.97	1.5	TBD
MW-19D	4/2/12	131.55	34.08	1.5	TBD
MW-23S	3/29/12	38.62	30.07	1.5	TBD
MW-23I	3/29/12	80.02	30.03	1.5	TBD
MW-23D	3/29/12	117.87	29.72	1.5	TBD
MW-24S	4/3/12	33.86	23.60	1.5	TBD
MW-24I	3/30/12	79.30	23.41	1.5	TBD
MW-24D	3/30/12	107.70	22.94	1.5	TBD
MW-25S	3/28/12	35.79	25.16	1.5	TBD
MW-25I	3/28/12	73.11	25.18	1.5	TBD
MW-25D	3/28/12	110.34	25.22	1.5	TBD
MW-26S	3/27/12	21.85	9.44	1.5	TBD
MW-26I	3/27/12	68.49	9.68	1.5	TBD
MW-26D	3/27/12	115.68	9.71	1.5	TBD
MWPD-1D	4/10/12	177.01	43.94	2.0	63.34
MWPD-2S	4/10/12	64.75	44.13	2.0	63.53

Notes:
[1] Well depth, depth to water, and liquid depth were measured by EnviroTech.
[2] MW-5 was dry during the spring 2012 sampling event; well depth was taken from the PDI Report.
[3] Top of inner casing elevations taken from Table 2 in the PDI Report, elevations by John C. Ehlers Licensed Surveyor, November 2005. Not all monitoring wells were in place at the time of this survey; a survey will need to be conducted to determine the elevations for these monitoring wells.

Table 3 – Former BB&S Site Sample Bottles, Volumes, and Preservatives

Analyte and Method	Bottle Type and Quantity[1]	Sample Holding Time[2]	Preservatives
Volatile organic compounds (VOCs) EPA Method 8260B;	Three 40-ml glass vials with septum-lined caps	7 days if unpreserved 14 days if preserved	HC1 to pH < 2 and ice to 4°C
Target Analyte List Metals SW-846 Method 6010B	One 1-L polyethylene bottle (or smaller per lab requirements)	6 months	$HN0_3$ to pH < 2 and ice to 4°C
Mercury SW-846 Method 7470A			
Hexavalent chromium SW-846 Method 7196A	One 1-L polyethylene bottle (or smaller per lab requirements)	24 hours	Ice to 4°C
Note: [1] Certified pre-cleaned bottles and containers. 2 From date and time of sample collection.			

Attachment A

Monitoring Well Inspection Checklist

Monitoring Well Inspection Checklist
BB&S Treated Lumber Corp. -- Southampton, NY
NYSDEC Site No 1-52-123

Well Number	Water Level (feet TOIC)	Current Depth (feet TOIC)	Well Completion (A/F)	Well Paint (G/F/P)	Well Label (G/F/P)	Casing Lock (G/F/P)	Protective Cover (G/F/P)	Inner Well Cap (G/F/P)	Equipment in Well (B/U/H)	Obstruction in Well (Y/N)	Water in Annulus (Y/N)	Concrete Pad (G/F/P)	Inspection Date	Comments/Needs

Key:

A = Above-grade completion.
B = Bailer.
C = Curb box (flush-mount) completion.
F = Fair.
G = Good.
H = PDB Harness.
N = No.
P = Poor.
TOIC = Top of inner casing.
U = Bladder Pump.
Y = Yes.

Attachment B

Groundwater Well Purge and Sample Record Form

WELL PURGE & SAMPLE RECORD

Site Name/Location: _____ Well ID: _____

Project No.: _____ Date: _____

Initial Depth to Water: _____ feet TOIC Start Time: _____

Total Well Depth: _____ feet TOIC End Time: _____

Depth to Pump: _____ feet TOIC ☐ Bailer ☐ Pump

Initial Pump Rate: _____ Lpm / gpm Pump Type: _____

adjusted to: _____ at _____ minutes Well Diameter: _____ inches

adjusted to: _____ at _____ minutes 1x Well Volume: _____ gallons

Time	Purge Volume (gallons/liters)	pH (s.u.)	Temp. (ºC/ºF)	ORP (mV)	Conductivity (µS/cm mS/cm)	DO (mg/L)	Turbidity (NTU)	Water Level (feet)
Final Sample Data:								

Sample ID: _____ Duplicate? ☐ Dupe Samp ID: _____

Sample Time: _____ MS/MSD? ☐

Analyses:	Methods:
☐ VOCs	☐ CLP
☐ SVOCs	☐ SW846
☐ PCBs	☐ Drink. Wtr.
☐ Metals	☐ _____
☐ _____	☐ _____

Comments: _____

Sampler(s): _____

Attachment C

Monitoring Well Sample Naming Conventions

Monitoring Well Sample Naming Conventions
BB&S Treated Lumber Corp. -- Southampton, NY
NYSDEC Site No. 1-52-123

Location Name	COC Sample ID[1]	COC Sample Date & Time	COC Analysis Requested
BBS-1	**BBS-1-EventX**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
MW-10	**MW-10-EventX**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
MW-13	**MW-13-EventX**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
MW-17D	**MW-17D-EventX**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
MW-17I	**MW-17I-EventX**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
MW-17S	**MW-17S-EventX**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
MW-18D	**MW-18D-EventX**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
MW-18I	**MW-18I-EventX**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
MW-18S	**MW-18S-EventX**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
MW-19D	**MW-19D-EventX**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
MW-19I	**MW-19I-EventX**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
MW-19S	**MW-19S-EventX**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
MW-20D	**MW-20D-EventX**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
MW-20I	**MW-20I-EventX**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
MW-20S	**MW-20S-EventX**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
MW-22	**MW-22-EventX**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
MW-23D	**MW-23D-EventX**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
MW-23I	**MW-23I-EventX**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
MW-23S	**MW-23S-EventX**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
MW-24D	**MW-24D-EventX**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
MW-24I	**MW-24I-EventX**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
MW-24S	**MW-24S-EventX**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
MW-25D	**MW-25D-EventX**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**

MW-25I	**MW-25I-EventX**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
MW-25S	**MW-25S-EventX**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
MW-26D	**MW-26D-EventX**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
MW-26I	**MW-26I-EventX**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
MW-26S	**MW-26S-EventX**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
MW-27I	**MW-27I-EventX**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
MW-27S	**MW-27S-EventX**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
MW-3	**MW-3-EventX**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
MW-4	**MW-4-EventX**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
MW-5	**MW-5-EventX**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
MW-6	**MW-6-EventX**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
MW-9	**MW-9-EventX**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
MWPD-1D	**MWPD-1D-EventX**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
MWPD-2S	**MWPD-2S-EventX**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
Quality Control Samples for Monitoring Well Samples			
Field Duplicate #1[2]	**LocName-EventX-FD**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
Field Duplicate #2	**LocName-EventX-FD**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
Matrix Spike (MS) #1[3]	**LocName-EventX-MS**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
Matrix Spike Duplicate (MS) #1[3]	**LocName-EventX-SD**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
Matrix Spike (MS) #2	**LocName-EventX-MS**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
Matrix Spike Duplicate (MS) #2	**LocName-EventX-SD**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
Trip Blank #1	**TB-mmddyyyy**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
Trip Blank #2, etc.	**TB-mmddyyyy**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**
Rinsate/Equipment Blank[4]	**RB-mmddyyyy**	mm/dd/yyyy hh:mm:ss	**6010C; 7196A; 7470A; 524.2**

Notes:

1 "X" refers to Sample Event #. If the sample is collected during Monitoring Event #5, the sample ID will read '**MW-20S-Event5**".

3 Field duplicate may be taken at any monitoring well sampling location. Multiple field duplicates may not be taken at one well location.

4 MS/MSD may be taken at any monitoring well sampling location. MS and MSD must be taken at the same location. Multiple MS/MSDs may not be taken at one well location. At least one duplicate sample per 20 samples taken.

5 Rinsate/equipment blank taken as needed. Rinsate blank not required for equipment that does not require decontamination before sampling.

F

Soils Management Plan

On-site Soils Management Plan for the BB&S Treated Lumber Site - NYSDEC Site No. 152123

Southampton, New York
June 2013

Prepared by: Jessica Wood, Ecology and Environment Engineering, P.C.

Reviewed by: Mike Steffan, EEEPC Work Assignment Project Manager - BB&S

Accepted for Use:

Revisions:

Dated:	Revisions:	By:
6/11/13	Updated Figure 1	M. Steffan

1.0 Introduction

This Soils Management Plan (Soils MP) has been prepared for use in conjunction with the Former BB&S Lumber Corporation (BB&S) Site Management Plan (SMP). The purpose of this Soils MP is to provide guidance for the proper handling and final disposition of chromated copper arsenate (CCA)-contaminated sediments and materials excavated in and around the site. Any proposed maintenance of drainage structures, including asphalt pavements; excavation of existing soils, including sub-base materials and sub-floor slab materials; and decommissioning of monitoring wells/piezometers and other subsurface utilities must be evaluated for the potential to expose CCA or other contaminants to the environment in designated areas of the site (see Figure 1).

These activities must be performed in accordance with this Soils MP, the Community Protection Plan (CPP), the Generic Health and Safety Plan (G-HASP), and the established and approved Institutional Controls and Engineering Controls (IC/EC) presented in the BB&S SMP. Only the designated areas of the BB&S property are included in this Soils MP, which is based on information submitted in the BB&S Final Engineering Report (FER) and obtained by the New York State Department of Environmental Conservation (NYSDEC) indicating those areas where the presence of CCA contamination remains after remedial completion.

When excavation or maintenance activities are planned in the designated areas of the BB&S Site where sediments or soils may be contaminated with CCA, adequate personal protective equipment must be used to prevent exposure to potentially contaminated soils.

A work plan must be prepared that addresses the methods of excavation or maintenance, precipitation runoff and groundwater control, handling and storing of the contaminated sediment or excavated materials on site, and the proper transportation and disposal of the sediment or excavated material. The testing and analytical requirements must be described in detail as part of the work plan. In addition, a Health and Safety Plan (HASP) and specifications and drawings must be prepared and submitted to NYSDEC for their comment and approval prior to performing any maintenance activities or excavations within these potentially contaminated areas.

2.0 Sediment

Sediments at the BB&S Site are associated with catch basins, storm sewers, other surface drainage structures, the north and south retention ponds, and roof runoff structures (e.g., downspouts, gutters). See Figure 1 of Appendix D for the sediment sampling locations that are part of the Surface Water and Sediment Sampling Plan.

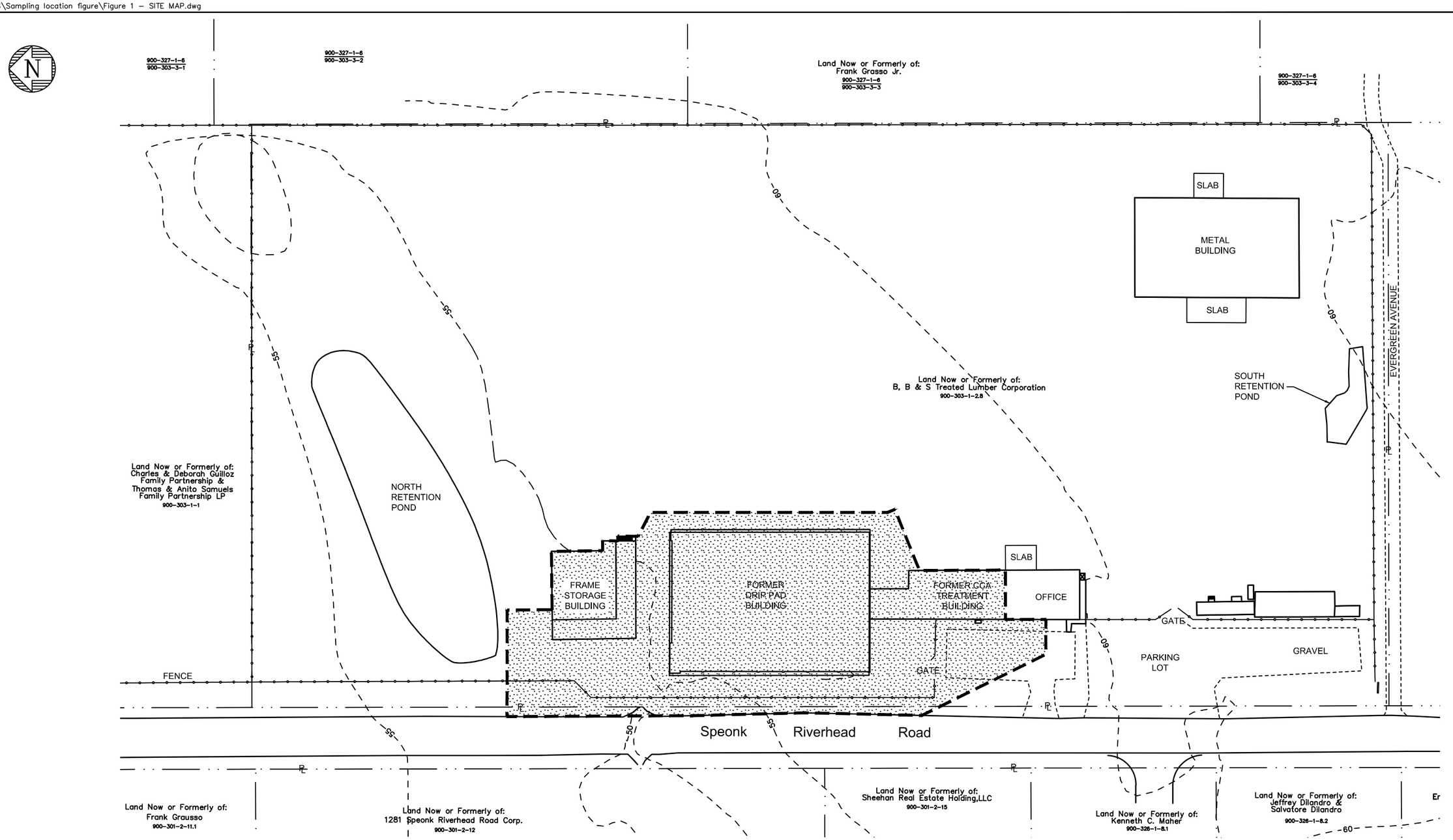
3.0 Excavated Material

Soils and materials excavated from designated areas of the BB&S Site are considered to be contaminated with CCA, while materials from other areas either have not been exposed to CCA or consist of clean soils used to backfill areas where contaminated material was excavated. Excavated soils and other materials at the BB&S Site are classified as follows:

a. **Probably contaminated:** The BB&S property has been remediated to meet SCOs for commercial/industrial use. Any materials from future excavations within the limits of the contaminated area around the CCA treatment building, the Frame Storage building, and the former drip pad are considered probably hazardous because these materials were not removed in order to preserve the substructure of the buildings. There is also a small amount of contaminated material within the culvert that runs 7 feet beneath Speonk-Riverhead Road for the width of the right-of-way. Figure 1 shows the hazardous zone where waste was left in place for structural reasons. Materials from future excavations could include asphalt pavement material, the pavement base materials, sub-grade materials, materials generated by the decommissioning of monitoring wells and piezometers, soils, concrete slabs and structures, and other soils materials located within the boundaries of the contaminated area, and all materials beneath the structures mentioned above regardless of the depth of excavation.

b. **Probably not contaminated:** All materials from other excavations off-site.

F:\BB+S\Sampling location figure\Figure 1 – SITE MAP.dwg



SCALE IN FEET

0 80 160 240

LEGEND

- ROAD
- BUILDING
- APPROXIMATE PROPERTY BOUNDARY
- FENCE LINE
- 60 TOPOGRAPHIC SURFACE CONTOUR (1 FT.)
- HAZARDOUS ZONE - WASTE REMAINING

NOTE

1. ORIGINAL MAPPING BASED ON SURVEYS BY JOHN C. EHLERS , LAND SURVEYOR, 6 MAIN STREET RIVERHEAD, NY 11901 AND WENDEL SURVEYORS, 7405 CANAL ROAD LOCKPORT, NY 14095. ADDITIONAL INFORMATION WAS ADDED BY AECOM FROM FIELD SURVEY AND OBSERVATIONS. CAD FILE 97347-DESIGN-R1.DWG WAS PROVIDED BY AECOM (OCTOBER 2009) AND IS THE DRAWING USED TO CREATE THIS FIGURE.
2. VERTICAL DATUM: NAVD 1988
   HORIZONTAL DATUM: NAD 1927

ecology and environment

FIGURE 1 ONSITE SOILS MANAGEMENT AREAS
BB&S TREATED LUMBER CORPORATION SITE
TOWN OF SOUTHAMPTON, SUFFOLK COUNTY, NY

4.0 Sediment and Excavated Material Handling

This section describes the minimum requirements that must be followed when handling CCA-contaminated sediments and excavated materials at the designated areas of the BB&S Site. Additional requirements may be added as necessary by NYSDEC.

a. All maintenance activities and excavations should be completed during non-precipitation events unless these activities must be performed immediately. A water-handling and treatment plan must be developed for inclusion into the Soils MP as a contingency in the event that emergency maintenance or excavation activities must be performed during a precipitation event.

b. Prior to performing any maintenance or excavation activity, samples of the affected sediments and excavated materials (either new or from an existing stockpile) must be submitted to a laboratory for analysis (a) to determine the appropriate disposal method and (b) for waste characterization and profiling for disposal. The analysis must be performed by a laboratory certified by the National Voluntary Laboratory Accredited Program (NVLAP). If, in the opinion of NYSDEC, the materials are considered free of contamination, then the materials may be handled by standard construction means and methods and in conformance with the erosion and sediment control plan (E&SCP) or Storm Water Pollution Prevention Plan (SWPPP) prepared by BB&S and approved by NYSDEC.

c. Transport of sediments and excavated materials must be performed using approved watertight containers. Dump trucks may be used as the container if their beds are lined with 40-mil polyethylene or an approved equivalent.

d. Waterproof containers such as roll-offs and drums should be used to store sediments and excavated materials. However, as an option for small quantities of materials, sediments and excavated materials may be stored on a 40-mil polyethylene base sheet and covered with a waterproof cover when not being added to or removed.

e. Non-contaminated drainage from the waterproof cover must be directed away from the stockpiled soils suspected of being contaminated with CCA and collected in a water-tight sump for observation or analysis prior to being manually discharged to an on-site ditch or drainageway.

f. Uncontaminated soils must not come into contact with sediments and excavated materials. If the uncontaminated soils come into contact with the stored sediments and excavated materials, these soils also must be considered contaminated.

g. Contaminated materials should be stored on-site for as short a period as possible prior to disposal. In no event should the materials be stored for longer than 90 days.

h. Transport of CCA-contaminated sediments and excavated materials shall be provided by a certified transportation company that can ship either hazardous waste or solid wastes.

i. Disposal of contaminated sediments and excavated materials shall be at an approved disposal facility. Sampling and analysis shall be performed as described in the BB&S SMP. Additional requirements of the company receiving the waste shall also be followed.

5.0 Backfill Materials

All backfill materials shall be obtained from an approved source, free of all contaminants per the NYSDEC DER 10 requirements, and suitable for the intended purpose. Analytical results are to be provided to demonstrate acceptability of the materials. Uncontaminated on-site soils should be used as on-site backfill when feasible.

a. Backfill material used around sewers and other below-grade features shall be placed and compacted such that no voids will result and full support will be provided to the below-grade feature and the pavement structure in the vicinity of the below-grade feature.

b. Backfill material used under floor slabs must be well-graded crushed stone and placed and compacted to support the anticipated loadings within buildings.

c. Backfill used in other areas shall be material appropriate for that area's use.

6.0 Backfill Placement

a. Backfill used beneath pavements shall be placed on a prepared subgrade in 6-inch lifts and compacted to 95% of the maximum dry density per ASTM D1557 for modified Proctor. The combined thickness of the lifts shall be at least the same as the thickness of the existing fill.

b. Backfill used in unpaved areas must be compacted as necessary and be suitable for the intended end use of the area being backfilled.

7.0 Investigation-Derived Waste

At least two waste stream types of IDW are expected to be generated: decontamination water and personal protective equipment (PPE). NYSDEC will determine, on a case by case basis, what other wastes will require disposal. Waste streams will be segregated and not mixed. Existing data indicates that there are no direct contact exposure concerns, so decontamination waters will be disposed of by discharging onto the ground in an unpaved area. In the event that evidence of significant contamination is present (e.g. strong odors, sheen, product), the waste will be containerized in steel drums and stored on site pending analysis and potential off-site disposal. All expendable materials generated during the

investigation (including, but not limited to, gloves and plastic sheeting) will be bagged and disposed of off-site as non-regulated solid waste.

8.0 References

New York State Department of Environmental Conservation (NYSDEC). 2010. *Final Technical Guidance for Site Investigation and Remediation*, DER-10, 3 May 2010.

G

Potable Water Supply Sampling Work Plan

Potable Water Supply Sampling Procedures
Work Plan for the
BB&S - NYSDEC Site No. 152123

Southampton, New York
April 2014

Prepared by: Jessica Wood, Ecology and Environment Engineering, P.C.

Reviewed by: Mike Steffan, EEEPC Work Assignment Project Manager - BB&S

Accepted for Use:

Revisions:

Dated:	Revisions:	By:
6/12/13	**Include onsite potable water location in text, contact list of potable water locations (Table 2), and map of general potable sampling locations (Figure 2).**	**X. Xue**
4/17/14	**Revision of Analytical Plan, Sample Labeling, Report, Table 1 and Table 2 sections; addition of Attachments B and C**	**J. Pristach**

1.0 Objective

A sampling/analytical program will be performed to evaluate trends in and the concentrations of chromated copper arsenate (CCA) and volatile organic compounds (VOCs) in the groundwater-derived potable water supply at the site and at off-site properties. The BB&S Site is located at 1348 Speonk-Riverhead Road in Southampton, New York. It is a light industrial property known as the Former BB&S Treated Lumber Site (see Figure 1). This document describes procedures for obtaining representative potable water samples, quality assurance/quality control (QA/QC) measures to be followed, proper documentation of sampling activities, and recommendations for personnel safety. Potable water samples will be taken at on-site and off-site properties supplied by groundwater wells. No facilities supplied with public water service will be sampled. The potable water sampling locations are provided on Figure 2. Table 1 identifies sample collection, preservation, and analytical methods, and Table 2 indicates the point of contact for each of the potable water locations.

2.0 Site Access and Coordination

2.1 Access to Off-Site Properties

Access agreements will first need to be reviewed by the New York State Department of Environmental Conservation (NYSDEC) for the off-site properties where potable water sampling is determined to occur. Prior to a sampling event, the sampling team and/or the work assignment

Project Manager will call at least one week in advance to notify the owner and any tenants, if applicable, of the off-site properties of the date and time of potable water supply sampling. Access requirements will be discussed with the owner and tenants, if any. All sampling will be coordinated with the NYSDEC Division of Environmental Remediation at 518-402-9814 and the New York State Department of Health (NYSDOH) at 518-402-7860.

2.3 NYSDEC Coordination

The NYDEC Project Manager should be informed of all sampling events in relation to the former BB&S site and can be contacted at NYSDEC's central office in Albany, New York at 518-402-9814.

3.0 Potable Water Supply Sampling Points

3.1 Sample Collection Points

Eight private water well locations were sampled in 2008 as part of the Supplemental Pre-Design Investigation (AECOM 2009). Figure 2, which identifies the locations of the private water wells, and Table 2, which provides the contact list for the potable water sampling program, are provided at the end of this appendix. The potable water well locations will be sampled at the direction of NYSDEC, NYSDOH, and/or the SCDHS.

Opening the casing for sampling in a domestic well may not be possible or may be impractical and construction information may be unavailable. Also, treatment systems, filters, pressure tanks, storage tanks or other apparatus may be present in domestic well systems. When sampling to assess potable water supply conditions, potable water samples must be collected upstream of all such features, if possible.

3.2 Sample Collection Point Inspection

During the sampling of each potable water supply monitoring point, an inspection of the sampling points' physical condition will be performed. Sampling point observations will be noted on the Potable Water Sampling Inspection Checklist (see Attachment A).

4.0 Potable Water Supply Sampling 4.1 Equipment and Supplies

- Stopwatch, logbook, calculator
- pH/temperature/specific conductance meter;
- Gloves;
- Sample bottles, labels, custody seals, chain-of-custody forms; and
- Packing material and cooler with ice.

4.2 Potable Water Supply Sampling Procedures

- Stagnant water may be a relatively minor issue in domestic drinking water wells and supply lines that are used on a regular basis; however such sources should be purged prior to sample

collection. If a storage tank is present, a spigot, valve or other sampling point should be located between the pump and the storage tank. If not, locate the valve closest to the tank.

- Disconnect any hoses, filters, or aerators attached to the tap before sampling. These devices can harbor a bacterial population if they are not routinely cleaned or replaced when worn or cracked and can introduce air into samples.

- Open the faucet or spigot and allow the water to run at a steady rate for at least 15 minutes if possible. Adjust the flow rate to minimize spikes or dips in flow pressure. Purging and sample collection should be from the cold water supply if given a choice between hot and cold water.

- If the sample must be collected at a point in the water line beyond pressurization or holding tank, a sufficient volume of water should be purged to provide a complete exchange of fresh water into the tank and at the location where the sample is collected. Best judgment should be utilized to remove enough water from the plumbing to flush standing water from the piping and any storage tanks that might be present. Generally, under these conditions, 15 to 30 minutes will be adequate. If the sample is collected from a tap or spigot located just before a storage tank, spigots located inside the building or structure should be turned on to prevent any backflow from the storage tank to the sample tap or spigot. It is generally advisable to open several taps during the purge to ensure a rapid and complete exchange of water in the tanks.

- Monitor the pH, specific conductance, and temperature of the water removed to confirm that the water source has been adequately purged. An adequate purge is achieved when the pH, specific conductance, and temperature of the potable water have stabilized. Purge information will be recorded on the Potable Water Grab Sample Data Collection Form (see Attachment B).

- Reduce flow rate to a smooth flowing water stream without splashing prior to sample collection. This step is especially important during sample collection for VOC analysis. Wear gloves to avoid sample contamination, fill bottles, leaving minimum headspace. Clean gloves should be worn for each sample collection location. During sample collection, make sure that the tap or spigot does not contact the sample container to avoid sample contamination. The proper collection of a sample for dissolved VOCs requires minimal disturbance of the sample to limit volatilization and subsequent loss of volatiles from the sample. The following procedures should be followed when collecting VOA samples:

    - Open the vial, set the cap in a clean place, and place the proper amount of preservatives (HCl) in the vial;

    - Fill the vial to the top until a convex meniscus forms on the top of the vial. Do not overfill the vial;

- Check that the cap has not been contaminated, and carefully cap the vial. Place the cap directly over the top and screw down firmly. Do not over tighten and break the cap;

- Invert the vial and tap gently. If an air bubble appears, discard the sample and begin again. It is imperative that no entrapped air remains in the sample vial; and

- Place the VOA vial in a cooler, oriented so that it is lying on its side, not straight up.

- Label sample bottles as specified in Section 6. All samples requiring preservation must be preserved as soon as practically possible, ideally immediately at the time of sample collection. Upon collection, immediately place the samples in a cooler maintained with ice at 4°C. Prepare chain of-custody documents, package samples, and store the samples under the chain-of-custody pending shipment in accordance with the procedures specified in Section 6.

4.3 Analytical Plan

Potable water supply points shall be sampled and analyzed using the lowest possible detection limits in accordance with NYSDEC Analytical Services Protocol for inorganics (21 metals in total, including arsenic, chromium, mercury, and hexavalent chromium), and VOCs. The approved methods for analyzing the collected samples for these compounds are identified in Table 1.

5.0 Field Quality Control Samples

Field QC samples help determine whether project data quality objectives are being met. Analyzed in the laboratory as ordinary field samples, they are used to assess sampling and transport procedures as possible sources of sample contamination and to document overall sampling and analytical precision. One duplicate sample shall be collected per 20 samples per sampling round and analyzed for all parameters (VOCs and inorganics). Additional volume shall be collected for matrix spike/matrix spike duplicate (MS/MSD) analyses at the rate of one MS/MSD sample set per 20 samples during each sampling round. Rinsate blank samples will not be required.

6.0 Sample Containers, Labeling, Packaging and Shipping, and Custody

The volumes and containers for aqueous samples, as well as sample preservation are presented in Table 1. Sample containers pre-washed and prepared in accordance with EPA bottle washing procedures will be provided by the laboratory. During the holding period prior to delivery to the laboratory, the samples will be chilled using wet ice with the goal of achieving 4±2°Celsius (39.2 ± 35.6 ^{o} Fahrenheit).

6.1 Sample Labeling

All samples will be assigned a unique sample identifier. Labels for each sample container will contain the sample identifier, date of sample collection, analytical parameters, and type of preservation used. Any change in the label information prepared prior to the sample collection will be initialed by the sampler. Sample naming conventions are provided in Attachment C of this sampling plan.

6.2 Sample Packaging and Shipping

Sample containers will be placed inside sealed plastic bags as a precaution against cross-contamination caused by leakage or breakage. The bags will be placed in coolers in such a manner as to minimize the chance of breakage during shipment. Ice in plastic bags will be placed in the coolers to chill the samples with the goal of achieving 4±2°C (39.2 ± 35.6 ^{o}F) throughout shipment.

Sample shipment will be performed in strict accordance with all applicable U.S. Department of Transportation (DOT) regulations. The samples will be shipped to a NYSDEC standby laboratory.

6.3 Sample Custody

A sample is considered to be in custody under the following situations:

- The sample is directly in your possession;
- The sample is clearly in your view;
- The sample is placed in a locked location; or
- The sample is in a designated secure area.

In order to demonstrate that the samples and coolers have not been tampered with during shipment, adhesive custody seals will be used. The custody seals will be placed either around the cap of each sample container or across the cooler lids in such a manner that they will be visibly disturbed upon opening of the sample container or cooler. The seals will be signed or initialed and dated by field personnel when affixed to the container and cooler.

Documentation of sample chain-of-custody is necessary to demonstrate that the integrity of the samples has not been compromised between collection and delivery to the laboratory. Each sample cooler will be accompanied by a chain-of-custody record to document the transfer of custody from the field to the laboratory. All information requested in the chain-of-custody record will be completed. A standard turnaround time will be requested for sample analysis. One copy of the chain-of-custody form will be retained by the samplers and placed in the project records file. The original will be sealed in a plastic bag and placed inside the cooler. Upon receipt at the laboratory, the chain-of-custody documents will be completed. It is the responsibility of the laboratory to document the condition of custody seals and sample integrity upon receipt.

6.4 Turnaround Time for Analysis

All groundwater-derived potable water samples will be analyzed at the approved laboratory within the turnaround times indicated in Table 1.

7.0 Health and Safety

Health and safety procedures will be as described in the Health and Safety Plan (HASP) and its amendment for these potable water sampling tasks. Care will be taken when opening any well to avoid breathing of vapors that have potentially accumulated in the headspace inside the well. Wasps/bees in well casings and slips, trips, and falls associated with accessing sampling points

are also a concern. Some sampling may take place inside residences, under direct observation by the property owner. All work is expected to be completed in Level D personal protection.

A generic Health and Safety Plan for this work plan is provided as Appendix L of the Site Management Plan.

8.0 Decontamination Procedures

All decontamination will be performed in accordance with NYSDEC-approved procedures. Sampling methods and equipment have been chosen to minimize decontamination requirements and prevent the possibility of cross-contamination. Any non-dedicated sampling equipment will be decontaminated using the procedure above or by the following procedure:

- Initially remove all foreign matter;
- Wash in a laboratory-grade detergent solution (e.g., Alconox);
- Rinse with deionized or distilled water; and
- Allow to air dry.

Fluids generated during decontamination will be handled according to the procedures outlined in Section 9.

9.0 Investigation-Derived Waste

At least one waste stream types of investigation-derived waste (IDW) will be generated: Level D personal protective equipment (PPE). NYSDEC will determine, on a case by case basis, what other wastes will require disposal. Waste streams will be segregated and not mixed. If purging takes place inside a residence, purge and decontamination water will be discharged in the existing plumbing system. If purging takes place outdoors, the purge and decontamination water will be allowed to discharge onto the ground in an unpaved area. All expendable materials generated during the investigation (including, but not limited to, gloves and plastic sheeting) will be bagged and disposed of off-site as non-regulated solid waste.

10.0 Report

A brief letter report summarizing all field activities and providing a summary of the analytical results will be provided by the Engineer to the NYSDEC Project Manager upon receipt and validation of the analytical report from the laboratory. Analytical data review will be performed by a qualified chemist in accordance with NYSDEC Division of Environmental Remediation Guidance for Data Deliverables and the Development of Data Usability Summary Reports (in DER-10, May 2010) and appropriate USEPA Region 2 data validation standard operating procedures for the analytical methods performed (available at http://www.epa.gov/region2/qa/documents.htm). Finally, validated groundwater-derived potable water sampling results must be submitted to the NYSDEC Environmental Information Management System in accordance with the most recent version of NYSDEC standardized electronic data deliverable (EDD) format. Naming conventions and standard submittal formats for the BB&S site are provided in Attachment C. Further information on EDD is available at the website http://www.dec.ny.gov/chemical/62440.html.

11.0 Schedule

Potable water supply evaluation and sampling is currently scheduled to be performed on a semiannual basis. Sampling is to be performed in approximately June and November of each year. Efforts will be made to conduct potable water sampling at the same time as groundwater sampling (Appendix E of the SMP).

12.0 References

AECOM Technical Services Northeast, Inc. 2009. *Supplemental Pre-Design Investigation Report.* Prepared for: New York State Department of Environmental Conservation

American Society for Testing and Material (ASTM). 1986. *Standard Guide for Sampling Groundwater Monitoring Wells*, D-4448-85a, Philadelphia, Pennsylvania.

Gibb, J.P., R.M. Schuller, and R.A. Griffin. 1980. *Monitoring Well Sampling and Preservation Techniques*, EPA-600/9-80-010.

Korte, N. and P. Kearl. 1985. *Procedures for the Collection and Preservation of Groundwater and Surface Water Samples and for the Installation of Monitoring Wells*, Second Edition, U.S. Department of Energy, GJ/TMC-08, Technical Measures Center, Grand Junction Projects Office.

New York State Department of Environmental Conservation (NYSDEC). 2010. *Technical Guidance for Site Investigation and Remediation* (DER-10).

U.S. Environmental Protection Agency. 2007. *Potable Water Supply Sampling Operating Procedure*. Science and Ecosystem Support Division, Athens, Georgia.

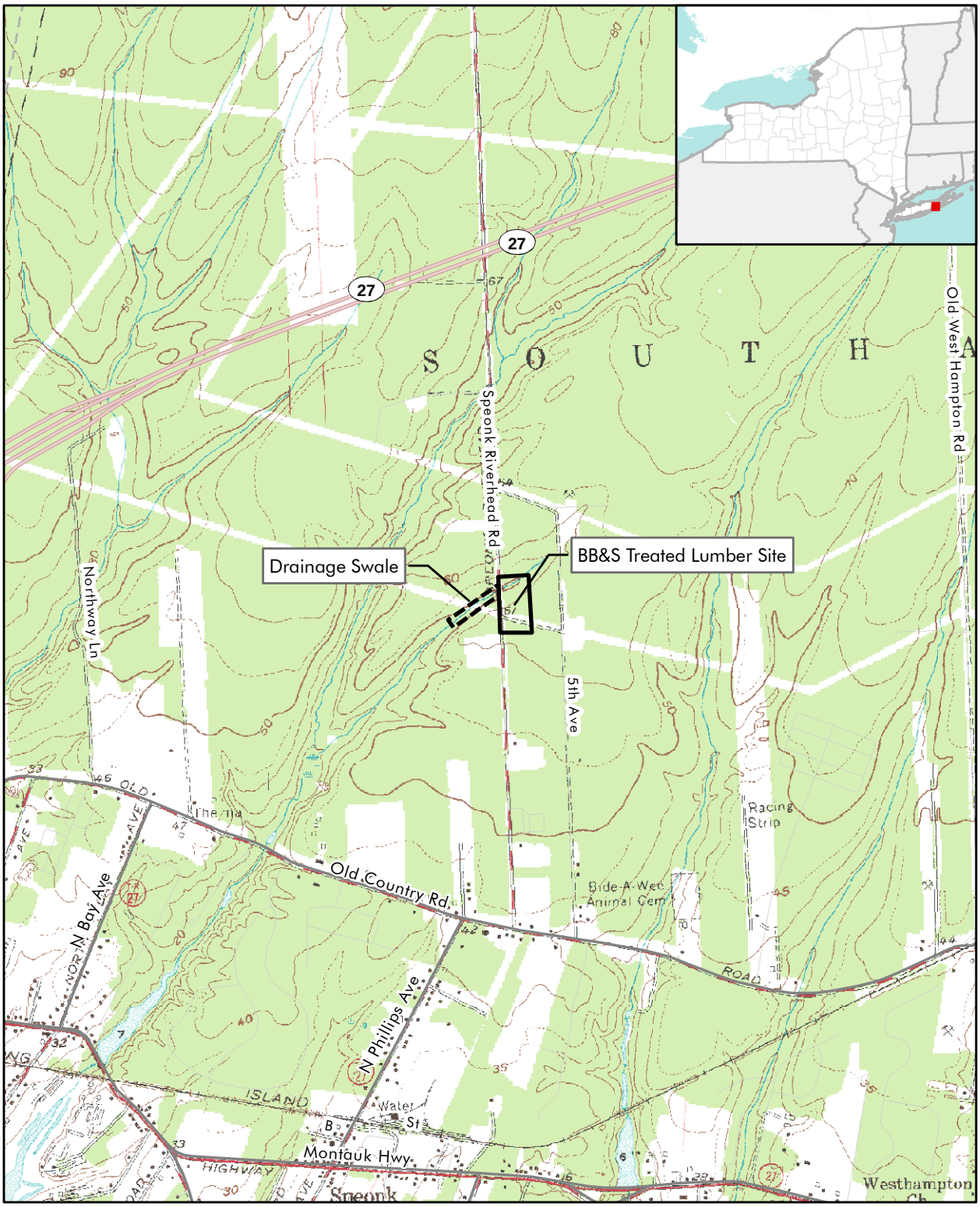
Table 1 – Former BB&S Sample Bottles[1], Volumes, and Preservatives

Analytical Parameter per Matrix	Bottles Type	Sample Volume Needed	Sample Holding Time	Preservatives	Analysis	Turnaround Time
VOA	40-mL glass vial with septum-lined cap	2 x 40 ml per sample x 8 samples (plus 3 QC samples)	14 days from date sampled	Add HC1 until pH <2 and ice to 4°C (39.2 ^{o}F)	EPA Method 524.2	7 days
Target Analyte List Metals	1-L poly bottle	1 bottle per sample x 8 samples (plus 3 QC samples)	6 months from date sampled	Add $HN0_3$ until pH <2 and ice to 4°C (39.2 ^{o}F)	EPA Method 200.8	14 days
Mercury	1-L poly bottle	1 bottle per sample x 8 samples (plus 3 QC samples)	6 months from date sampled	Add $HN0_3$ until pH <2 and ice to 4°C (39.2 ^{o}F)	SW-846 EPA Method 7470A	14 days
Hexavalent chromium	1-L poly bottle	1 bottle per sample x 8 samples (plus 3 QC samples)	30 days from time sampled	Add NaOH until pH >12 and ice to 4°C (39.2 ^{o}F)	SW-846 EPA Method 7196A	14 days

Note:
[1] Certified pre-cleaned bottles and containers.

Key:
EPA = (United States) Environmental Protection Agency
L = liter
mL = milliliter
VOA = volatile organic analysis

Path: L:\Buffalo\BBS_Treated_Lumber\Maps\MXD\MiscRequests\USGS_Topo.mxd



BB&S Treated Lumber Site
Drainage Swale
Secondary Road
Local Road

Figure 1
Site Location Map
BB&S Treated Lumber Site
Suffolk County, New York

NYSDEC Site # 1-52-123

0 0.125 0.25 0.5 Miles


L
D
M
N
O
P
Q
R
E
F
S
T
G
H
I
A
B
J
U
C
K
V
W
Legend
Public Water
Private Well
Extent of Chromium Plume

Table 2

BB&S LUMBER SITE
Potable Water Sampling CONTACT LIST
SITE NO. 152123

Location No.	Map Index of Figure 2	Residents for Private Well Sampling Property Address	Owner	Owner Address	Owner Ph. No.	Sample Loc	Comments
PW-1	D	**1319 Speonk-Riverhead Rd.**	Excelsior Plumbing & Heating	PO Box 491	631-288-8383		Off-site
PW-2	On-site PW	**1338 Speonk-Riverhead Rd. (BB&S Site)**	Chuck Guilloz		631-325-2000	sink in bathroom or maintenance shop	On-site
PW-3	L	**60 Fifth Ave.**	Speonk Wood Recycling	PO Box 1058	631-325-5566	sill cock near office door	Off-site
PW-4	M	**30 Fifth Ave.**	Pendleton Family	PO Box 288	NO Phone		Off-site
PW-5	R	**16 Fifth Ave.**	Bob Thorne	PO Box 733	TBD		Off-site
PW-6	A	**8 Homestead Ave.**	Tom Nidzyn	PO Box 58	631-325-2076 H	sill cock/rear of house	Off-site
					631-774-2328 C		
PW-7	C	**4 Homestead Ave.**	Lane Family	PO Box 312	631-405-0231	basement before treatment system	Off-site
PW-8		**139 Old Country Rd.**	Harold Schoppman	PO Box 126	631-325-0848		Off-site
PW-9	P	**20 Fifth Ave.**	Toliver Family	38 Dzamba Rd., Stamford, CT 16903	631-325-8969 H		Off-site
					203-461-2484 C		
PW-10	O	**22 Fifth Ave.**	Caccavalia Family	PO Box 238	516-983-1166		Off-site
PW-11	N	**3 Seventh St.**	Ray Norell	PO Box 35	631-300-5452		Off-site
PW-12	B	**6 Homestead Ave.**	Mr. & Mrs. Merrilee Tuttle	PO Box 206	631-325-8384		Off-site
PW-13	T	**10 Fifth Ave.**	Bruce and Trish Carter	6 Fifth Ave.	631-801-2252	kitchen sink faucet	Off-site
PW-14	S	**14 Fifth Ave.**	Blau Family	6 Sleator Dr., Ossinging, NY 10562	914-263-3258	kitchen sink faucet	Off-site
PW-15	V	**138 Old Country Rd.**	Cotter Family	PO Box 20	631-325-8654		Off-site
PW-16	U	**8 Fifth Ave.**	Bruce and Trish Carter	6 Fifth Ave.	631-801-2252		
PW-17	I	**1612 Speonk-Riverhead Rd.**	Demasco Family	PO Box 496	TBD		Off-site
PW-18	Q	**18 Fifth Ave.**	Linda James	PO Box 543	917-783-0367		Off-site
					718-756-4200		
PW-19	W	**131 Old Country Rd.**	Warner Family	PO Box 133	631-325-0380		Off-site

Attachment A

Potable Water Sampling Inspection Checklist

Potable Water Sampling Inspection Checklist
BB&S Treated Lumber Corp. -- Southampton, NY
NYSDEC Site No 152123

Sampling Point	Inspection Date	Sampling Point Description (i.e. tap, spigot)	Well Pump Description	Comments/Observations

Attachment B

Potable Water Grab Sample Data Collection Form

ecology and environment engineering, p.c.
International Specialists in the Environment
BUFFALO CORPORATE CENTER 368 Pleasant View Drive, Lancaster, New York 14086
Tel: 716/684-8060, Fax: 716/684-0844

Potable Water Grab Sample Data Collection Form

Site Name:	**Project No.:**
Sample Location Information	
Project Location:	
Project Task:	
Sampler Names (Print):	
Organic Vapor Meter Used: ☐ PID ☐ FID	Model:
Water Quality Meter Used:	Calibration Date/Time:

Location Code:					
Sample Code:					
Sample Date:					
Sample Time:					
Depth (feet bgs):					
Purge Volume (L):					
pH:					
Temp. (°):					
Conductivity (µS/cm):					
Turbidity (NTU):					
OVM (ppm):					
Quality Control:					
QC Sample Code:					
Analysis Method:					

Laboratory:	**Date Shipped to Lab:**
Associated Trip Blank Sample ID:	
Comments:	
	Signature:

Key:
bgs = below ground surface
FID = flame-ionization detector
ft = feet
OVM = organic vapor meter
PID = photo-ionization detector

Attachment C

Groundwater-Derived Potable Water Sample Naming Conventions

Groundwater-Derived Potable Water Sample Naming Conventions
BB&S Treated Lumber Corp. -- Southampton, NY
NYSDEC Site No. 1-52-123

Location Name	Location Address	COC Sample ID[1]	COC Sample Date & Time	COC Analysis Requested
PW-1	1319 Speonk-Riverhead Rd (Excelsior Pl)	**PW-1-EventX**	mm/dd/yyyy hh:mm:ss	**200.8; 524.2; 245.1; 7196A**
PW-2	1338 Speonk-Riverhead Rd (BB&S Site, post-filter in maintenance shop)	**PW-2-EventX**	mm/dd/yyyy hh:mm:ss	**200.8; 524.2; 245.1; 7196A**
PW-2A	1338 Speonk-Riverhead Rd (BB&S Site, pre-filter at well)	**PW-2A-EventX**	mm/dd/yyyy hh:mm:ss	**200.8; 524.2; 245.1; 7196A**
PW-5	16 Fifth Ave	**PW-5-EventX**	mm/dd/yyyy hh:mm:ss	**200.8; 524.2; 245.1; 7196A**
PW-6	8 Homestead Ave	**PW-6-EventX**	mm/dd/yyyy hh:mm:ss	**200.8; 524.2; 245.1; 7196A**
PW-7	4 Homestead Ave	**PW-7-EventX**	mm/dd/yyyy hh:mm:ss	**200.8; 524.2; 245.1; 7196A**
PW-9	20 Fifth Ave	**PW-9-EventX**	mm/dd/yyyy hh:mm:ss	**200.8; 524.2; 245.1; 7196A**
PW-14	14 Fifth Ave	**PW-14-EventX**	mm/dd/yyyy hh:mm:ss	**200.8; 524.2; 245.1; 7196A**
PW-17	1612 Speonk-Riverhead Rd	**PW-17-EventX**	mm/dd/yyyy hh:mm:ss	**200.8; 524.2; 245.1; 7196A**
PW-18	18 Fifth Ave	**PW-18-EventX**	mm/dd/yyyy hh:mm:ss	**200.8; 524.2; 245.1; 7196A**
Quality Control Samples for Groundwater-Derived Potable Water Samples				
Field Duplicate #1[2]		**LocName-EventX-FD**	mm/dd/yyyy hh:mm:ss	**200.8; 524.2; 245.1; 7196A**
Matrix Spike (MS) #1[3]		**LocName-EventX-MS**	mm/dd/yyyy hh:mm:ss	**200.8; 524.2; 245.1; 7196A**
Matrix Spike Duplicate (MS) #1[4]		**LocName-EventX-SD**	mm/dd/yyyy hh:mm:ss	**200.8; 524.2; 245.1; 7196A**
Trip Blank #1		**TB-mmddyyyy**	mm/dd/yyyy hh:mm:ss	**200.8; 524.2; 245.1; 7196A**
Trip Blank #2, etc.		**TB-mmddyyyy**	mm/dd/yyyy hh:mm:ss	**200.8; 524.2; 245.1; 7196A**

Notes:

1 "X" refers to Sample Event #. If the sample is collected during Monitoring Event #5, the sample ID will read "**MW-20S-Event5**".

2 Field duplicate may be taken at any monitoring well sampling location. Multiple field duplicates may not be taken at one well location. At least one duplicate sample per 20 samples taken.

3 MS/MSD may be taken at any monitoring well sampling location. MS and MSD must be taken at the same location. Multiple MS/MSDs may not be taken at one well location.

H Community Protection Plan

Community Protection Plan for the BB&S Treated Lumber Site - NYSDEC Site No. 152123

Southampton, New York
May 2012

Prepared by: Jessica Wood, Ecology and Environment Engineering, P.C.

Reviewed by: Mike Steffan, EEEPC Work Assignment Project Manager - BB&S

Accepted for Use:

Revisions:

Dated:	Revisions:	By:

1.0 Introduction

This Community Protection Plan (CPP) has been prepared for use in conjunction with the current version if the Former BB&S Lumber Corporation (BB&S) Site Management Plan (SMP). The purpose of the CPP is to provide guidance on the minimum precautions necessary for community protection in the event that chromated copper arsenate (CCA)-contaminated sediments and materials in and around the BB&S site building are disturbed or contaminants are found in soils and sediment during semi-annual monitoring events. Any proposed maintenance of drainage structures, including asphalt pavements; excavation of existing soils, including sub-base materials and sub-floor slab materials; and installation and/or decommissioning of monitoring wells/piezometers and other subsurface utilities must be evaluated for the potential to expose CCA or other contaminants to the community in the surrounding area. The Soils Management Plan (Appendix F of the BB&S SMP) describes the areas on site where contamination remains.

These activities must be performed in accordance with this CPP, the Soils Management Plan, the Generic Health and Safety Plan (G-HASP) and the established and approved Institutional Controls and Engineering Controls (IC/EC) presented in the BB&S SMP. A Site-Specific CPP must be prepared using, as a minimum, the requirements of this CPP. The site specific CPP must address the methods of community protection. The testing and analytical requirements must be described in detail as part of the plan. In addition, a Health and Safety Plan (HASP) and specifications and drawings must be prepared and submitted to the New York State Department of Environmental Conservation (NYSDEC) prior to performing any maintenance activities or excavations within the site.

2.0 Precautions Necessary to Protect Human Health

This section describes the minimum community protection requirements that must be followed when intrusive work occurs on the BB&S Site. Additional requirements may be added as necessary for the Site-specific CPP.

a. **Air Monitoring** is required for community safety for odor and dust when intrusive work occurs on site. The Community Air Monitoring Plan shall be followed.

b. **Dust Control** should be accomplished by wetting soil with water.

c. **Dewatering Excavation**. Water must be sampled and characterized before it can be discharged to storm sewers. If water is found to be contaminated or stained it should beplaced in storage containers for proper transportation and disposal (i.e. 55- gallon drums or larger containers).

3.0 Community Air Monitoring Plan

Real-time air monitoring for dust particulates will be conducted at the perimeter of the Exclusion Zone during all intrusive activities. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells. Dust particulates will be monitored at the downwind perimeter of the exclusion zone on a continuous basis. Continuous air monitoring will be conducted as follows:

• If particulate levels at the downwind station exceed particulate levels at the upwind station by more than 150 micrograms per cubic meter (mcg/m^3), work activities will be halted and appropriate dust suppression measures will be employed. All readings will be recorded and be available for NYSDEC and NYSDOH personnel to review if requested.

3.1 Particulate Monitoring, Response Levels and Actions

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

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

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

4.0 Community Fact Sheet

A fact sheet will be prepared and made available to the public in the event that there is a breakdown in the corrective action process. The necessity of a fact sheet will be determined by the NYSDEC and NYSDOH.

Examples of such an event could include, but are not limited to, the following events:

- Contaminated sediments found in the catch basins;
- Standing or surface waters found to exceed the SCGs;
- Visible staining outside the building protective HDPE;
- Property owner issues with the discharge of oils or general damage of remedial protective system; and
- Contaminant issues on-site or off-site after semi-annual event sampling (See Appendices D, E, F, and G for sampling work plans).

5.0 References

New York State Department of Environmental Conservation (NYSDEC). 2010. *Final Technical Guidance for Site Investigation and Remediation*, DER-10, 3 May 2010.

Site Engineering Controls Inspection Form

Site Engineering Controls Inspection Form
for the
BB&S - NYSDEC Site No. 152123

Southampton, New York
April 2014

Prepared by: Jared Pristach, Ecology and Environment Engineering, P.C.

Reviewed by: Mike Steffan, EEEPC Work Assignment Project Manager - BB&S

Accepted for Use:

Revisions:

Dated:	Revisions:	By:

This Site Engineering Controls Inspection Form was developed to replace Figures 2-1 through 2-6 in the August 2012 SMP for the BB&S Treated Lumber site. The following inspection form is to be used for semi-annual site inspections as a means to evaluate the condition and effectiveness of the engineering controls that are installed at the site.

BB&S Treated Lumber Corporation Site Inspection Form

Town of Southampton
Suffolk County, NY
NYSDEC Site No. 152123

Site Inspection Date: _____
Name of Inspector: _____
Phone Number: _____

Site Access Control		
Presence of holes in fence?	Yes ☐	No ☐
Breaches in fence?	Yes ☐	No ☐
Erosion present along fence?	Yes ☐	No ☐
Maintenance performed?	Yes ☐	No ☐
Access to site gate?	Yes ☐	No ☐
Comments:		

Former CCA Treatment Building		
Heavy equipment staged in building?	Yes ☐	No ☐
Chips or cracks in epoxy paint?	Yes ☐	No ☐
Drainage system damage (i.e. pooling water)?	Yes ☐	No ☐
Distress in floor slab (i.e. cracks, sunken areas, etc.)?	Yes ☐	No ☐
Damage to concrete slab outside building?	Yes ☐	No ☐
Maintenance to be performed?	Yes ☐	No ☐
Comments:		

Former Drip Pad Building		
Heavy equipment staged in building?	Yes ☐	No ☐
Equipment staged on HDPE liner?	Yes ☐	No ☐
Rips/tears in HDPE liner?	Yes ☐	No ☐
If yes, provide location(s):		
Asphalt cracks or distress?	Yes ☐	No ☐
Roof support column distress?	Yes ☐	No ☐
Drainage system damage (i.e. pooling water)?	Yes ☐	No ☐
Stone drip pad erosion?	Yes ☐	No ☐
Maintenance to be performed?	Yes ☐	No ☐
Comments:		

Drainage Swale		
Erosion present?	Yes ☐	No ☐
Erosion/degradation of berm between Drip Pad Building and Frame Storage Building?	Yes ☐	No ☐
Repairs required?	Yes ☐	No ☐
Maintenance to be performed?	Yes ☐	No ☐
Comments:		

Frame Storage Building		
Heavy equipment staged in building?	Yes ☐	No ☐
Cracks or distress in concrete present?	Yes ☐	No ☐
Presence of sand in building?	Yes ☐	No ☐
Erosion present around building?	Yes ☐	No ☐
Maintenance to be performed?	Yes ☐	No ☐
Comments:		

Culverts and Catch Basins		
Damage to CB-1 (north of Drip Pad Building)?	Yes ☐	No ☐
Damage to CB-2 (east side of Speonk-Riverhead Rd.)?	Yes ☐	No ☐
Damage to CB-3 (west side of Speonk-Riverhead Rd.)?	Yes ☐	No ☐
Damage to roadside culverts?	Yes ☐	No ☐
Damage to CB-4 (west side of North Retention Pond)?	Yes ☐	No ☐
Catch basin cleaning required?	Yes ☐	No ☐
Culvert cleaning required?	Yes ☐	No ☐
Maintenance to be performed?	Yes ☐	No ☐
Comments:		

Retention Ponds		
North Retention Pond:		
Erosion present?	Yes ☐	No ☐
Presence of vegetation?	Yes ☐	No ☐
Damage to stone weirs?	Yes ☐	No ☐
Review of flow control structure?	Yes ☐	No ☐
Influent piping obstructed?	Yes ☐	No ☐
Comments:		
South Retention Pond:		
Erosion present?	Yes ☐	No ☐
Presence of vegetation?	Yes ☐	No ☐
Discoloration of soils indicating presence of contamination?	Yes ☐	No ☐
Comments:		

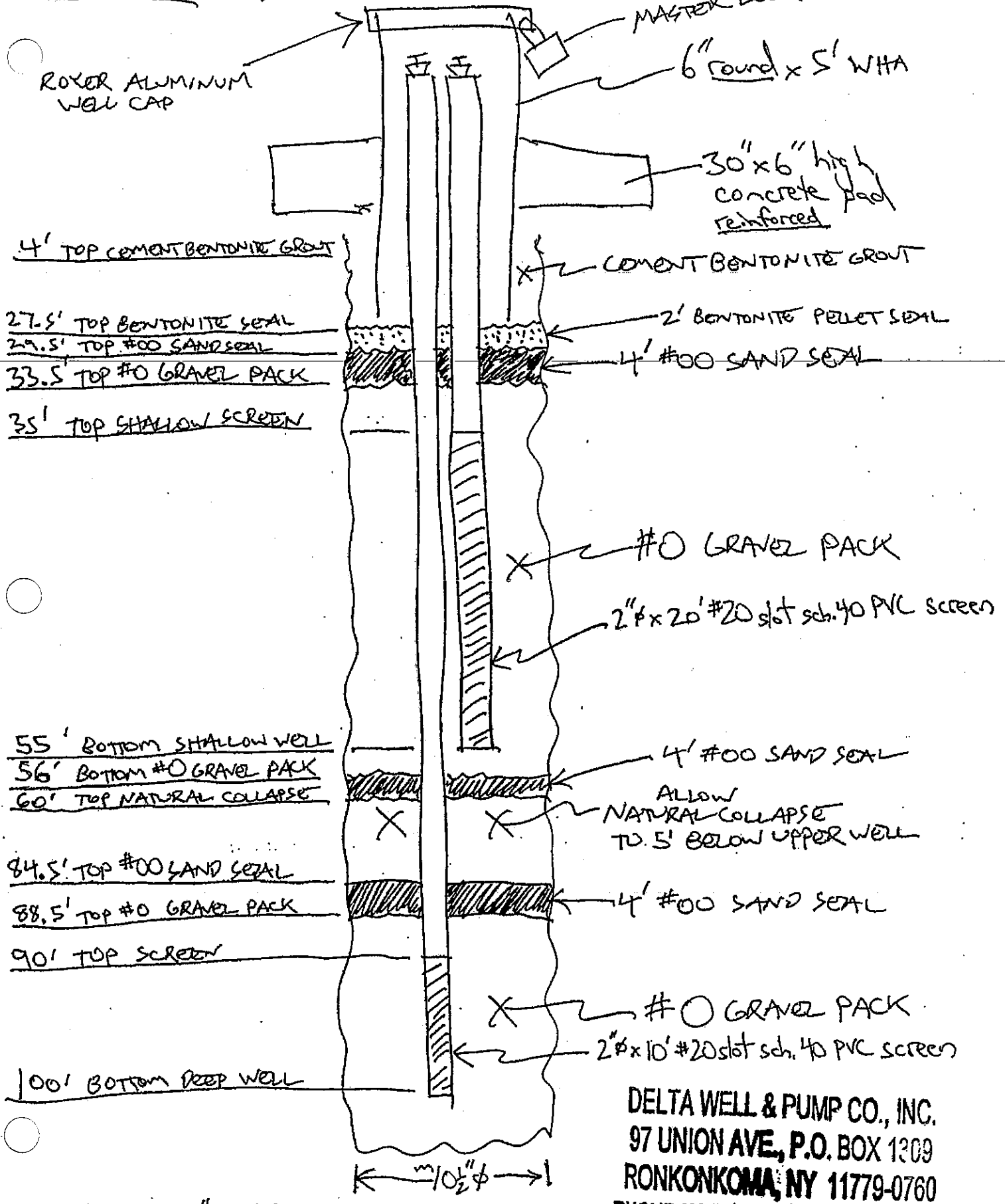
General Site Status Review		
Heavy equipment staged? *Location(s):* *Description:*	Yes ☐	No ☐
Erosion present around clean fill stockpile? *Description:*	Yes ☐	No ☐
General site erosion present? *Location(s):* *Description:*	Yes ☐	No ☐

J Well Logs

J-1

On-site Groundwater Monitoring Wells

Job 8319 BBS Lumber MW27 s, i



All casing 2" sch. 40 PVC

DELTA WELL & PUMP CO., INC.
97 UNION AVE., P.O. BOX 1309
RONKONKOMA, NY 11779-0760
PHONE (631) 981-2255 • FAX 981-2369

08/15/11

ABANDON AND SEAL WELL
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

8319
Suffolk
County

S-84422
Well Number

COMPLETION REPORT—LONG ISLAND WELL

OWNER
B&S Treated Lumber Corp. c/o NYSDEC

ADDRESS 1 Wolf Road, Albany, New York

LOCATION OF WELL Recovery Well RW 1
e/s Speonk-Riverhead Road, s/o 5th Avenue, Speonk

*LOG

Ground surface is located ____ Ft. above/below (+)(-) MSL

Top of casing is located ____ Ft. above/below (+)(-) MSL

TOP OF WELL
N/A

DEPTH OF WELL BELOW SURFACE
102.42 feet

DEPTH TO GROUNDWATER FROM SURFACE

CASINGS

DIAMETER	8 in.	in.	in.	in.
LENGTH	ft.	ft.	ft.	ft.

SEALING

CASINGS REMOVED None

SCREENS

MAKE
N/A

OPENINGS

DIAMETER	in.	in.	in.	in.
LENGTH	ft.	ft.	ft.	ft.

DEPTH TO TOP FROM TOP OF CASING

PUMPING TEST

DATE N/A

TEST OR PERMANENT PUMP?

DURATION OF TEST ____ days ____ hours

MAXIMUM DISCHARGE ____ gallons per min.

STATIC LEVEL PRIOR TO TEST ____ ft. ____ in. below top of casing

LEVEL DURING MAXIMUM PUMPING ____ ft. ____ in. below top of casing

MAXIMUM DRAWDOWN ____ ft.

Approximate time of return to normal level after cessation of pumping
Not Measrd hours ____ min.

PUMP INSTALLED

TYPE N/A	MAKE	MODEL NUMBER
MOTIVE POWER	MAKE	H.P.

CAPACITY ____ g.p.m. against ____ ft. of discharge head

NUMBER OF BOWLS OR STAGES ____ ft. of total head

DROP LINE	SUCTION LINE
DIAMETER N/A in.	DIAMETER N/A in.
LENGTH ____ ft.	LENGTH ____ ft.

METHOD OF DRILLING
☐ rotary ☐ cable tool ☒ other Abandon

USE OF WATER
Former Recovery Well

WORK STARTED
06/21/11

COMPLETED 06/22/11

DATE 8/24/2011 DRILLER Delta Well & Pump Co., Inc. REGISTRATION NO. 1299

* NOTE: Show log of well materials encountered, with depth below ground surface, water bearing beds and water levels in each, casings, screens, pump, additional pumping tests and other matters of interest. Describe repair job. See Instructions as to Well Driller's Registration and Reports.

ORIGINAL—Environmental Conservation Copy

ABANDON AND SEAL WELL
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

8319
Suffolk
County

S-84423
Well Number

COMPLETION REPORT—LONG ISLAND WELL

OWNER
J&S Treated Lumber Corp. c/o NYSDEC

ADDRESS 1 Wolf Road, Albany, New York

LOCATION OF WELL Recovery Well No. 2
e/s Speonk-Riverhead Road, s/o 5th Avenue, Speonk

*LOG

Ground surface is located____Ft. above/below (+)(-) MSL

Top of casing is located____Ft. above/below (+)(-) MSL

TOP OF WELL
N/A

DEPTH OF WELL BELOW SURFACE
101.42 feet

DEPTH TO GROUNDWATER FROM SURFACE

CASINGS

DIAMETER	8 in.	in.	in.	in.
LENGTH	ft.	ft.	ft.	ft.

SEALING

CASINGS REMOVED None

SCREENS

MAKE	N/A			
OPENINGS				
DIAMETER	in.	in.	in.	in.
LENGTH	ft.	ft.	ft.	ft.

DEPTH TO TOP FROM TOP OF CASING

PUMPING TEST

DATE N/A

TEST OR PERMANENT PUMP?

DURATION OF TEST days hours

MAXIMUM DISCHARGE gallons per min.

STATIC LEVEL PRIOR TO TEST ft. in. below top of casing

LEVEL DURING MAXIMUM PUMPING ft. in. below top of casing

MAXIMUM DRAWDOWN ft.

Approximate time of return to normal level after cessation of pumping: Not Measrd hours min.

PUMP INSTALLED

TYPE N/A	MAKE	MODEL NUMBER
MOTIVE POWER	MAKE	H.P.

CAPACITY g.p.m. against ft. of discharge head

NUMBER OF BOWLS OR STAGES ft. of total head

DROP LINE	SUCTION LINE
DIAMETER N/A in.	DIAMETER N/A in.
LENGTH ft.	LENGTH ft.

METHOD OF DRILLING ☐ rotary ☐ cable tool ☒ other Abandon

USE OF WATER Former Recovery Well

WORK STARTED 06/21/11

COMPLETED 06/22/11

DATE 8/24/2011 DRILLER Delta Well & Pump Co., Inc. REGISTRATION NO. 1299

* NOTE: Show log of well materials encountered, with depth below ground surface, water bearing beds and water levels in each, casings, screens, pump, additional pumping tests and other matters of interest. Describe repair job. See instructions as to Well Driller's Registration and Reports.

ORIGINAL—Environmental Conservation Copy

8319
Suffolk
County

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

S-130618
Well Number

COMPLETION REPORT—LONG ISLAND WELL

OWNER
B&S Treated Lumber Corp. c/o NYSDEC

ADDRESS 1 Wolf Road, Albany, New York

LOCATION OF WELL MW 27s, i cluster
e/s Speonk-Riverhead Rd, w/o 5th Ave Speonk, n/o Evergreen Ave,Speonk

DEPTH OF WELL BELOW SURFACE	DEPTH TO GROUNDWATER FROM SURFACE
55'(shallow), 100' (intermediate)	

CASINGS

Schedule 40 PVC

DIAMETER	(intermediate)	(shallow stickup)	Intermediate stickup
2 in.	2 in.	2 in.	in.
LENGTH			
35 ft.	90 ft.	2 ft.	2 ft.

SEALING	CASINGS REMOVED
Cement-bentonite grout	None

SCREENS

MAKE	OPENINGS
Johnson Schedule 40 PVC	20 slot

DIAMETER	(intermediate)		
(shallow) 2 in.	2 in.	in.	in.
LENGTH			
20 ft.	10 ft.	ft.	ft.

DEPTH TO TOP FROM TOP OF CASING
shallow,intermediate

PUMPING TEST

DATE	TEST OR PERMANENT PUMP?
N/A	
DURATION OF TEST: days / hours	MAXIMUM DISCHARGE: gallons per min.
STATIC LEVEL PRIOR TO TEST: ft. / in. below top of casing	LEVEL DURING MAXIMUM PUMPING: ft. / in. below top of casing
MAXIMUM DRAWDOWN: ft.	Approximate time of return to normal level after cessation of pumping: Not Measrd hours / min.

PUMP INSTALLED

TYPE	MAKE	MODEL NUMBER
N/A		
MOTIVE POWER	MAKE	H.P.

CAPACITY: g.p.m. against / ft. of discharge head

NUMBER OF BOWLS OR STAGES / ft. of total head

DROP LINE	SUCTION LINE
DIAMETER N/A in.	DIAMETER N/A in.
LENGTH ft.	LENGTH ft.

METHOD OF DRILLING: ☐ rotary ☐ cable tool ☒ other Auger

USE OF WATER: Monitoring Well Cluster

WORK STARTED 08/09/11

COMPLETED 08/15/11

DATE	DRILLER	REGISTRATION NO.
8/24/2011	Delta Well & Pump Co., Inc.	1299

* NOTE: Show log of well materials encountered, with depth below ground surface, water bearing beds and water levels in each, casings, screens, pump, additional pumping tests and other matters of interest. Describe repair job. See Instructions as to Well Driller's Registration and Reports.

*LOG

Ground surface is located ____Ft. above/below (+)(-) MSL

Top of casing is located ____Ft. above/below (+)(-) MSL

TOP OF WELL

0-3 loam

3-25 fine to medium brown sand

25-50 fine to coarse sand, some gravel

50-75 fine to coarse sand, some gravel, some grits

75-100 fine to coarse sand

ORIGINAL—Environmental Conservation Copy

SEE ATTACHED WELL DRAWING

Johnson Screens
SALES TERMS AND CONDITIONS

9. PATENT INFRINGMENT - If the goods herein described are to be manufactured by SELLER based on specifications or drawings furnished by CUSTOMER, CUSTOMER agrees to indemnify and hold harmless SELLER, its successors and assigns, against any and all loss, damage, or injury arising out of a claim or suit for alleged infringement of any letter patent granted by the United States or any foreign government relating to the goods herein described. CUSTOMER agrees that in such event it will assume the defense of any and all such suits and pay all expenses incidental thereto.

10. TERMINATION – This agreement may be terminated immediately by SELLER if CUSTOMER is unable to meet its obligations as they mature or in the case of proceeding under bankruptcy against the CUSTOMER, or if receivers for CUSTOMER are appointed or applied for or if any assignment for the benefit of creditors is made by CUSTOMER. This agreement will otherwise remain in full force and effect continuously until either party cancels with a minimum of thirty (30) days written notice to the other party.

11. FORCE MAJEURE – SELLER will not be liable for any loss or damage of any nature whatsoever incurred or suffered as a result of any failures or delays in performance due to any cause or circumstances beyond its control, including but not by way of limitation any failures or delays in performance caused by any strikes, lockouts, or labour disputes, fires, acts of God or the public enemy, riots, incendiaries, interference by civil or military authorities, compliance with the laws of the United States of America or with the orders or policies of any governmental authority, delays in transit or delivery on the part of the transportation companies or communication facilities, or failures of sources of materials. SELLER may, at its option, make deliveries ratably with reference to itself and all its CUSTOMERS.

12. EXPORT OR IMPORT LICENSE – CUSTOMER will procure at its expense any export or import licenses required for any of the material included in the quotation. For any goods being exported from the United States, CUSTOMER agrees to comply fully with all applicable economic sanctions and export control laws and regulations. CUSTOMER shall not – directly or indirectly – sell, provide, export, re-export, transfer, divert, loan, lease, consign, or otherwise dispose of any equipment, product, services, software, source code, technical data, or technology received from SELLER to or via any person, entity, or destination, or for any activity or end-use restricted by laws or regulations of the United States or any other applicable jurisdiction without obtaining all required government authorizations.

13. CUSTOMER represents and warrants that it and all of its affiliates and agents shall act in accordance with the principles described in the Convention on Combating Bribery of Foreign Public Officials in International Business Transactions, signed in Paris on December 17, 1997 ("the Convention"), and the Convention's Commentaries (collectively "the OECD Principles"), and shall comply with all applicable laws implementing the OECD principles (including the U.S. Foreign Corrupt Practices Act of 1977), as well as any applicable local laws related to anti-corruption, anti-kickbacks, and anti-money laundering.

14. DEFINITIONS – "SELLER" means Johnson Screens, Inc. and all affiliates. "CUSTOMER" means the person or company to whom the quotation is submitted. "The quotation" means techno-commercial offer to which these terms and conditions are attached. "The Contract" means the contract/order formed upon acceptance by the purchaser of the quotation.

15. QUOTATION – The Quotation is subject to withdrawal or variation by JSI, at any time prior to acceptance in writing by purchaser.

16. PRICES AND VARIATION - Unless otherwise stated in writing, the quoted prices are net, in US Dollars based upon labour and material cost at the date of quotation.

17. WHERE – The quotation is for supply of goods to be imported by JSI for the CUSTOMER or purchased from another manufacturer, the prices quoted is calculated on the basis of the prices charged by the SELLER, the rate of exchange, duty, freight, insurance, clearance, and other similar charges as applicable, ruling at the date of quotation and any increase therein shall be to the account of the CUSTOMER.

18. THE PRICES - Quoted for the goods manufactured by JSI is subject to rise and fall for variation in the cost of labour, material, or overhauls after the due date of quotation, unless otherwise specified in writing.

19. DISPUTE RESOLUTION – The laws of England shall govern the validity, construction, interpretation, and effect of this Contract, excluding any choice of law rules which would otherwise require the application of laws of any other jurisdiction. Any dispute arising in connection with this Contract shall be settled by arbitration in the English language in the London Court of International Arbitration.

20. ALTERATION – The above terms and conditions may be modified by the SELLER from time to time in writing and such variations shall be binding on the CUSTOMER.

21. NOTICES

CUSTOMER: _____

_____

_____

_____

SELLER: Johnson Screens, Inc.
515 Post Oak Boulevard
Suite 600
Houston, Texas 77027
USA
Attn: Bill Rouse

22. THE AUTHORISED REPRESENTATIVES OF THE PARTIES HAVE EXECUTED THE CONTRACT IN DUPLICATE UPON THE DATE INDICATED BELOW:

For Seller:

Name: Bill Rouse
Title: President
Date: January 1, 2010

For CUSTOMER:

Name: _____

Title: _____

Date: _____

MASTER LOCK

Frequently Asked Questions

Question: My lock does not function. Is it covered under warranty? Can the replacement lock be keyed and/or combinated to the key or combination I currently have?

Answer: Master Lock offers a Lifetime Limited Warranty on its padlocks. (See the Limited Lifetime Warranty section below). Replacements to the same key or combinations are determined by the model lock being replaced. Customer Service will be able to verify that information at the time you make your warranty claim.

Limited Lifetime Warranty

All Master Lock padlocks are warranted to be free from mechanical defects for the life of the product. If a mechanical defect occurs, we will replace it free of charge. **Please contact our Consumer line at 800-464-2088 to discuss obtaining a replacement lock. For Canadian customers please call 1-800-227-9599.**

Note: If you are an inmate in a *Correctional Facility*, the request for your replacement must be mailed. Click here for the warranty returns form which includes mailing instructions. In addition to the form, you must also include a letter on official prison letterhead and signed by a warden or prison official. The letter must include your lock model number, serial number (if applicable), and control key number. Please also note that your replacement lock will be shipped via parcel post.

If the product fails due to a defect in materials or workmanship at any time during the life of the product, Master Lock Company will replace it free of charge. Simply contact Master Lock at www.masterlock.com for replacement information and complete warranty. This warranty does not cover products which have been abused, altered, damaged, misused, cut or worn. TO THE EXTENT PERMITTED BY LAW, MASTER LOCK COMPANY DISCLAIMS ALL OTHER IMPLIED OR EXPRESS WARRANTIES INCLUDING ALL WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR PURPOSE.

LIMITATION OF LIABILITY: This warranty is your sole remedy and MASTER LOCK COMPANY shall not be liable for any damages, whether direct, indirect, incidental, special, consequential, exemplary, or otherwise, including lost revenues and lost profits, arising out of any theory of recovery, including statutory, contract or tort. In no event will MASTER LOCK COMPANY's entire liability exceed the purchase price of this product. Some states and provinces do not allow the exclusion or limitation of incidental or consequential damages so the above limitations or exclusions may not apply to you. This limited warranty gives you specific legal rights, and you may also have other rights which vary from state to state and province to province.

PVC

Johnson Screens
SALES TERMS AND CONDITIONS

1. ENTIRE AGREEMENT, MODIFICATIONS – The terms, conditions and specifications contained in this agreement ("Terms") constitute the entire agreement between the parties for the provision of goods by SELLER at any time. No change in, addition to, or waiver of the Terms will be a binding obligation on SELLER unless approved in writing by its authorized representative. SELLER'S receipt, acknowledgement and/or acceptance of CUSTOMER'S purchase order form will not modify these Terms or become part of SELLER'S agreement to the extent it contradicts these Terms. If any provision of this agreement is held to be invalid or unenforceable, the balance of this agreement will remain in force.

2. TITLE AND RISK OF LOSS – TITLE of the goods herein described shall pass to CUSTOMER upon full payment of said goods and any prior outstanding debt.

RISK OF LOSS passes to CUSTOMER upon delivery of said goods at SELLER'S plant.

Such title to and risk of loss of said goods will not pass to CUSTOMER in any other way, notwithstanding any agreement to the contrary, including, but not limited to, any agreement to pay freight, express or other transportation or insurance charges.

3. PAYMENT AND PRICES – SELLER may, at its option, draw at sight on CUSTOMER or require CUSTOMER to obtain an irrevocable letter of credit in favour of SELLER from an issuer acceptable to SELLER. In the event SELLER does not so draw or require such letter of credit, payment by CUSTOMER will become due thirty (30) days from the date of SELLER'S invoice covering a particular shipment. Such terms of payment by CUSTOMER are of the essence of this agreement. In the event of failure by CUSTOMER to make any payment when due, SELLER may decline to make further shipments until such default is cured. In the alternative, SELLER may elect to continue to make shipments despite the continuance of such default, but such election by SELLER will in no way constitute a waiver of such default nor affect SELLER'S legal remedies thereof.

CUSTOMER assumes full responsibility, including reporting and payment, of all taxes, however designated, or other governmental charges arising out of, levied or based upon, or in connection with the sale of the goods herein described, including state and local privilege, sales and use, or excise taxes based on gross revenue or any taxes or amount in lieu hereof paid or payable by SELLER in respect of the foregoing, exclusive however, of taxes paid on net income.

In no event will any charges for engineering services imply a conveyance of any design and/or manufacturing rights as to the goods, unless such conveyance is expressly set forth in a separate written agreement signed by authorized representatives of both parties.

4. WARRANTIES –
(A) Provided that CUSTOMER subjects Equipment only to operating conditions specified by CUSTOMER when the order is placed, if any, and operates it in accordance with SELLER's written operating instructions, if any, SELLER warrants Equipment sold pursuant hereto to be free of defects in material and workmanship for a period of 1 year after the date Equipment is delivered. The above warranty does not apply to: (i) used Equipment or Equipment that has been repaired or worked over; (ii) Equipment that has been modified or subjected to improper handling, storage, installation, operation or maintenance by CUSTOMER, including use of unauthorized replacement parts; (iii) component parts not manufactured by SELLER, whether purchased by SELLER or furnished by CUSTOMER, such parts being subject to any applicable manufacturer's warranty; (iv) parts requiring replacement because of normal wear and tear; (v) design on those jobs where SELLER prepared drawings, lists or bills of material from designs furnished by others; and (vi) models or samples furnished to CUSTOMER as illustrations only of general properties of equipment. This warranty will not apply if CUSTOMER, on request by SELLER, does not return the defective part to SELLER for inspection, freight prepaid.

(B) SELLER's liability for breach of this warranty is expressly limited to the repair or replacement, at its sole option, of any Equipment or parts of Equipment which prove to be defective during the warranty period. All parts repaired or replaced hereunder shall be repaired or replaced F.O.B. SELLER's Plant.

5. LIMITATION OF LIABILITY –
SELLER and BUYER each agree to protect, defend, indemnify and hold harmless each other and each other's subsequent parents, subsidiaries, affiliates and the officers, directors, employees of each, from and against all claims, demands and causes of action of every kind and character without limit and without regard to the cause or causes thereof or the negligence or fault, active or passive, of any party or parties including the sole, joint or concurrent negligence of the other party and any theory of strict liability arising in connection herewith in favour of the other party's employees, invitees or subcontractors or their employees on account of bodily injury, death or property damage

SELLER WILL NOT BE LIABLE FOR PROSPECTIVE PROFITS OR SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES INCLUDING WITHOUT LIMITATION, FACILITY DOWNTIME, LOSS OF PROFIT OR BUSINESS INTERRUPTION WHETHER ANY SUCH CLAIM OR LAWSUIT BE BASED ON TORT, CONTRACT OR OTHERWISE.

IN NO EVENT WILL RECOVERY OF ANY KIND AGAINST SELLER BE GREATER THAN THE PURCHASE PRICE OF THE SPECIFIC GOODS SOLD WHICH CAUSED THE ALLEGED DAMAGE.

6. CATASTROPHIC LOSSES – Notwithstanding anything to the contrary contained herein, CUSTOMER hereby agrees to assume the liability for, the following specified types of losses or events: (1) reservoir or underground damage, including loss of any mineral substance, or water or the wellbore itself; (2) control of a wild well, underground or above the surface; and (3) pollution, including clean-up and control of the pollutant or contamination.

7. CLAIMS – Within twenty (20) days after tender of delivery to or receipt by CUSTOMER of any shipment and before any part of such goods (except for reasonable test and inspection quantities) has been changed from its original condition, CUSTOMER will inform SELLER in writing if said goods are found defective of short in any respect. Failure to so inform SELLER or use of said goods (except for reasonable test and inspection quantities) will be conclusive that SELLER has satisfactorily performed.

8. MODIFICATION AND CANCELLATION – SELLER reserves the right to reject any order made by CUSTOMER, including changes. Changes to an order may be subject to price adjustments. Custom orders and orders designed specifically for CUSTOMER cannot be cancelled once the construction material has been ordered and/or production has begun. Cancelled orders will incur charges for materials ordered, design and manufacturing time to the point of cancellation.

J-2
Off-Site Groundwater Monitoring Wells

Earth Tech Northeast, Inc.
40 British American Boulevard
Latham, New York 12110
Phone: (518) 951-2200
Fax: (518) 951-2300

BOREHOLE LOG

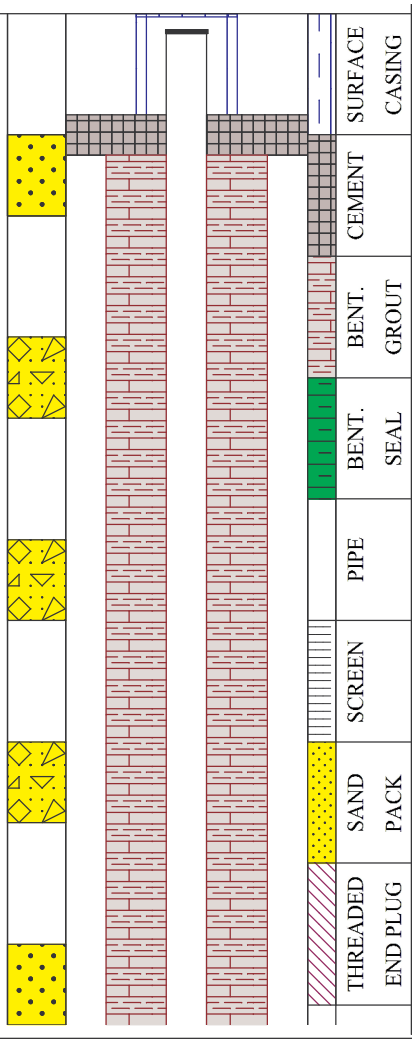
BORING ID #: **MWPD 1-D**

START DATE: **9/6/05** END DATE: **9/12/05**

PROJECT NAME: **BB&S Lumber**
PROJECT MANAGER: **Walter Howard**
SITE LOCATION: **Speonk, NY**
BORING LOCATION **MWPD 1-D**
DRILLING CO.: **ADT**
DRILLER:
DRILLING METHOD: **Hollow Stem Auger**
BOREHOLE DIAMETER: **8.0"**
DEPTH TO BEDROCK: **Not Reached**
TOTAL DEPTH DRILLED: **207.0'**
TOTAL DEPTH REACHED: **207.0'**
INSPECTOR: **James Clark**
WEATHER CONDITIONS: **Warm, No Prec.**
LATITUDE:
LONGITUDE:
ELEVATION AND DATUM:

	HAMMER	SAMPLER	ST. WATER LEVELS			CONSTRUCTION PARAMETERS
WEIGHT(S) →	**140lb**		DATE 1: **9/7/05**	DEPTH 1: **42.2'**	TIME 1: **7:10**	W. CASING TYPE: **Sch. 40 PVC**
FALL →	**30"**		DATE 2: **9/8/05**	DEPTH 2: **42.1'**	TIME 2: **7:05**	WELL TYPE: **Monitoring**
TYPE →	**Downhole**	**Split Spoon**	CASING	TUBE	CORE	SCREENED INT. **157.0'-177.0'**
ID/OD →		**2" OD**	**3.25"/4.25"**			PACK GRADE: **Grade #0**
			RIG TYPE: **Failing F10**			JOINTS: **Threaded**
						SLOT SIZE: **0.010"**

DEPTH (feet bgs)	SAMPLE ID	RECOVERY (ft)	BLOW COUNT	ODOR OBSERVED	LAB ANALYSIS	GEOLOGIC DESCRIPTION	REMARKS
0.0	S-1	NR		None		Dark Yellow brown fine Sand, well srtd	Dry, loose
6.0	S-2	1.2'	7-13 15-17	None		Light Yellow brown med to fine Sand, med to fine Gravel - pred qtzite; sbrdd	Dry, loose
10.0	S-3	1.2'	6-7 8-7	None		Same	Dry, loose
16.0	S-4	1.5'	4-6 10-11	None		Same	Damp
20.0	S-5	1.5'	4-6 10-11	None		Dark yellow brown med to fine Sand; pred qtzite Sand	Damp, med stiff

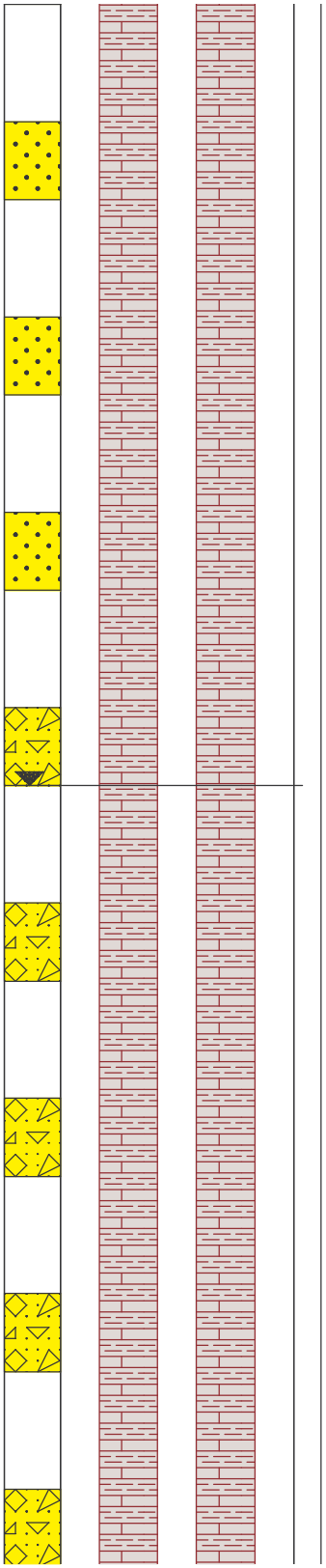


BORING ID **MWPD 1-D**

WATER LEVEL

WELL CONSTRUCTION

DEPTH (feet bgs)	SAMPLE ID	RECOVERY (ft)	BLOW COUNT	ODOR OBSERVED	LAB ANALYSIS	GEOLOGIC DESCRIPTION	REMARKS
22.0			7-8				
24.0			11-13				
26.0	S-6	1.4'	6-8 13-15	None		Same, occ fine to med gravel (rdd qtz)	Dry, med stiff
28.0							
30.0	S-7	1.4'	8-10 10-11	None		Same	Dry, med stiff
32.0							
34.0							
36.0	S-8	1.4'	12-10 15-18	None		Same	Dry, med stiff
38.0							
40.0	S-9	2.0'	5-9 12-15	None		Yellow brown coarse to fine (-) Sand, trace med to fine gravel; sbrdd qtzite gravel	Damp, med stiff
42.0							WT @ 42.0'
44.0							
46.0	S-10	1.9'	15-10 9-9	None		Same, pred qtz sand	Wet, stiff
48.0							
50.0	S-11	1.3'	19-23 26-30	None	Sieve	Yellow brown coarse to fine (-) Sand, some (-) med to fine gravel; gravel is sbrdd qtzite	Wet, stiff
52.0							
54.0							
56.0	S-12	2.0	22-25 28-31	None		Same	
58.0							
60.0	S-13	1.9'	18-22 29-32	None		Yellow brown corase to fine Sand, trace med to fine gravel	
62.0							



BORING ID **MWPD 1-D**

WATER LEVEL

WELL CONSTRUCTION

DEPTH (feet bgs)	SAMPLE ID	RECOVERY (ft)	BLOW COUNT	ODOR OBSERVED	LAB ANALYSIS	GEOLOGIC DESCRIPTION	REMARKS	LITHOLOGY/ SOIL TYPE
62.0								
64.0								
66.0	S-14	1.9'	16-23 11-12	None	Sieve	Moderate yellow brown med to fine Sand, trace fine gravel	Wet, stiff	
68.0								
70.0	S-15	1.8	13-24 32-29	None		Same	Wet, stiff	
72.0								
74.0								
76.0	S-16	1.9'	13/15 17-22	None		Moderate yellow brown med to fine Sand,trace fine gravel; well sorted	Wet, stiff	
78.0								
80.0	S-17	2.0	6-17 37-40	None		Same	Wet, stiff	
82.0								
84.0								
86.0	S-18	1.9'	13-15 17-20	None		Same	Wet, stiff	
88.0								
90.0	S-19	1.2'	4-10 23-25	None		Moderate yellow brown med to fine Sand, trace Silt, trace fine gravel, Stiff and Saturated.	Wet, stiff	
92.0								
94.0								
96.0	S-20	1.9'	5-8 12-15	None		Same	Wet, stiff	
98.0								
100.0	S-21	1.1'	10-26 36-40	None	Sieve	Moderate yellowish brown coarse to fine (-) Sand, trace silt; pred qtzite sand	Wet, stiff	
102.0								

BORING ID **MWPD 1-D**

WATER LEVEL

WELL CONSTRUCTION

DEPTH (feet bgs)	SAMPLE ID	RECOVERY (ft)	BLOW COUNT	ODOR OBSERVED	LAB ANALYSIS	GEOLOGIC DESCRIPTION	REMARKS	LITHOLOGY/ SOIL TYPE
102.0								
104.0								
106.0	S-22	8'	14-22 45-21	None		Moderaty yellow brown fine Sand	Wet, stiff. Poss wash	
108.0								
110.0	S-23	1.0'	12-65 8-8	None	Sieve	Yellow brown coarse to fine (-) Sand, some medium to fine (+) Gravel; sbrdd qtzite	4' heaved Sand in HSAs. Washed out w/ ~100 gal. of water	
112.0								
114.0								
116.0	S-24	2.0'	45-36 58-57	None		Moerate yellow brown coarse to fine Sand	Wet, stiff	
118.0								
120.0	S-25	0.7'	15-20 23-27	None		Same; pred qtzite gravel; some cemented sand	Washed out HSAs Wet, stiff	
122.0								
124.0								
126.0	S-26	1.0'	10-11 15-19	None		Moderate yellow brown med to fine Sand	Wet, stiff	
128.0								
130.0	S-27	0.5'	11-27 15-28	None		Same, w/ piece coarse gravel	Resumed Drilling on 9/8/05. Wet	
132.0								
134.0								
136.0	S-28	0.5'	14-36 13-37	None		Moderate yellow brown coarse to fine Sand; pred qtz	Washed out HSAs Wet, V/ stiff	
138.0								
140.0	S-29	1.6'	13-15 100-Ref	None	Sieve	Moderate yellow brown medium to fine Sand; pred qtz	Wet, V/ stiff	
142.0								

BORING ID **MWPD 1-D**

WATER LEVEL

WELL CONSTRUCTION

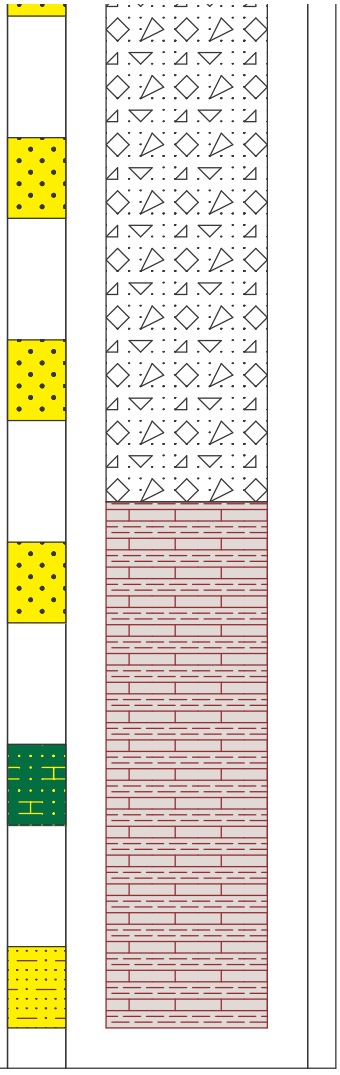
DEPTH (feet bgs)	SAMPLE ID	RECOVERY (ft)	BLOW COUNT	ODOR OBSERVED	LAB ANALYSIS	GEOLOGIC DESCRIPTION	REMARKS	LITHOLOGY/ SOIL TYPE
142.0								
144.0								
146.0	S-30	1.1'	18-39 42-62	None		Same	Wet, V/ stiff	
148.0								
150.0	S-31	1.9'	13-15 104- Ref	None		Moderate yellow brown medium to fine Sand, trace fine gravel	Wet, V/ stiff	
152.0								
154.0								
156.0	S-32	1.4'	17-35 25-40	None		Moderate yellow brown coarse to fine Sand; pred qtz	Wet, V/ stiff	
158.0								
160.0	S-33	1.5'	17-24 34-40	None	Sieve	Same		
162.0								
164.0							Washed out HSAs, Driller notes hard drilling.	
166.0	S-34	1.8'	26-28 34-38	None		Moderate yellow brown coarse to fine Sand, trace fine gravel; pred qtz		
168.0								
170.0	S-35	0.9'	6-8 15-20	None	Sieve	Same (170.0'-170.5') 170.5'-171.8' Dark brown fine Sand, and silt	Wet	
172.0								
174.0								
176.0	S-36	1.8'	15-18 38-62	None		No Recovery		
178.0								
180.0	S-37	1.6'	18-22 13-14	None		Yellow brown medium to fine Sand, some silt, trace fine gravel; red (Fe?) cemented nodule @ top	Wet, stiff	
182.0								

BORING ID **MWPD 1-D**

WATER LEVEL

WELL CONSTRUCTION

DEPTH (feet bgs)	SAMPLE ID	RECOVERY (ft)	BLOW COUNT	ODOR OBSERVED	LAB ANALYSIS	GEOLOGIC DESCRIPTION	REMARKS	LITHOLOGY/ SOIL TYPE
182.0								
184.0								
186.0	S-38	1.5'	17-37 27-52	None		Moderate yellow brown medium to fine Sand; pred qtz sand	Wet, stiff	
188.0								
190.0	S-39	1.4'	2-10 15-30	None		Same; Clay seam at 190.8' (0.01' thick)		
192.0						Gray fine Sandy Silt (195.0'-195.8') Yellow brown coarse to fine Sand, some silt, trace fine gravel (195.8'-196.9')		
194.0								
196.0	S-40	1.9'	15-25 30-45	None			Wet, V/ stiff	
198.0	S-41		8-22 33-40			Same	Wet, V/ stiff	
200.0	S-42	0.5'	18-33 50/.4	None		Dark gray med to fine (+) Sand, trace med to fine gravel; gravel sbrdd; tr green glauconite fgmts; seam of dk gr-blk Clayey Silt	Wet, V/ stiff	
202.0								
204.0								
206.0	S-43	1.2'	17-25 43-48	None		Tan-Green medium to fine Sand, trace Silt; abdnt mica	Wet	
208.0						EOB @ 207.0'		



Earth Tech Northeast, Inc.
40 British American Boulevard
Latham, New York 12110
Phone: (518) 951-2200
Fax: (518) 951-2300

BOREHOLE LOG

BORING ID #: **MWPD-2S**

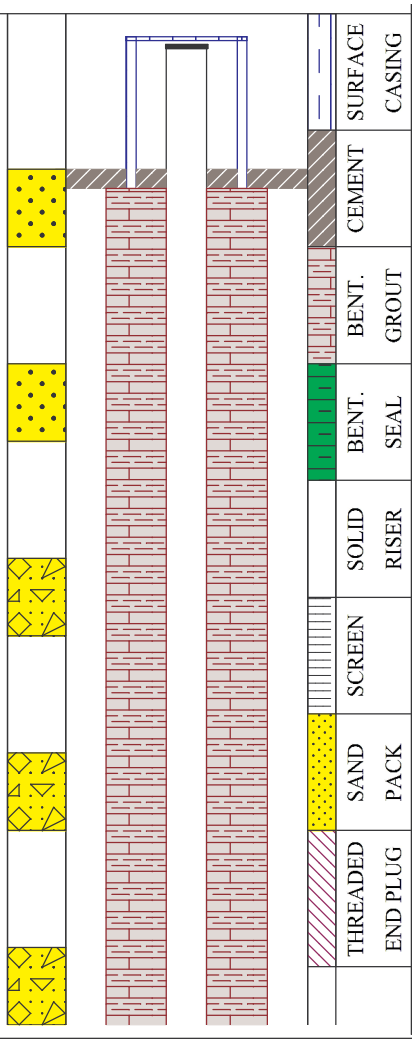
START DATE: **9/12/05** END DATE: **9/12/05**

PROJECT NAME: **BB&S Lumber**
PROJECT MANAGER: **Walter Howard**
SITE LOCATION: **Speonk, NY**
BORING LOCATION **MWPD-2S**
DRILLING CO.: **ADT**
DRILLER:
DRILLING METHOD: **Hollow Stem Auger**
BOREHOLE DIAMETER: **8.0'**
DEPTH TO BEDROCK: **Not Reached**
TOTAL DEPTH DRILLED: **62.0'**
TOTAL DEPTH REACHED: **62.0'**
INSPECTOR: **James Clark**
WEATHER CONDITIONS: **Warm, No Prec.**
LATITUDE:
LONGITUDE:
ELEVATION AND DATUM:

	HAMMER	SAMPLER	ST. WATER LEVELS			
WEIGHT(S) →	**140lb**		DATE 1:	DEPTH 1:	TIME 1:	
			DATE 2:	DEPTH 2:	TIME 2:	
FALL →	**30"**		CASING	TUBE	CORE	RIG TYPE:
TYPE →	**Down Hole**	**Split Spoon**	**HSA**			**Failing F10**
ID/OD →		**2" OD**	**4.25" ID**	**3" ID**	**2" ID**	

CONSTRUCTION PARAMETERS
W. CASING TYPE: **PVC**
WELL TYPE: **Monitoring Well**
SCREENED INT. **52.0'-62.0'**
PACK GRADE: **Grade #0**
JOINTS: **Threaded**
SLOT SIZE: **0.010"**

FIELD SAMPLE INFORMATION						GEOLOGIC DESCRIPTION	REMARKS
DEPTH (feet bgs)	SAMPLE ID	RECOVERY (ft)	BLOW COUNT	ODOR OBSERVED	LAB ANALYSIS		
-4.0							
-2.0							
0.0	S-1	NA	NA	None		Dark yellowish brown med to fine Sand; pred qtz	Auger cttgs dry
2.0							
4.0							
6.0	S-2	1.3'	11-10 9-9	None		Yellow brown med to fine Sand, some med to fine Gravel	Dry, loose
8.0							
10.0	S-3	1.1'	19-11 7-5	None		Pale yellow brown med to fine Sand, trace coarse to fine gravel; Gravel sbrdd	Dry, stiff
12.0							
14.0							
16.0	S-4	1.1'	3-4 7-10	None		Pale yellow brown med to fine Sand, pred qtz	Dry, loose
18.0							
20.0	S-5	1.2'	15-25 34-6	None		Moderate yellow brown med to fine Sand, little fine Gravel	Damp, soft
22.0							



EARTH TECH NORTHEAST, INC.
CLIENT **NYS DEC**
PROJECT #: **42796**
5/3/2006

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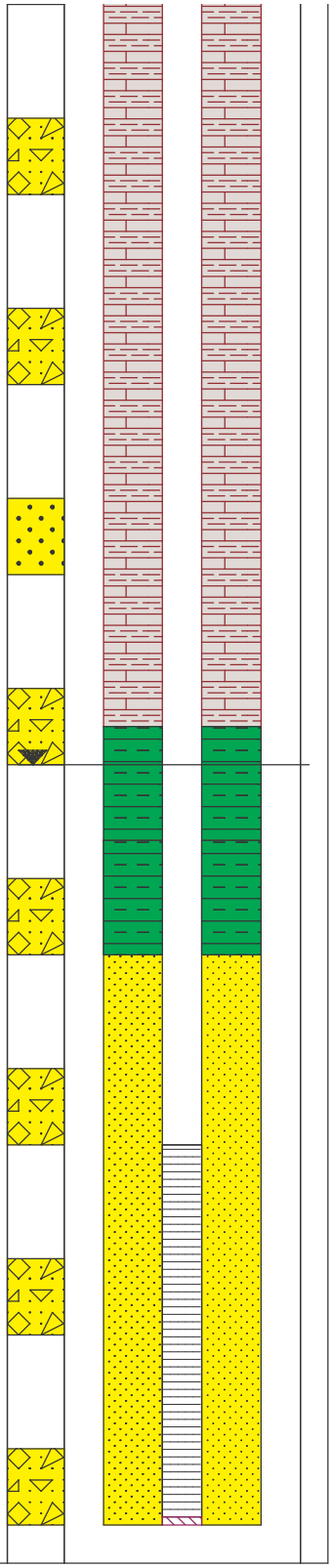
BORING ID **MWPD-2S**

WATER LEVEL

WELL CONSTRUCTION

DEPTH (feet bgs)	SAMPLE ID	RECOVERY (ft)	BLOW COUNT	ODOR OBSERVED	LAB ANALYSIS	GEOLOGIC DESCRIPTION	REMARKS
26.0	S-6	1.4'	11-7 15-19	None		Pale yellow brown med to fine Sand, little coarse to fine Gravel	Dry, stiff
30.0	S-7	1.0'	4-6 8-9	None		Same	
36.0	S-8	0.9'	5-5 12-17	None		Moderate yellow brown med to fine Sand	Damp, med soft
40.0	S-9	1.2'	5-7 10-9	None		Moderate yellow brown med to fine Sand, little fine Gravel; Gravel sbrdd qtzite	Damp WT @ 42.0' (Inferred)
46.0	S-10	1.5'	5-6 11-15	None		Moderate yellow brown coarse to fine Sand, little med to fine gravel; pred qtz	Wet, med stiff
50.0	S-11	2.0'	15-17 22-25	None		Same	
56.0	S-12	2.0'	10-12 15-17	None		Same	
60.0	S-13	1.8'	1-1 1-3	None		Same	
62.0						EOB @ 62.0'	



Earth Tech Northeast, Inc.
40 British American Boulevard
Latham, New York 12110
Phone: (518) 951-2200
Fax: (518) 951-2300

BOREHOLE LOG

BORING ID #: **MWPD-3S**

START DATE: **9/14/05** END DATE: **9/14/05**

PROJECT NAME: **BB&S Lumber**
PROJECT MANAGER: **Walter Howard**
SITE LOCATION: **Speonk, NY**
BORING LOCATION **MWPD-3S**
DRILLING CO.: **ADT**
DRILLER:
DRILLING METHOD: **Hollow Stem Auger**
BOREHOLE DIAMETER: **8.0'**
DEPTH TO BEDROCK: **Not Reached**
TOTAL DEPTH DRILLED: **62.0'**
TOTAL DEPTH REACHED: **62.0'**
INSPECTOR: **James Clark**
WEATHER CONDITIONS: **Warm, No Prec.**
LATITUDE:
LONGITUDE:
ELEVATION AND DATUM:

	HAMMER	SAMPLER	ST. WATER LEVELS			RIG TYPE:
WEIGHT(S) →	**140lb**		DATE 1:	DEPTH 1:	TIME 1:	
			DATE 2:	DEPTH 2:	TIME 2:	
FALL →	**30"**		CASING	TUBE	CORE	
TYPE →	**Down Hole**	**Split Spoon**	**HSA**			**Failing F10**
ID/OD →		**2" OD**	**4.25" ID**			

CONSTRUCTION PARAMETERS
W. CASING TYPE: **PVC**
WELL TYPE: **Monitoring Well**
SCREENED INT. **50.0'-60.0'**
PACK GRADE: **Grade #0**
JOINTS: **Threaded**
SLOT SIZE: **0.010"**

DEPTH (feet bgs)	SAMPLE ID	RECOVERY (ft)	BLOW COUNT	ODOR OBSERVED	LAB ANALYSIS	GEOLOGIC DESCRIPTION	REMARKS
0.0	S-1	NA		None		Brwon coarse to fine Sand, some med to fine gravel	Very hard drilling from auger cuttings
6.0	S-2	1.4'	18-22 6-10	None		Brown coarse to fine Sand, and med gravel; pred qtz	Dry, stiff
10.0	S-3	1.0'	3-6 10-12	None		Very light white brown med to fine Sand, with little coarse to fine (+) gravel; pred qtz	Dry, loose
16.0	S-4	1.1'	25-15-11	None;		Same	Dry, loose
20.0	S-5	0.4'	1-3 10-12	None		Pale yellow brown med to fine Sand	Dry, loose
24.0							

WATER LEVEL ▼

EARTH TECH NORTHEAST, INC.
CLIENT **NYS DEC**
PROJECT #: **42796**
5/3/2006

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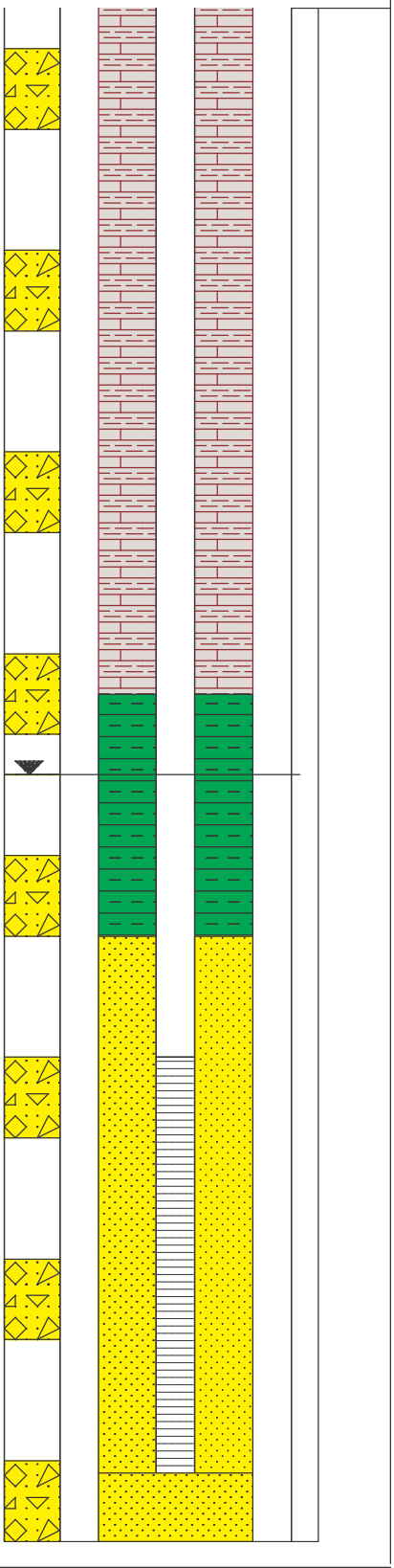
BORING ID **MWPD-3S**

WATER LEVEL

WELL CONSTRUCTION

FIELD SAMPLE INFORMATION					GEOLOGIC DESCRIPTION	REMARKS	LITHOLOGY/ SOIL TYPE
DEPTH (feet bgs)	SAMPLE ID	RECOVERY (ft)	BLOW COUNT	ODOR OBSERVED / LAB ANALYSIS			
24.0							
26.0	S-6	.08'	6-8 9-11	None	Yellow brown med to fine Sand, trace fine gravel	Dry	
28.0							
30.0	S-7	1.2'	3-5 6-9	None	Moderate yellow brown med to fine Sand, little fine gravel	Damp, soft	
32.0							
34.0							
36.0	S-8	1.5'	7-7 8-12	None	Same	Damp, med stiff	
38.0							
40.0	S-9	1.1'	3-7 8-12	None	Yellow brown coarse to fine Sand, little med to fine (+) gravel; Gravel pred well rdd qtzite	Damp	
42.0						WT @ 43.0' (Inferred)	
44.0							
46.0	S-10	.08'	1-4 6-6	None	Moderate yellow brown coarse (-) to fine Sand, trace coarse gravel	Wet, loose	
48.0							
50.0	S-11	1.2'	2-4 6-9	None	Moderate yellow brown med to fine Sand, little coarse fine gravel	Wet, loose	
52.0							
54.0							
56.0	S-12	1.5'	1-1 1-1	None	Same	Wet, loose	
58.0							
60.0	S-13	1.1'	6-12 11-15	None	Same	Wet, loose	
62.0							



EARTH TECH NORTHEAST, INC.
CLIENT **NYS DEC**
PROJECT #: **42796**
5/3/2006

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EarthTech
A tyco International Ltd. Company

Earth Tech Northeast, Inc.
40 British American Boulevard
Latham, New York 12110
Phone: (518) 951-2200
Fax: (518) 951-2300

BOREHOLE LOG

BORING ID #: **SBPD-158**

START DATE: **11/16/05** END DATE: **11/16/05**

PROJECT NAME: **BB&S Lumber**
PROJECT MANAGER: **Waler Howard**
SITE LOCATION: **Speonk, NY**
BORING LOCATION:
DRILLING CO.: **Zebra Environmental Services, Inc.** DRILLER: **Luke Reiss, Robert Burawa**
DRILLING METHOD: **Direct Push Technology**
BOREHOLE DIAMETER: **2.25" OD**
DEPTH TO BEDROCK: **Not reached**
TOTAL DEPTH DRILLED: **44.0'**
TOTAL DEPTH REACHED: **44.0'**
INSPECTOR: **James Clark**
WEATHER CONDITIONS: **Partly cloudy**
LATITUDE:
LONGITUDE:
ELEVATION AND DATUM: **Grade**

FIELD SAMPLE INFORMATION		HAMMER	SAMPLER	ST. WATER LEVELS	DATE 1: **11/16/05** DATE 2:	DEPTH 1: **38.0'** DEPTH 2:	TIME 1: **~1330** TIME 2:	
	WEIGHT(S) →							
	FALL →			CASING	TUBE	CORE	RIG TYPE:	WATER LEVEL
	TYPE →				**Acetate Liner**		**Geoprobe 6600 Track Unit**	▼
	ID/OD →				**1.88" ID**			

DEPTH (feet bgs)	SAMPLE ID	RECOVERY	PID (ppm)	LAB ANALYSIS	GEOLOGIC DESCRIPTION	LITHOLOGY/ SOIL TYPE	REMARKS
0.0	S-1	1.4'			Yellow/orange brown med to fine Sand, and silt; Dark Silt layer 0.8'-0.85'		Concrete at surface (2"); Dry, loose
-2.0							
-4.0	S-2	3.3'			Yellow brown med (-) to fine (+) Sand, and silt, trace fine gravel; pred qtz		Wet, med stiff
-6.0							
-8.0	S-3	4.0'			Same		
-10.0							
-12.0	S-4	3.0'			Same; No fine gravel		
-14.0							
-16.0	S-5	3.1'			Same; gravel fgmts, some green (As & Cr) staining		
-18.0							
-20.0	S-6	2.5'		<-- SBPD-158 (23-24)	Same; Green (As & Cr) staining on outside of liner (23.7'-24.0')		Drillers reoccupied boring to retrieve additional soil from the 20'-24' interval
-22.0							
-24.0							

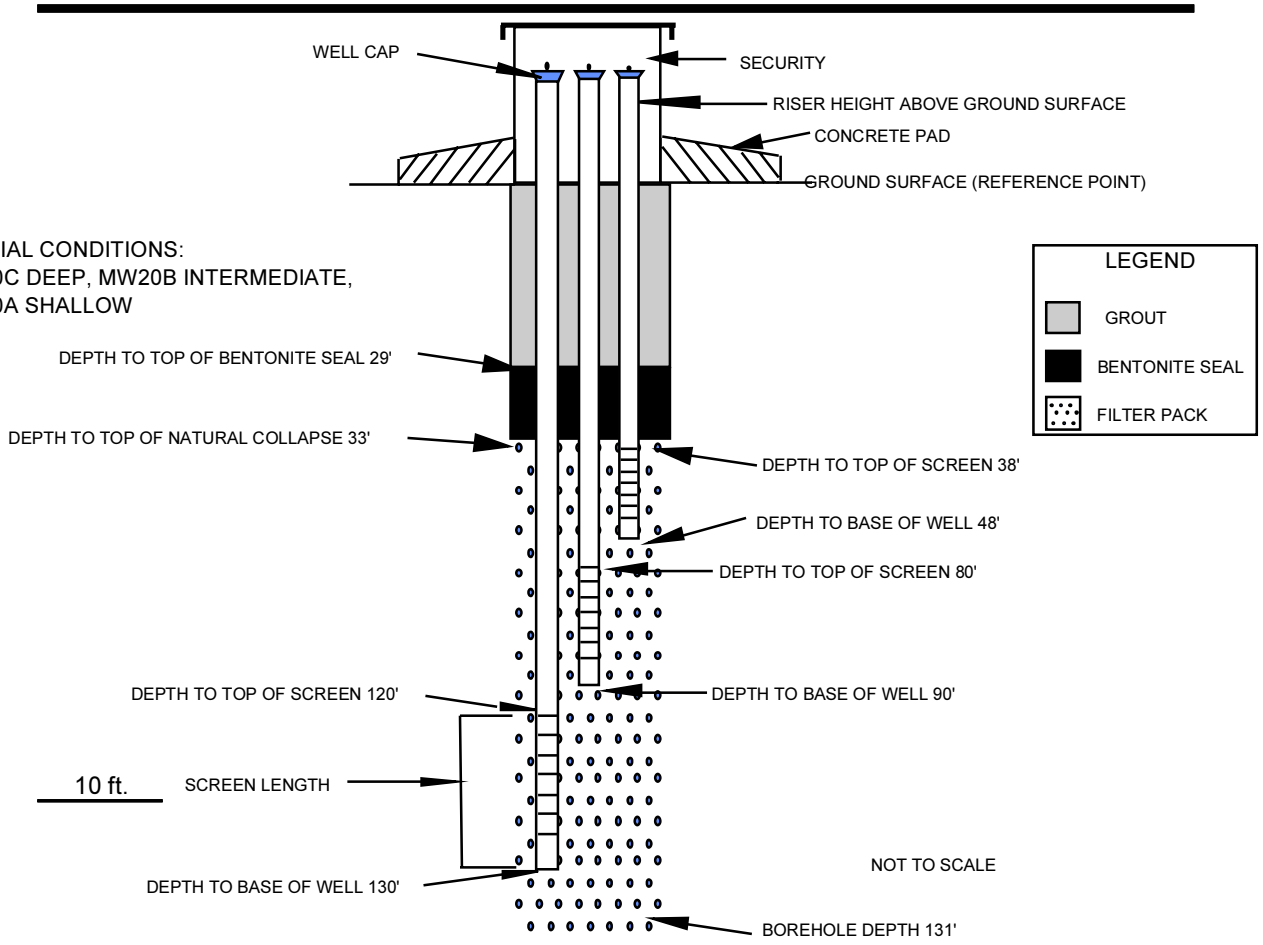
F. SAMPLE INFO.

BORING ID #: **SBPD-158**

DEPTH (feet bgs)	SAMPLE ID	RECOVERY	PID (ppm)	LAB ANALYSIS	GEOLOGIC DESCRIPTION	LITHOLOGY/ SOIL TYPE	WATER LEVEL / REMARKS
-24.0					Yellow brown med (-) to fine Sand, some silt, trace fine gravel; pred qtz		Damp, med stiff
-26.0	S-7	2.5'					
-28.0					Same		
-30.0	S-8	2.1'		DUP 3			
-32.0					Same		
-34.0	S-9	1.4'					
-36.0					Same; Green (As & Cr) stained interval 37.9'-38.0'		
-38.0	S-10	1.8'					WT @ 38.0' (Inferred)
-40.0				SBPD-158 (38-39)-->	Yellow brown med (-) to fine Sand, some silt, trace fine gravel; pred qtz		Wet, soft; Sample SBPD-158 (40-42) sampled. Held pending analysis of other samples
-42.0	S-11	2.1'					
-44.0							

WELL CONSTRUCTION DETAILS

FIELD REPRESENTATIVE:	Bryon Blaydes	TYPE OF FILTER PACK:	Natural Collapse
		GRADATION:	N/A
DRILLING CONTRACTOR:	Delta Well and Pump	AMOUNT OF FILTER PACK USED:	N/A
DRILLING TECHNIQUE:	Hollow Stem Augers	TYPE OF BENTONITE:	Pure Gold
SIZE AND TYPE:	4.25" I.D. Flighted	AMOUNT OF BENTONITE:	1 Bag
BOREHOLE IDENTIFICATION:	**MW-20**	TYPE OF CEMENT:	Portland Type II
BOREHOLE DIAMETER:	4.25" HSA	AMOUNT CEMENT USED:	160 Lbs.
WELL IDENTIFICATION:	MW20A, MW20B, MW20C	GROUT MATERIALS USED:	Bentonite Powder
WELL CONSTRUCTION START DATE:	5/28/2008		
WELL CONSTRUCTION COMPLETION DATE:	5/29/2008	DIMENSIONS OF SECURITY CASING:	5"
SCREEN MATERIAL:	Schedule 40 PVC	TYPE OF WELL CAP:	Slip
SCREEN DIAMETER:	1" I.D.	TYPE OF END CAP:	Flush Threaded
SCREENED INTERVAL (ft.):	38-48 A, 80-90 B, 120-130 C	COMMENTS:	
RISER MATERIAL:	Schedule 40 PVC		
RISER DIAMETER:	1" I.D.		



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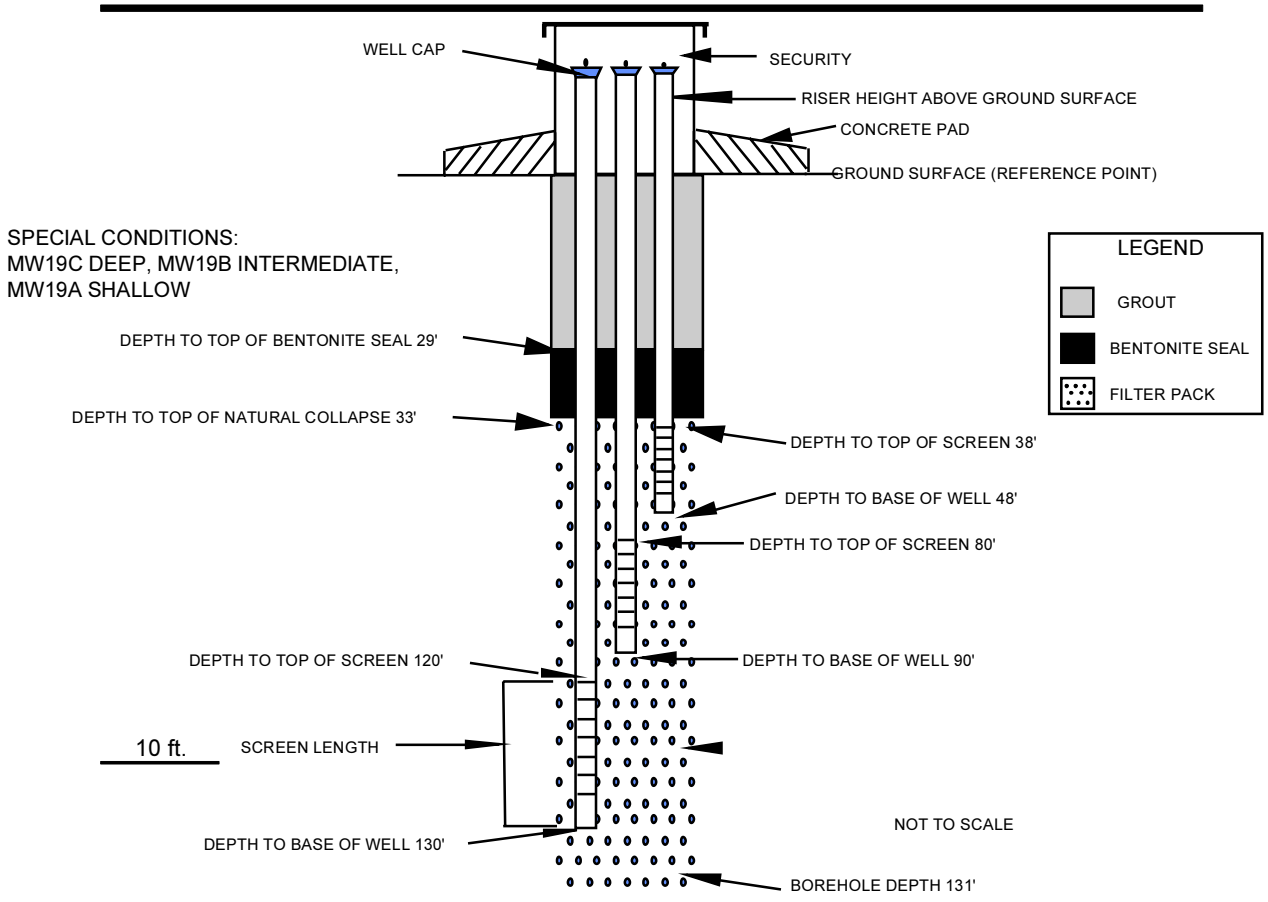
WELL CONSTRUCTION DETAILS

FIELD REPRESENTATIVE:	Bryon Blaydes	TYPE OF FILTER PACK:	Natural Collapse
		GRADATION:	N/A
DRILLING CONTRACTOR:	Delta Well and Pump	AMOUNT OF FILTER PACK USED:	N/A
DRILLING TECHNIQUE:	Hollow Stem Augers	TYPE OF BENTONITE:	Pure Gold
SIZE AND TYPE:	4.25" I.D. Flighted	AMOUNT OF BENTONITE:	1 Bag
BOREHOLE IDENTIFICATION:	**MW-19**	TYPE OF CEMENT:	Portland Type II
BOREHOLE DIAMETER:	4.25" HSA	AMOUNT CEMENT USED:	160 Lbs.
WELL IDENTIFICATION:	MW19A, MW19B, MW19C	GROUT MATERIALS USED:	Bentonite Powder
WELL CONSTRUCTION START DATE:	5/21/2008		
WELL CONSTRUCTION COMPLETION DATE:	5/23/2008	DIMENSIONS OF SECURITY CASING:	5"
SCREEN MATERIAL:	Schedule 40 PVC	TYPE OF WELL CAP:	Slip
SCREEN DIAMETER:	1" I.D.	TYPE OF END CAP:	Flush Threaded
SCREENED INTERVAL (ft.):	38-48 A, 80-90 B, 120-130 C	COMMENTS:	
RISER MATERIAL:	Schedule 40 PVC		
RISER DIAMETER:	1" I.D.		



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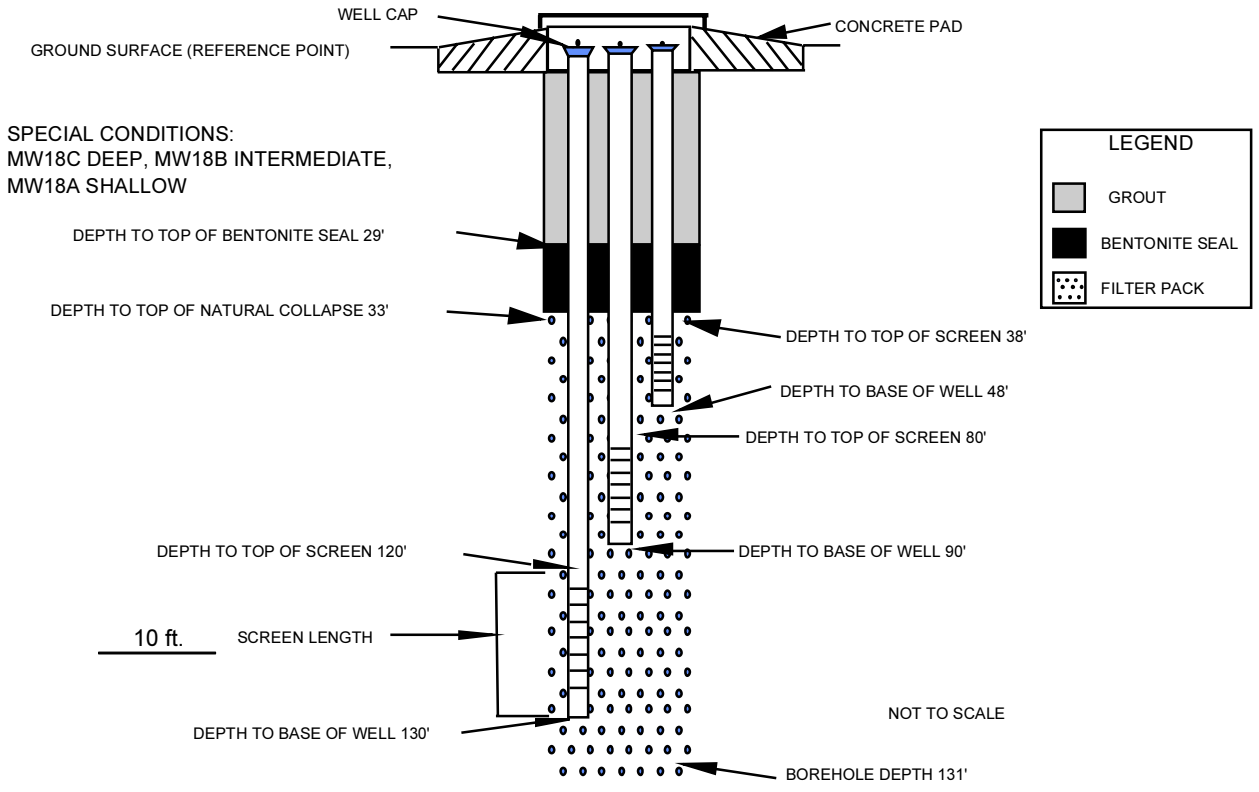
WELL CONSTRUCTION DETAILS

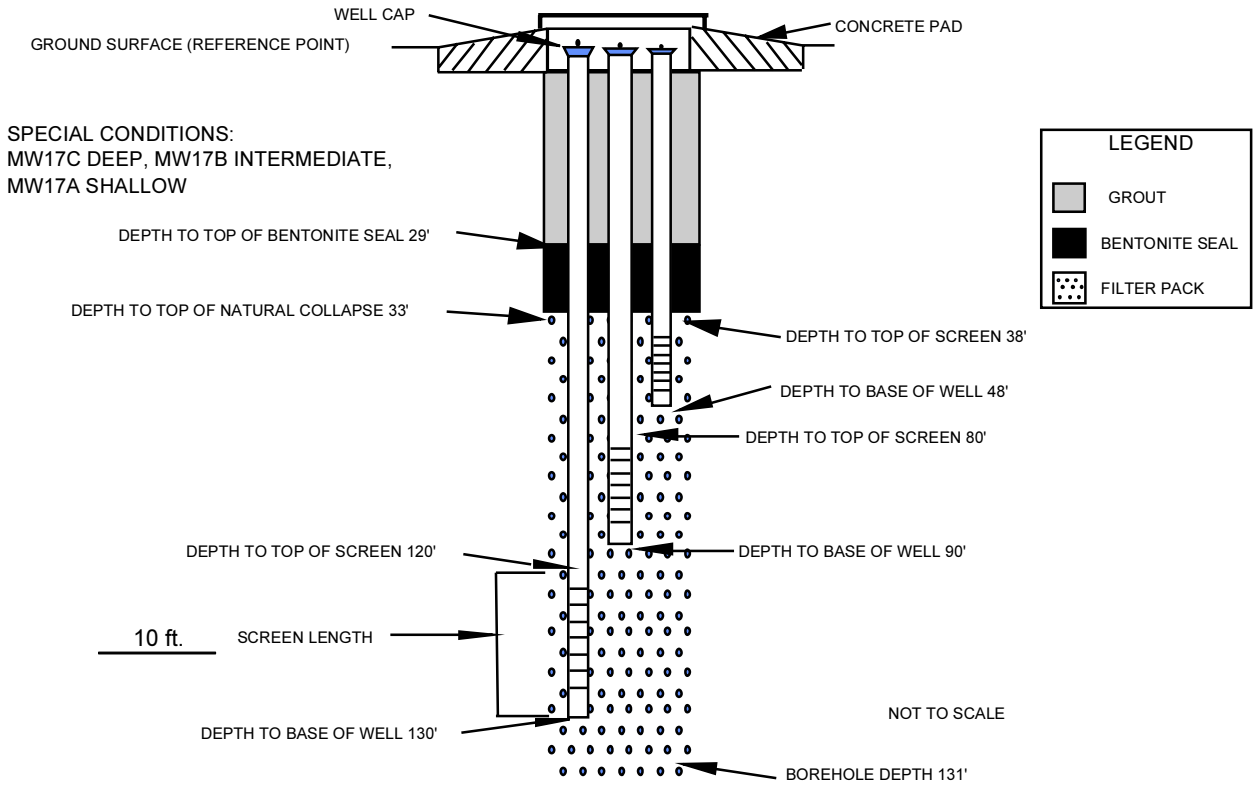
FIELD REPRESENTATIVE:	Bryon Blaydes	TYPE OF FILTER PACK:	Natural Collapse
		GRADATION:	N/A
DRILLING CONTRACTOR:	Delta Well and Pump	AMOUNT OF FILTER PACK USED:	N/A
DRILLING TECHNIQUE:	Hollow Stem Augers	TYPE OF BENTONITE:	Pure Gold
SIZE AND TYPE:	4.25" I.D. Flighted	AMOUNT OF BENTONITE:	1 Bag
BOREHOLE IDENTIFICATION:	**MW-18**	TYPE OF CEMENT:	Portland Type II
BOREHOLE DIAMETER:	4.25" HSA	AMOUNT CEMENT USED:	160 Lbs.
WELL IDENTIFICATION:	MW18A, MW18B, MW18C	GROUT MATERIALS USED:	Bentonite Powder
WELL CONSTRUCTION START DATE:	5/15/2008		
WELL CONSTRUCTION COMPLETION DATE:	5/20/2008	DIMENSIONS OF SECURITY CASING:	5"
SCREEN MATERIAL:	Schedule 40 PVC	TYPE OF WELL CAP:	Slip
SCREEN DIAMETER:	1" I.D.	TYPE OF END CAP:	Flush Threaded
SCREENED INTERVAL (ft.):	38-48 A, 80-90 B, 120-130 C	COMMENTS:	
RISER MATERIAL:	Schedule 40 PVC		
RISER DIAMETER:	1" I.D.		



●Earth Tech Northeast Inc. ● 40 British American Blvd. Latham, NY 12110

WELL CONSTRUCTION DETAILS

FIELD REPRESENTATIVE:	Bryon Blaydes	TYPE OF FILTER PACK:	Natural Collapse
		GRADATION:	N/A
DRILLING CONTRACTOR:	Delta Well and Pump	AMOUNT OF FILTER PACK USED:	N/A
DRILLING TECHNIQUE:	Hollow Stem Augers	TYPE OF BENTONITE:	Pure Gold
SIZE AND TYPE:	4.25" I.D. Flighted	AMOUNT OF BENTONITE:	1 Bag
BOREHOLE IDENTIFICATION:	**MW-17**	TYPE OF CEMENT:	Portland Type II
BOREHOLE DIAMETER:	4.25" HSA	AMOUNT CEMENT USED:	160 Lbs.
WELL IDENTIFICATION:	MW17A, MW17B, MW17C	GROUT MATERIALS USED:	Bentonite Powder
WELL CONSTRUCTION START DATE:	5/13/2008		
WELL CONSTRUCTION COMPLETION DATE:	5/14/2008	DIMENSIONS OF SECURITY CASING:	5"
SCREEN MATERIAL:	Schedule 40 PVC	TYPE OF WELL CAP:	Slip
SCREEN DIAMETER:	1" I.D.	TYPE OF END CAP:	Flush Threaded
SCREENED INTERVAL (ft.):	38-48 A, 80-90 B, 120-130 C	COMMENTS:	
RISER MATERIAL:	Schedule 40 PVC		
RISER DIAMETER:	1" I.D.		



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MALCOLM PIRNIE

APPENDIX A

REGIONAL WELL COMPLETION REPORTS

County Suffolk

WSA 5454

ORIGINAL—TO COMMISSION

State of New York
Department of Conservation
Division of Water Resources

COMPLETION REPORT—LONG ISLAND WELL

Well No. S-31646
(on preliminary report)

LOG

Ground Surf., El. 63 ft. above sea

63 ft.

Top of Well

SPEONK

63'

10

Owner MAR-KAI APTS.

Address MONTAUK Hwy 200' E/o PHillips AVE

Location of well " " , " Speonk

Dept of well below surface 63 feet

Depth to ground water from surface 51' feet

STATE OF NEW YORK
WATER RESOURCES
JUN 20 1968
RECEIVED

CASINGS:

Diameter 6" in. ... in. ... in. ... in.

Length 63' ft. ... ft. ... ft. ... ft.

Sealing

Casings removed

SCREENS: Make JHUSTANG Openings 14 SLOT

Diameter 6 in. ... in. ... in. ... in.

Length 10' ft. ... ft. ... ft. ... ft.

Depth to top from top of casing 58' ft.

PUMPING TEST: Date ... Test or permanent pump?

Duration of Test ... days ... hours

Maximum Discharge ... gallons per minute

Static level prior to test ... ft. ... in. below top of casing

Level during Max. Pumping ... ft. ... in. below top of casing

Maximum Drawdown ... ft.

Approx. time of return to normal level after cessation of pumping ... hours ... minutes

PUMP INSTALLED:

Type SUB Make STA-RITE Model No. 3PYC2

Motive power ELECT Make " H.P. 1/2

Capacity 8.0 g.p.m. against 40 ft. of discharge head

No. bowls or stages 8 240 ft. of total head

DROP LINE: SUCTION LINE:

Diameter 1" in. ... in.

Length 50' ft. ... ft.

Use of water APARTMENT

Work started 4/3/68 Completed 5/8/68

Date 6/17/68 Driller MAURICE CASOLA

License No. 341

NOTE: Show log of well—materials encountered, with depth below ground surface, water bearing beds and water levels in each, casings, screens, pump, additional pumping tests and other matters of interest. Describe repair job.

See Instructions as to Well Drillers' Licenses and Reports—pp. 5-7.

ORIGINAL TO COMMISSION

County [illegible]

Well No. S-14401

[illegible]

LOG

Ground Surf. El. ...... ft. above sea

...... ft.

Top of Well

State of New York
Department of Conservation
Division of Water Power and Control

COMPLETION REPORT—LONG ISLAND WELL

3'	Loam
	Fine sand- very little grits
58'	

Owner U.S. Air Force

Address Westha [illegible] on, New York

Location of well Westhampton, New York

Depth of well below surface 58 feet

Depth to ground water from surface 27 feet

CASINGS:

Diameter 4 in. ...... in. ...... in. ...... in.

Length 51 ft. ...... ft. ...... ft. ...... ft.

Sealing ......

Casings removed ......

SCREENS: Make Cook Openings 16 slot

Diameter 4 in. ...... in. ...... in. ...... in.

Length 7 ft. ...... ft. ...... ft. ...... ft.

Depth to top from top of casing 51 ft.

PUMPING TEST: Date ...... Test or permanent pump? ......

Duration of Test ...... days ...... hours

Maximum Discharge ...... gallons per minute

Static level prior to test ...... ft. ...... in. below top of casing

Level during Max. Pumping ...... ft. ...... in. below top of casing

Maximum Drawdown ...... ft.

Approx. time of return to normal level after cessation of pumping ...... hours ...... minutes

PUMP INSTALLED:

Type Submersible Make REDA Model No. ......

Motive power electric Make Reda H.P. 1/2

Capacity 10 g.p.m. against 93 ft. of discharge head

No. bowls or stages ...... ft. of total head

DROP LINE: **SUCTION LINE:**

Diameter ...... in. ...... in.

Length ...... ft. ...... ft.

Use of water Temporary Construction

Work started May 14, 1958 Completed June 4, 1958

Date June 5, 1958 Driller Mathias Well & Pump Co., Inc.

License No. 153

NOTE: Show log of well—materials encountered, with depth below ground surface, water bearing beds and water levels in each, casings, screens, pump, additional pumping tests and other matters of interest. Describe repair job.

See Instructions as to Well Drillers' Licenses and Reports—pp. 3-7.

STATE OF NEW YORK WATER POWER AND CONTROL COMMISSION RECEIVED JUN 6 – 1958

S-31646

County Suf.

W-S. A 5404

ORIGINAL—TO COMMISSION

State of New York
Department of Conservation
Division of Water Resources

COMPLETION REPORT—LONG ISLAND WELL

(MAR-KAI JOB)

Well No. S-47104

LOG

Ground Surf. El. ____ ft. above sea

Top of Well

Soil
Gravel
&
Heavy Sand.

24' Water

Sand
&
Gravel

44'

Sand.

60'

Sand.

Owner A-C-B-Welding & Heating Corp. Mr Hoda

Address 1366 Montauk Hwy East Patchogue

Location of well N/S Montauk Hwy 200' E/o Phillips Ave Speonk

Depth of well below surface 66' feet

Depth to ground water from surface 24' feet

Casings:

Diameter 4" in. ____ in. ____ in. ____ in.

Length 62' ft. ____ ft. ____ ft. ____ ft.

Sealing ____

Casings removed 4'

Screens: Make Johnson Stainless Opening 10 slot

Diameter 3 5/8 in. ____ in. ____ in. ____ in.

Length 4' ft. 4 1/2' riser ft. ____ ft. ____ ft.

Depth to top from top of casing 60' ft.

Pumping Test: Date ____ Test or permanent pump? ____

Duration of Test ____ days ____ hours

Maximum Discharge 25 gallons per minute

Static level prior to test ____ ft. ____ in. below top of casing

Level during Max. Pumping ____ ft. ____ in. below top of casing

Maximum Drawdown ____ ft.

Approx. time of return to normal level after cessation of pumping ____ hours ____ minutes

Pump Installed:

Type Sub. Make Sta-Rite Model No. 20 Series

Motive power Elec. Make Sta-Rite H.P. 1/2

Capacity 25 g.p.m. against } ____ ft. of discharge head

No. bowls or stages 20 } ____ ft. of total head

Drop-Line: Suction Line:

Diameter ____ in. ____ in.

Length 49 ft. ____ ft.

Method of Drilling (Rotary, cable tool, etc.) Cable Tool

Use of Water Domestic

Work started Nov. 28, 1969 Completed Nov. 28, 1969

Date Nov. 30, 1972 Driller Maurice Casola

License No. 241

D. E. C. REGION 1
DEC 4 1972
WATER SUPPLY
MGMT. UNIT
RECEIVED

Note: Show log of well—materials encountered, with depth below ground surface, water bearing beds and water levels in each, casings, screens, pump, additional pumping tests and other matters of interest. Describe repair job.

See Instructions as to Well Drillers' Licenses and Reports—pp. 5-7.

County Suffolk

ORIGINAL—TO COMMISSION

Well No. S-10893
(on preliminary report)

State of New York
Department of Conservation
Division of Water Power and Control

COMPLETION REPORT—LONG ISLAND WELL

LOG

Ground Surf., El. ..... ft. above sea

^
..... ft.
v
Top of Well

Owner U. S. Army Engineer District New York (Layne #2)

Address 111 East 16th Street, New York, N. Y.

Location of well Suffolk County Air Force Base Westhampton, L. I.

Depth of well below surface 69 feet

Depth to ground water from surface 32 feet

CASINGS:

Diameter	12 in.	in.	in.	in.
Length	60 ft.	ft.	ft.	ft.
Sealing	Cemented			
Casings removed				

SCREENS: Make Layne Openings Shutter

Diameter	12 in.	in.	in.	in.
Length	10 ft.	ft.	ft.	ft.
Depth to top from top of casing	59			ft.

See Attached Blue Print

PUMPING TEST: Date Oct. 16, 1956 Test or permanent pump? Test

Duration of Test	days 6 hours
Maximum Discharge	231 gallons per minute
Static level prior to test	ft. in. below top of casing
Level during Max. Pumping	ft. in. below top of casing
Maximum Drawdown	ft.
Approx. time of return to normal level after cessation of pumping	hours minutes

PUMP INSTALLED: Not Installed

Type	Make	Model No.	
Motive power	Make	H.P.	
Capacity	g.p.m. against	ft. of discharge head	
No. bowls or stages		ft. of total head	

DROP LINE:		SUCTION LINE:	
Diameter	in.		in.
Length	ft.		ft.

Use of water S

Work started Sept. 17, 1956 Completed Oct. 16, 1956

Date Jan. 7, 1957 Driller Layne New York Co. Inc.

License No. S

STATE OF NEW YORK
WATER POWER AND
RECEIVED

NOTE: Show log of well—materials encountered, with depth below ground surface, water bearing beds and water levels in each, casings, screens, pump, additional pumping tests and other matters of interest. Describe repair job.

See Instructions as to Well Drillers' Licenses and Reports—pp. 5-7.

County Suffolk

ORIGINAL—TO COMMISSION

Well No. S-16882
(on preliminary report)

State of New York
Department of Conservation
Division of Water Power and Control

COMPLETION REPORT—LONG ISLAND WELL

LOG

Ground Surf., El. ___ ft. above sea

___ ft.

Top of Well

Owner U.S. Army Engineer District, New York (Layne #1)

Address 111 East 16th St., New York 3, N.Y.

Location of well Suffolk County Air Force Base, Westhampton, L.I.

Depth of well below surface 76 feet

Depth to ground water from surface 29 feet

Casings:

Diameter	12 in.	___ in.	___ in.	___ in.
Length	46 ft.	___ ft.	___ ft.	___ ft.
Setting	Cemented			
Casing removed				

Screens: Make Layne Openings Shutter

Diameter	12 in.	___ in.	___ in.	___ in.
Length	10 ft.	___ ft.	___ ft.	___ ft.
Depth to top from top of casing	56			ft.

Pumping Tests: Date Oct. 16, 1958 Test or permanent pump? Test

Duration of Test ___ days ___ hours

Maximum Discharge 502 gallons per minute

Static level prior to test ___ ft. ___ in. below top of casing

Level during Max. Pumping ___ ft. ___ in. below top of casing

Maximum Drawdown ___ ft.

Approx. time of return to normal level after cessation of pumping ___ hours ___ minutes

Pump Installation: No Pump Installed

Type ___ Make ___ Model No. ___

Motive power ___ Make ___ H.P. ___

Capacity ___ g.p.m. against ___ ft. of discharge head

No. bowls or stages ___ ___ ft. of total head

Riser Line: Suction Line:

Diameter ___ in. ___

Length ___ ft. ___

Depth of water ___

Work started Oct. 2, 1958 Completed Oct. 16, 1958

Date January 2, 1959 Driller Layne-New York Co.

License No. ___

Note: Show log of well—materials encountered, with depth below ground surface, water bearing beds and water levels in each, casings, screens, pump, additional pumping tests and other matters of interest. Describe repair job.

See Instructions as to Well Drillers' Licenses and Reports—pp. 5-7.

See Attached Blue Print

STATE OF NEW YORK
WATER POWER AND
JAN 5 - 1959
CONTROL COMMISSION
RECEIVED

Suffolk
County

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WSA-6866

S-65905
Well No.

COMPLETION REPORT — LONG ISLAND WELL

OWNER
Suffolk County Water Authority

ADDRESS
Oakdale, N.Y. 11769

LOCATION OF WELL
#3 Old Country Rd., e/o Evergreen Av. Westhampton CWB

DEPTH OF WELL BELOW SURFACE 161'-2½" ft.

DEPTH TO GROUND WATER FROM SURFACE 34' - 11/20/78 ft.

CASINGS

DIAMETER 16" in.	10" in.	10" in.	in.
LENGTH 126'-4½" ft.	5'-3½" ft.	3'-2½" ft.	ft.

SEALING cement

CASINGS REMOVED none

SCREENS

MAKE Cook

OPENINGS #70 slot

DIAMETER 10" in.	in.	in.
LENGTH 31'-2" ft.	ft.	ft.

DEPTH TO TOP FROM TOP OF CASING 126'-4½"

PUMPING TEST

DATE

TEST OR PERMANENT PUMP

DURATION OF TEST days

MAXIMUM DISCHARGE gallons per min.

STATIC LEVEL PRIOR TO TEST ft.

LEVEL DURING MAXIMUM PUMPING ft. in. below top of casing

MAXIMUM DRAWDOWN

level after cessation of pumping min.

PUMP INSTALLED

TYPE D.T. MAKE

MODEL NO. BHC

MOTOR POWER

215 50

CAPACITY 200 ft. of discharge head

NUMBER BOWLS OR STAGES 4 215 ft. of total head

DROP LINE

SUCTION LINE

DIAMETER 8 in.

LENGTH ft.

* LOG

Ground Surface

El. ________ ft. above sea

A/V ________ ft.

TOP OF WELL

Log of well attached

Pump data submitted 9/25/79

RECEIVED

1979

N.Y.S. D.E.C.

[illegible]

ORIGINAL—TO COMMISSION

County Suffolk

State of New York
Department of Conservation
Division of Water Power and Control
COMPLETION REPORT—LONG ISLAND WELL

Well No. S-16379
(on preliminary report)
LOG
Ground Surf., El. ...... ft. above sea
...... ft.
Top of Well

	Loam
3'	Fine sand-very little grits
59'	

Owner U.S. Air Force
Address Westhampton, New York
Location of well Westhampton, New York
Depth of well below surface 69 feet
Depth to ground water from surface 32'-6" feet

Casings:
Diameter 6 in. ...... in. ...... in. ...... in.
Length 58 ft. ...... ft. ...... ft. ...... ft.
Sealing
Casings removed

Screens: Make Cock Openings 14 slot
Diameter ... in. ...... in. ...... in. ...... in.
Length 11 ft. ...... ft. ...... ft. ...... ft.
Depth to top from top of casing 58 ft.

Pumping Test: Date ...... Test or permanent pump? ......
Duration of Test ...... days ...... hours
Maximum Discharge ...... gallons per minute
Static level prior to test ...... ft. ...... in. below top of casing
Level during Max. Pumping ...... ft. ...... in. below top of casing
Maximum Drawdown ...... ft.
Approx. time of return to normal level after cessation of pumping ...... hours ...... minutes

Pump Installed:
Type Submersible Make Deming Model No. 6720
Motive power electric Make U.S. H.P. 5
Capacity 65 g.p.m. against 116 ft. of discharge head
No. bowls or stages ...... ft. of total head

Drop Line:
Diameter ...... in.
Length ...... ft.

Suction Line:
...... in.
...... ft.

STATE OF NEW YORK
WATER POWER AND
MAY 23 1958
CONTROL COMMISSION
RECEIVED

Use of water [illegible]
Work started April 22, 1958 Completed May 20, 1958
Date May 22, 1958 Driller Mathies Well & Pump Co. Inc.
License No. 15[illegible]

Note: Show log of well—materials encountered, with depth below ground surface, water bearing beds and water levels in each, casings, screens, pump, additional pumping tests and other matters of interest. Describe repair job.

See Instructions as to Well Drillers' Licenses and Reports—pp. 5-7.

County Suffolk

ORIGINAL—TO COMMISSION

State of New York
Department of Conservation
Division of Water Resources

COMPLETION REPORT—LONG ISLAND WELL

Well No. S-44417

LOG

Ground Surf. El. .... ft. above sea

ft.

Top of Well

Owner Eastwood Builders, Inc.

Address Montauk Hwy., Hampton Bays

Location of well E/s Speonk Riverhead Rd. 150' N old Country Rd. Speonk

Depth of well below surface 70 feet

Depth to ground water from surface 30 feet

CASINGS:

Diameter 4" in. .... in. .... in. .... in.

Length 95 65 ft. .... ft. .... ft. .... ft.

Sealing

Casings removed 5'

SCREENS: Make Mustang Stainless Opening 10 Slot

Diameter 3 5/8 in. .... in. .... in. .... in.

Length 5 ft. + 2 R... ft. .... ft.

Depth to top from top of casing 63 ft.

PUMPING TEST: Date .... Test or permanent pump?

Duration of Test .... days 1 hours

Maximum Discharge 20 gallons per minute

Static level prior to test .... ft. .... in. below top of casing

Level during Max. Pumping .... ft. .... in. below top of casing

Maximum Drawdown .... ft.

Approx. time of return to normal level after cessation of pumping .... hours .... minutes

PUMP INSTALLED:

Type Sub. Make Sta-Rite Model No. DP8F2

Motive power Elec. Make A.O. Smith H.P. 1

Capacity 20 g.p.m. against .... ft. of discharge head

No. bowls or stages 13 .... ft. of total head

DROP LINE: SUCTION LINE:

Diameter 1 in. .... in.

Length 50 ft. .... ft.

Method of Drilling (Rotary, cable tool, etc.) Cable Tool

Use of Water Domestic

Work started 7-3-72 Completed 7-5-72

Date 7-19-72 Driller M. Canale

License No. 241

Depth	Material
	...
11	Sand Gravel
	Sand
30	Water
	Brown Sand
63	...
5 Screen	Sand
70	

...L SEAL

JUL 20 1972

...DIV. WATER RES...

REC...

NOTE: Show log of well—materials encountered, with depth below ground surface, water bearing beds and water levels in each, casings, screens, pump, additional pumping tests and other matters of interest. Describe repair job.

See Instructions as to Well Drillers' Licenses and Reports—pp. 3-7.

ORIGINAL—TO COMMISSION

County Suffolk

Well No. S-48442
(on preliminary report)

State of New York
Department of Conservation
Division of Water Resources

LOG

Ground Surf., El. ..... ft. above sea

COMPLETION REPORT—LONG ISLAND WELL

A
..... ft.
V
Top of Well

Owner S.C.D.E.C.

Address Motor Pkwy., Hauppauge

Location of well Speonk-Riverhead Road, Westhampton

Depth of well below surface 54'6" feet

Depth to ground water from surface 31'6" feet

CASINGS:

Diameter	6" in.	in.	in.	in.
Length	41'10" ft.	ft.	ft.	ft.
Sealing				
Casings removed				

SCREENS: Make Johnson Openings #12

Diameter 6" in. 5" (riser) 6" (screen) in. in.

Length 6" ft. 1' & 2' ft. ft.

Depth to top from top of casing 40'10" (top of packer) ft.

PUMPING TEST: Date None Test or permanent pump?

Duration of Test ..... days ..... hours

Maximum Discharge ..... gallons per minute

Static level prior to test ..... ft. ..... in. below top of casing

Level during Max. Pumping ..... ft. ..... in. below top of casing

Maximum Drawdown ..... ft.

Approx. time of return to normal level after cessation of pumping ..... hours ..... minutes

N.Y.S. C. REGION 1
OCT 11 1973
WATER SUPPLY MGMT. UNIT
RECEIVED

PUMP INSTALLED:

Type ..... Make ..... Model No. .....

Motive power ..... Make ..... H.P. .....

Capacity ..... g.p.m. against ..... ft. of discharge head

No. bowls or stages ..... ft. of total head

DROP LINE: None Diameter ..... in. Length ..... ft.

SUCTION LINE: Diameter ..... in. Length ..... ft.

Method of Drilling (Rotary, cable tool, etc.) Cable tool

Use of Water Observation

Work started 10/5/73 Completed 10/8/73

Date 10/10/73 Driller The Lauman Company Inc.

License No. 13

NOTE: Show log of well—materials encountered, with depth below ground surface, water bearing beds and water levels in each, casings, screens, pumps, additional pumping tests and other matters of interest. Describe repair job.

See Instructions as to Well Drillers' Licenses and Reports, pp. 5-7.

ORIGINAL—TO COMMISSION

County Suffolk

Well No. S-34508
(on preliminary report)

S 34743

State of New York
Department of Conservation
Division of Water Resources

LOG

Ground Surf., El. ..... ft. above sea

COMPLETION REPORT—LONG ISLAND WELL

A
..... ft.
V
Top of Well

See copy of Well Log for Formation

Owner County of Suffolk - Dept. of Health

Address County Center - Riverhead

Location of well Old Country Rd & Speonk Riverhead Road
SOUTH RIVERSIDE (EASTPORT)

Dept of well below surface 92' feet

Depth to ground water from surface 50' feet

CASINGS:

Diameter	6" in.	in.	in.	in.
Length	80'-6" ft.	ft.	ft.	ft.
Sealing	capped			

Casing ~~screen~~ to become property of owner & screen

SCREEN: Make Johnson - Red Brass openings #16

Diameter	6" in.	in.	in.	in.
Length	10' ft.	ft.	ft.	ft.

Depth to top from top of casing ..... ft.

PUMPING TEST: Date ..... Test or permanent pump? .....

Duration of Test ..... days ..... hours

Maximum Discharge ..... gallons per minute

Static level prior to test ..... ft. ..... in. below top of casing

Level during Max. Pumping ..... ft. ..... in. below top of casing

Maximum Drawdown ..... ft.

Approx. time of return to normal level after cessation of pumping ..... hours ..... minutes

PUMP INSTALLED: None - only test pump to determine capacity of well

Type ..... Make ..... Model No. .....

Motive power ..... Make ..... H.P. .....

Capacity ..... g.p.m. against ..... ft. of discharge head

No. bowls or stages ..... ft. of suction lift

DROP LINE:

Diameter ..... in.

Length ..... ft.

SUCTION LINE:

..... in.

..... ft.

STATE OF NEW YORK
WATER
FEB 11 1969
CO
RECE

Use of water Construction Well

Work started 1/16/69 Completed 1/20/69

Date 2/7/69 Driller MATHIES WELL & PUMP CO., INC.

License No. 153

NOTE: Show log of well—materials encountered, with depth below ground surface, water bearing beds and water levels in each, casings, screens, pumps, additional pumping tests and other matters of interest. Describe repair job.

See Instructions go to Well Drillers' Licenses and Reports—pp. 5-7.

County Suffolk

S 3-1506

ORIGINAL—TO COMMISSION

State of New York
Department of Conservation
Division of Water Resources

Well No. S-34743
(on preliminary report)

LOG

Ground Surf., El. _____ ft. above msl

^
_____ ft.
v
Top of Well

COMPLETION REPORT—LONG ISLAND WELL

Owner COUNTY OF SUFFOLK - Dept. of Health

Address County Center, Riverhead, N.Y.

Location of well f-#11 SPEONK RIVERHEAD RD. WESTHAMPTON

Dept of well below surface 1123-2" feet

Depth to ground water from surface 45 feet

Casings:

Diameter	18 in.	12 in.	8 in.	4 in.
Length	80 ft.	1077 ft.	63 ft.	135 ft.
Sealing	Impervious Fill & Clay			
Casings removed	none			

Screens: Make Johnson Openings #60

Diameter	DOM 8" in.	in.	in.
Length	40 ft.	ft.	ft.
Depth to top from top of casing	1077 3-3/4"		ft.

Pumping Test: Date 2/20/70 Test or permanent pump? Test

Duration of Test 8 days 0 hours

Maximum Discharge 735 gallons per minute

Static level prior to test 45 ft. in. below top of casing

Level during Max. Pumping 164 ft. in. below top of casing

Maximum Drawdown 119 ft.

Approx. time of return to normal level after cessation of pumping 30 hours minutes

Pump Installed: None

Type Make Model No.

Motive power Make H.P.

Capacity g.p.m. against ft. of discharge head

No. bowls or stages ft. of total head

Drop Line: Suction Line:

Diameter in. in.

Length ft. ft.

Use of water Permit obt. Well

Work started 5/19/69 Completed 2/20/70

Date 6/8/70 Driller Layne-New York Co. Inc.

License No.

Log of well attached
Well Prior to follow

STATE OF NEW YORK
WATER RESOURCES
JUN 10 1970
COMMISSION
RECEIVED

Note: Show log of well—materials encountered, with depths below ground surface, water bearing beds and water-levels in each, casings, screens, pumps, additional pumping tests and other matters of interest. Describe repair jobs.

See Instructions as to Well Drillers' Records and Reports - pp. 3-7.

ORIGINAL—TO COMMISSION

County Suffolk — W-2714 — Well No. S-38262

State of New York
Department of Conservation
Division of Water Resources

COMPLETION REPORT—LONG ISLAND WELL

LOG

Ground Surf. El. ____ ft. above msl

Top of Well

Owner N.Y. Dept of Transportation

Address

Location of well N/E/c SPEONK Riverhead Rd & Sunrise Hwy SPEONK

Depth of well below surface 103 feet

Depth to ground water from surface 50 feet

Casing: Diameter 6 in. ____ in. ____ in. ____ in.
Length 80' ft. ____ ft. ____ ft. ____ ft.
Sealing
Casing removed

Screens: Make ALL STAINLESS Openings SLOT
Diameter ____ in. ____ in. ____ in. ____ in.
Length ____ ft. ____ ft. ____ ft. ____ ft.
Depth to top from top of casing 80 ft.

Pumping Test: Date ____ Test or permanent pump? ____
Duration of Test ____ days ____ hours
Maximum Discharge ____ gallons per minute
Static level prior to test ____ ft. ____ in. below top of casing
Level during Max. Pumping ____ ft. ____ in. below top of casing
Maximum Drawdown ____ ft.
Approx. time of return to normal level after cessation of pumping ____ hours ____ minutes

Pump Installed:
Type SUBMERS Make STA-RITE Model No. USED
Motive power ELECT Make STA RITE H.P. 7½-10?
Capacity 230 g.p.m. against ± 100' ft. of discharge head
No. bowls or stages 6 ± 250 ft. of total head

Drop Lines: Diameter 3 in. ____ in.
Length TOTAL DEPTH TO ft. ____ ft.

Suction Lines:

Method of Drilling (Rotary, cable tool, etc.)
Use of Water domestic
Work started 9-15-76 Completed 9-15-76
Date 11-11-76 Driller McCoola
License No. 241

Note: Show log of well—materials encountered, with depth below ground surface, water bearing beds and water levels in each; casings, screens, pumps, additional pumping tests and other matters of interest. Describe repair jobs.

See Instructions as to Well Drillers' Licenses and Reports—pp. 5-7.

20	FINE SAND
	SAND + SMALL GRAVEL
50	WATER
	BROWN SAND
80	TOP OF SCREEN
	SAND + GRAVEL
103	

Suffolk County

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

S-58080 Well No.

COMPLETION REPORT — LONG ISLAND WELL

OWNER: John T Johnsen

ADDRESS: P.O. Box 768, Eastport NY

LOCATION OF WELL: 55 Circle Pl. S/o Old Cty Rd Speonk

DEPTH OF WELL BELOW SURFACE: 78 ft.

DEPTH TO GROUND WATER FROM SURFACE: 26 ft.

CASINGS

DIAMETER			
4 8 in.	in.	in.	in.

LENGTH			
73 ft.	ft.	ft.	ft.

SEALING

CASINGS REMOVED

SCREENS

MAKE: mustang S/s

OPENINGS: 10 slot

DIAMETER			
3 5/8 in.	in.	in.	in.

LENGTH			
5 ft.	ft.	ft.	ft.

DEPTH TO TOP FROM TOP OF CASING: 71

PUMPING TEST

DATE

TEST OR PERMANENT PUMP

DURATION OF TEST days hours

MAXIMUM DISCHARGE gallons per min.

STATIC LEVEL PRIOR TO TEST ft. in. below top of casing

LEVEL DURING MAXIMUM PUMPING ft. in. below top of casing

MAXIMUM DRAWDOWN ft.

Approximate time of return to normal level after cessation of pumping hrs. min.

PUMP INSTALLED

TYPE: sub

MAKE: F+W

MODEL NO.

MOTIVE POWER: elec

MAKE: F+W

H.P.: 1

CAPACITY: 15 g.p.m. against ft. of discharge

NUMBER BOWLS OR STAGES ft. of total head

DROP LINE

DIAMETER in.

LENGTH ft.

SUCTION LINE

DIAMETER in.

LENGTH ft.

METHOD OF DRILLING: ☐ rotary ☐ cable tool ☐ other

USE OF WATER: domestic

WORK STARTED: 4/13/76

COMPLETED: 4/13/76

DATE: 4/27/76

DRILLER: M Cirola

LICENSE NO.: 241

*LOG

Ground Surface

El. ____ ft. above sea

A/V ____ ft.

TOP OF WELL

rock

10'

water

26'

sand

71' gravel

screen

sand

78'

D. E. C. REGION I
ENVIRONMENTAL ANALYSIS UNIT
APR 29 1976
RECEIVED

*NOTE: Show log of well - materials encountered, with depth below ground surface, water bearing beds and water levels in each, casings, screens, pump, additional pumping tests and other matters of interest. Describe repair job. See Instructions as to Well Drillers' Licenses and Reports. Pages 5 - 7.

DUPLICATE — Retain

County Suffolk

ORIGINAL—TO COMMISSION

State of New York
Department of Conservation
Division of Water Resources

Well No. S-49935
(to preliminary report)

COMPLETION REPORT—LONG ISLAND WELL

LOG
Ground Surf., El. ____ ft. above sea

^ ____ ft.
v
Top of Well

Owner Mr. R. Hartman-% Eastern Iron Railings

Address 445 Montauk Highway, Westhampton Bch. N. Y.

Location of well Old Country Road, Speonk, N. Y.

Depth of well below surface 62 feet

Depth to ground water from surface 27 feet

Casings:

Diameter	5 in.	in.	in.	in.
Length	58 ft.	ft.	ft.	ft.
Sealing				
Casings removed				

Screens: Make Johnson Cook Openings 16

Diameter	5 in.	in.	in.	in.
Length	4 ft.	ft.	ft.	ft.

Depth to top from top of casing ____ ft.

Pumping Test: Date 10/15/73 Test or permanent pump? ____

Duration of Test ____ days ____ hours

Maximum Discharge 18 gallons per minute

Static level prior to test ____ ft. ____ in. below top of casing

Level during Max. Pumping ____ ft. ____ in. below top of casing

Maximum Drawdown ____ ft.

Approximate time of return to normal level after cessation of pumping ____ hours ____ minutes

D.E.C. REGION 1
OCT 18 197[illegible] ✓
WATER SUPPLY
& MGMT. UNIT
RECEIVED

Pump Installed:

Type Red Brass Make Myers Model No. S2C102-10A

Motive power Elec. Make Myers H.P. 1

Capacity 16 g.p.m. against ____ ft. of discharge head

No. bowls or stages ____ ft. of total head

Drop Line: Suction Line:

Diameter	1-1/4 in.	in.
Length	47 ft.	ft.

Method of Drilling (Rotary, cable tool, etc.) ____

Use of Water Domestic

Work started October 15, 1973 Completed October 15, 1973

Date October 16, 1973 Driller Kreiger Well & Pump

License No. 10

20	5	Grits, stones, mud & sand
40	4	coarse sand stones
60	4	coarse sand gravel
62	4	

Note: Show log of well—materials encountered, with depth below ground surface, water bearing beds and water levels in each, casings, screens, pumps, additional pumping tests and other matters of interest. Describe repair jobs.

See Instructions as to Well Drillers' Licenses and Reports—pp. 5-7.

K Quality Assurance Project Plan

Generic Quality Assurance Project Plan (GQAPP) for the Former BB&S Treated Lumber Site NYSDEC Site No. 1-52-123

July 2012

Prepared for:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
625 Broadway
Albany, New York 12233

Program QA Officer _____ Date _____

Table of Contents

Table of Contents (Cont.)

Section **Page**

Appendix

List of Tables

List of Figures

List of Abbreviations and Acronyms

AAS	atomic absorption spectroscopy
ASP	Analytical Services Protocol
ASTM	American Society for Testing and Materials
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CLP	Contract Laboratory Program
CM	construction management
COC	chain-of-custody
CPR	cardiopulmonary resuscitation
DOT	United States Department of Transportation
DUSR	Data Usability Summary Report
ECL	Environmental Conservation Law
EDD	electronic data deliverable
ELAP	Environmental Laboratory Accreditation Program
EPA	United States Environmental Protection Agency
FS	Feasibility Study
FSP	field sampling plan
GC/MS	gas chromatography/mass spectrometry
IATA	International Air Transport Association
ICP	inductively coupled plasma
ICS	interference check sample

List of Acronyms (Cont.)

IDW	investigation-derived waste
IIWA	immediate investigation work assignment
IRM	interim remedial measure
LCS	laboratory control sample
MDL	method detection limit
MEDD	multimedia electronic data deliverable
mL/min	milliliters per minute
MS/MSD	matrix spike/matrix spike duplicate
MSB	matrix spike blank
NELAP	National Environmental Laboratory Accreditation Program
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OVA	organic vapor analyzer
PARCC	precision, accuracy, representativeness, completeness, and comparability
PE	performance evaluation
PID	photoionization detector
PPE	personal protection equipment
PSA	preliminary site assessment
QA/QC	quality assurance/quality control
QAM	Quality Assurance Manual
QAPP	Quality Assurance Project Plan
QMP	Quality Management Plan
RA	remedial action
RD	remedial design
RI	Remedial Investigation

List of Acronyms (Cont.)

RPD	relative percent difference
SARA	Superfund Amendments and Reauthorization Act of 1986
SDG	sample delivery group
SI	site inspection
SOP	Standard Operating Procedure
SOW	scope of work
SVOC	semi-volatile organic compound
TCLP	toxicity characteristic leaching procedure
TRPH	total recoverable petroleum hydrocarbon
VOA	volatile organic analysis
VOC	volatile organic compound
VTSR	verified time of sample receipt

Distribution List

Party	Affiliation and Title	Revision	Date Sent
QAPP Original Distribution			
	QA Director		
	Project Manager(s)		
	NYSDEC Contracts		
	NYSDEC QA Officer		

Revision List

Revision	Modifications	Distributed

Laboratory Distribution and Approval

All site specific contract or subcontract laboratories working on project must perform analytical services and work in compliance with this QAPP.

Party	Affiliation and Title	Revision	Date Sent
QAPP Original Distribution			

This page must be completed and returned to NYSDEC with each revision of the QAPP.

Laboratory certifies that it will conduct analytical services in compliance with QAPP unless modified by any project-specific requirements listed in the site-specific QAPP or approved laboratories exceptions or clarifications.

Executed this day of , 20

_____
Contractor or Subcontractor Laboratory

_____
Signature

_____
Name

_____
Title

1 Project Management

This generic Quality Assurance Project Plan (GQAPP) has been prepared in support of projects performed for the New York State Department of Environmental Conservation (NYSDEC).

The GQAPP is applicable to the Former BB&S Treated Lumber Site project and needs to be implemented by site monitoring personnel and is subject to regulatory oversight by NYSDEC or that must be conducted in accordance with NYSDEC regulations.

This GQAPP has been prepared in accordance with "United States Environmental Protection Agency (EPA) Requirements for Quality Assurance Project Plans," final, EPA QA/R-5 (March 2001) and incorporates NYSDEC requirements. This GQAPP presents the policies, organization, objectives, functional activities, and specific quality assurance/quality control (QA/QC) procedures that will be employed by site monitoring personnel to ensure that all technical data generated are accurate, representative, and ultimately capable of withstanding judicial scrutiny. These activities will be implemented under the requirements of site monitoring personnel's comprehensive QA program as documented in the corporate Quality Management Plan (QMP).

The GQAPP is formatted to address the four major sections listed in the EPA QAPP guidance document: Project Management, Data Generation and Acquisition, Assessment and Oversight, and Data Validation and Usability.

1.1 Project Organization

The organizational chart for the site specific environmental investigation, design, or construction project work in New York is presented as Figure 1-1. The owner and project team members are primarily responsible for implementation of the QA program on NYSDEC related projects. All project communications are directed through the site specific project manager. The site specific project manager is the primary point of contact for the NYSDEC Project Manager and technical staff. The QA Officer for the site specific work provides independent review functions to verify that the projects are implemented in accordance with applicable QA documents. The site specific project manager is responsible for independent oversight of projects involving engineering services for design and construction. The

roles and specific QA responsibilities of key project personnel are described below.

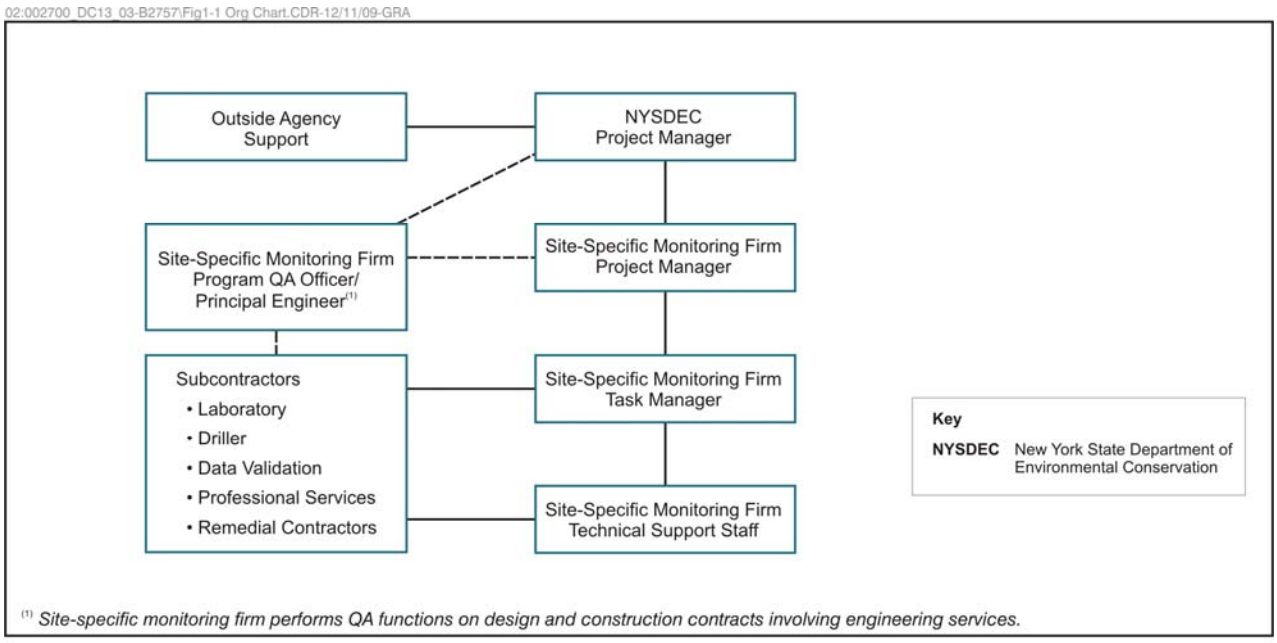

Figure 1-1 Organizational Chart

Project Manager

The site specific Project Manager is responsible for QA/QC functions for all task-specific operations on NYSDEC projects, and will coordinate with the owner on issues that impact the overall quality of performance on the site specific work.

The Project Manager will also be responsible for the overall quality of work performed under project activities as it relates to the following specific roles:

- Overseeing day-to-day performance including all technical and administrative operations;
- Interfacing frequently with the NYSDEC Project Manager and technical staff;
- Tracking schedules and budgets and managing of mobilization and contract closeout activities;
- Selecting and monitoring field staff;
- Managing the development of detailed work plans; and
- Reviewing and approving all final reports and other work products.

Corporate or Program QA Officer

The site specific monitoring firm's Corporate QA Director is responsible for ensuring compliance with the site specific QA program. The Program QA Officer is responsible for oversight of all QA/QC activities for NYSDEC projects. The QA Officer will remain independent of day-to-day, direct project involvement but will have the responsibility for ensuring that all project and task-specific QA/QC requirements are met. The QA Officer will have direct access to corporate executive staff, as necessary, to resolve any QA/QC problems, disputes, or deficiencies. The QA Officer's specific duties include:

- Reviewing and approving the QAPP;
- Conducting field and laboratory audits in conjunction and keeping written records of the audits;
- Coordinating with the NYSDEC technical staff, Project Manager, Task Managers, and laboratory management to ensure that QA objectives appropriate to the project are set and that laboratory and field personnel are aware of these objectives; and
- Recommending, implementing, and/or reviewing actions taken in the event of QA/QC failures in the laboratory or field.

Project Chemist

The Project Chemist is responsible for data validation and verification, generation of Data Usability Summary Reports (DUSRs), and independent assessment of the hard copy and electronic analytical data. The Project Chemist will report nonconformance with QC criteria (including an assessment of the impact on data quality objectives) to the appropriate managers.

Technical Support Staff

The technical support staff for this program will be drawn from the site specific pool of resources. The technical support staff will implement project and site tasks, analyze data, and prepare reports/support materials. All support personnel assigned will be experienced professionals who possess the degree of specialization and technical competence necessary to perform the required work effectively and efficiently.

Laboratories

Laboratories providing analytical services will be chosen as appropriate for the project requirements. All laboratories will be certified by the New York State Department of Health (NYSDOH) Environmental Laboratory Accreditation Program (ELAP) for the methods that they are contracted to perform. Laboratories

performing for Superfund sites with full data packages must be certified by NYSDOH for Contract Laboratory Program (CLP) analysis.

The laboratory QA programs are reviewed and approved by the QA Officer or the Project Chemist, and will be submitted to NYSDEC for approval. Copies of the laboratory QA manuals are available on request. The laboratory must provide an experienced Project Manager and a QA Officer that is independent of the day-to-day operations of the laboratory. The specific duties of the laboratory Project Manager and QA Officer for NYSDEC activities include:

- Reviewing the GQAPP to verify that analytical operations will meet project requirements;
- Documenting review and approval of GQAPP on distribution page;
- Reviewing receipt of all sample shipments and notifying the Project Manager and Project Chemist of any discrepancies within one day of receipt;
- Rapidly notifying the site specific Project Manager and Project Chemist regarding laboratory nonconformance with the GQAPP or analytical QA/QC problems affecting project samples; and
- Coordinating with the site specific Project Manager and Project Chemist, and laboratory management to implement corrective actions approved by NYSDEC or others as applicable.

1.2 Problem Definition/Background

All work is to be carried out consistent with NYSDEC and EPA requirements, protocols, and guidance.

1.3 Project Description

The work covered by this QAPP is defined under the site specific Site Management Plan (SMP). If necessary, site-specific QAPP information will be provided as an appendix to the field sampling plan (FSP).

1.4 Quality Objectives and Criteria

Quality objectives are qualitative or quantitative statements derived from the systematic planning process. Quality objectives are used to clarify the goals of the project and define the appropriate type of data to collect to support project decisions. General quality objectives for NYSDEC projects are summarized in Table 1-1.

Table 1-1 General Data Quality Objectives, NYSDEC Projects

Data Collection Activity	Quality Objectives	Standards[a]	Acceptability/ Performance Criteria[b]
Sampling and Analysis	To have samples and analytical results that accurately represents the nature and extent of contamination at the site. Data must be of sufficient quality to meet all regulatory requirements and allow assessment of impacts on human health by comparison to New York State criteria or background values. Data also may be used for long-term monitoring or to meet regulatory permit requirements. In these cases, data must meet the requirements of the permit.	■ NYSDEC Ambient Water Quality Standards ■ NYSDOH Soil Contaminant Level Guidance Values ■ NYSDEC Remedial Program Soil Cleanup Objectives	■ Data must be collected under an approved FSP using approved SOPs. Data must meet the acceptance and performance criteria documented in Section 2 of this QAPP. ■ Reporting limits should be below risk-based screening values for 90% of target analytes and 100% of critical analytes of concern. ■ Data must be compared to standards.
Field Screening Analysis	To have samples and analytical results that effectively indicate the nature and extent of contamination at the site. Technical personnel use data to determine the best locations to collect samples for laboratory analysis.	■ None	■ Data must be collected under an approved FSP using approved SOPs. Data must meet the acceptance and performance criteria for the screening method. ■ Reporting limits should be below anticipated concentrations of critical analytes of concern.
Subsurface Logging	To provide a description of the subsurface soils that is consistent and accurate, and to record drilling and sampling procedures and well construction details.	■ Site Specific SOPs (including Geologic Logging and Monitoring Well Installation)	■ Accurate, consistent, signed, and legible documentation as described in SOPs. ■ Unconsolidated materials described according to the Unified Soil Classification System. ■ Rock/soil material described using standard geologic nomenclature.
Surveying	To relate project work locations (including sample, monitoring well, and test pit locations) to existing local benchmarks.	■ Surveying subcontract ■ Differential correction for GPS data	■ Relation of all survey points to existing/known benchmarks. ■ Accurate horizontal coordinates (±0.5 foot for wells; ±3 feet for GPS locations). ■ Accurate vertical elevations (±0.01 foot) for permanent monitoring well locations.
Field Records	To document all field activities and to allow accurate representation field events in the final report. Records must be capable of withstanding legal scrutiny.	■ Section 2 of the QAPP ■ Site Specific SOPs (Field Activities Logbooks)	■ Consistency between field and laboratory data. ■ Clear and legible documentation for sample collection and equipment decontamination for final report.

Table 1-1 General Data Quality Objectives, NYSDEC Projects

Data Collection Activity	Quality Objectives	Standards[a]	Acceptability/ Performance Criteria[b]
Outside Records	To use the most current reference values, reports, or data from outside sources in data assessments and recommendations for the site.	None	■ All versions of data or standards must be the most current values available. ■ Data or standards must be accurately incorporated into the final report.
Data Review and Assessment	To review and verify data are generated according to the QAPP, and assign data qualifiers as necessary to indicate limitations on data usability.	■ NYSDEC DUSR Guidance ■ EPA Region 2 Data Validation SOPs ■ EPA National Functional Guidelines	■ Data must be reviewed by Project Chemist meeting minimum NYSDEC qualifications. ■ Data qualifiers or changes to data must be documented in a DUSR.

Notes:

[a] Major standards.
[b] Major or noteworthy acceptability criteria. All performance criteria must be verified using procedures listed in the QAPP.

Key:

GPS = Global Positioning System.
NYSDEC = New York State Department of Environmental Conservation.
NYSDOH = New York State Department of Health.
QAPP = Quality Assurance Project Plan.
SOP = Standard Operating Procedure.

Acceptance and performance criteria establish the quality and quantity of data needed to meet the project quality objectives. General acceptance or performance criteria for the collection, evaluation, or use of environmental data for NYSDEC projects are outlined in Section 2.5, Analytical Methods. Quality objectives or acceptance and performance criteria applicable to a project are specified in the site-specific QAPP or work plan.

1.4.1 Data Assessment Definitions

Acceptance and performance criteria are often specified in terms of precision, accuracy, representativeness, completeness, and comparability (PARCC) parameters. Numerical acceptance criteria cannot be assigned to all PARCC parameters, but general performance goals are established for most data collection activities. Numerical goals for analytical methods are presented in Section 2.4. Data assessment procedures throughout the QAPP clearly outline the steps to be taken, responsible individuals, and implications if QA objectives are not met. PARCC parameters are briefly defined below.

Precision

Precision measures the reproducibility of measurements under a given set of conditions. Specifically, it is a quantitative measure of the variability of a group of measurements compared to their average value, usually stated in terms of standard deviation or coefficient of variation. It also may be measured as the relative percent difference (RPD) between two values. Precision includes the interrelated concepts of instrument or method detection limits and multiple field sample variance. Sources of this variance are sample heterogeneity, sampling error, and analytical error.

Accuracy

Accuracy measures the bias of the measurement system. Sources of this error are the sampling process, field contamination, preservation, handling, sample matrix, sample preparation, and analysis. Data interpretation and reporting may also be significant sources of error. Typically, analytical accuracy is assessed through the analysis of spiked samples and may be stated in terms of percent recovery or the average (arithmetic mean) of the percent recovery. Blank samples are also analyzed to assess sampling and analytical bias (i.e., sample contamination). Background measurements similarly assess measurement bias.

Representativeness

Representativeness expresses the degree to which data represent a characteristic of a population, a parameter variation at a sampling point, or an environmental condition. Representativeness is a qualitative parameter, which is most concerned with proper design of the measurement program. Sample/measurement locations may be biased (judgmental) or unbiased (random or systematic). For unbiased schemes, sampling must be designed not only to collect samples that represent

conditions at a sample location, but also to select sample locations, which represent the total area to be sampled.

Completeness

Completeness is defined as the percentage of measurements performed that are judged to be valid. Although a quantitative goal must be specified, the completeness goal is the same for all data uses—that a sufficient amount of *valid* data be generated. It is important that critical samples are identified and plans are made to ensure that valid data are collected for them.

Comparability

Comparability is a qualitative parameter expressing the confidence with which one dataset may be compared to another. Sample data should be comparable with other measurement data for similar samples and sample conditions. This goal is achieved through the use of standard techniques to collect and analyze samples.

1.5 Special Training/Certification

The site specific monitoring firm is committed to providing vigorous training in health and safety procedures, the proper use of protective equipment, and overall policy objectives. General training requirements for NYSDEC activities are as follows:

- Site monitoring employees that participate in on-site activities must have completed the 40-hour health and safety training program and the cardiopulmonary resuscitation (CPR)/first aid certification course. To continue such participation, each employee must successfully complete a minimum of eight hours of refresher training, annually; and

- All personnel shipping samples must complete the United States Department of Transportation (DOT) hazardous materials transportation training and certification, including training in specific International Air Transport Association (IATA) regulations (air shipments).

1.6 Documentation and Records

The site monitoring firm's QA Officer will approve the site specific QAPP and maintain the most current approved version of the document. The site specific Project Manager is responsible for providing the most current copy of the site specific QAPP and other planning documents to the project team members.

In addition to the QAPP and other planning documents, the primary documentation for the project is field records and analytical data packages. Requirements for field records are documented in site monitoring firm's Standard Operating Procedures (SOPs) for Field Activities Logbooks and Geotechnical Logbooks and are described briefly below. Requirements for analytical data packages for NYSDEC

activities are also described below. The remainder of the QAPP describes additional project documentation and record requirements for QA/QC assessments, data validation, data management, and other areas.

1.6.1 Field Documentation

Sample Identification

Samples will be identified using the format described below. Each sample will be labeled, chemically preserved (if required), and sealed immediately after collection. To minimize handling of sample containers, labels will be completed prior to sample collection as practicable. The sample label will be completed using waterproof ink and will be firmly affixed to sample containers and protected with clear tape. The sample label will give the following information:

- Date of collection;
- Unique sample number;
- Analyses requested; and
- Preservation.

Each sample will be referenced by sample number in the logbook and on the chain-of-custody (COC) record.

Individual samples will be identified by a unique alphanumeric code. Normal field samples (non-quality-control) will be numbered according to the following convention:

SSS-MC-###-Q

SSS - Three letter code for site name

MC - Matrix code as designated below
- Sequential sample number
Q - Quality control sample code such as D for duplicate, F for filtered, S for split, etc.

The matrix codes are as follows:

AS - Bulk Asbestos
BA - Indoor Air from Basement or Crawlspace
DW - Drinking Water
EB - Equipment Blank
FA - Indoor Air, First Floor (not basement)

GW - Groundwater
OA - Outdoor Air
SD - Sediment
SB - Subsurface Soil
SF - Surface Soil
SS - Sub-slab Vapor
SV - Soil Vapor
SW - Surface Water
TB - Trip Blank
WS - Waste

Samples collected with an additional volume for matrix spike/matrix spike duplicates (MS/MSD) will be designated on the COC.

Field Logs and Data Forms

Field logs and data forms are necessary to provide sufficient data to enable participants to reconstruct events that occurred during the project and to refresh the memory of field personnel should they be called upon to give testimony during legal proceedings. Field logs also should document any deviations from the work plan, QAPP, or other applicable planning document. Procedures for recording information are specified in the Field Activities Logbook SOP. All field logs will be kept in a bound notebook containing numbered pages unless a specific field form is completed. All entries will be made in waterproof ink and the time of the entry will be recorded. The top of each page of the logbook or field form will contain the site specific project number, project name, and date that the entries on that page were recorded. No pages will be removed for any reason. Corrections will be made according to the procedures given later in this section. The field logs will include both site- and task-specific information.

Recording of information related to site activities is the responsibility of the site specific monitoring staff and will include a complete summary of the day's activities at the site and any communications outside the project team. Site information includes:

- Name of the person making the entry (signature);
- Names of team members, subcontractors, and visitors on site;
- Levels of personal protection equipment (PPE):
  - Level of protection originally used,
  - Changes in protection, if required, and
  - Reasons for changes; and
- Time spent on site.

Task-specific information may be recorded in multiple field logbooks. The task-specific information will include:

- Drilling information, including:
  - Method employed,
  - Diameter of borehole and well casing,
  - Materials used,
  - Depth of borehole, and
  - Well construction (if appropriate);

- Documentation on samples collected, including:
  - Construction of existing wells (if appropriate),
  - Sampling location and sample identification number,
  - Sampling depth for subsurface soil and surface water (if depth-specific surface water samples are collected) samples,
  - Flow rate of water from in-place plumbing (500 milliliters per minute [mL/min]) for samples of existing water supplies,
  - Sampling date, time, and personnel,
  - Sample sequence (order in which samples were collected),
  - Equipment used (including the use of fuel-powered units/motors during surface water sampling),
  - Type of sample (e.g., grab, composite, QC) and matrix,
  - Amount of each subsample or aliquot (if sample is a composite), and
  - Sample preservation and verification of preservation;

- Types of field QC samples, including when and where they were collected. The description of rinsate sample collection should include the equipment rinsed and the actual field samples collected with that equipment prior to collection of the rinsate;

- Information regarding well purging including:
  - Depth to water and total well depth,
  - Calculations used for volume purged,
  - Volume purged,
  - Equipment used,
  - Field measurements,
  - Length of purge time, and
  - Date and time well was purged;

- Drum inventory:
  - Type of drum and description of contents, and
  - Description of material in the drum and which ayers were sampled (if performed);

- Field equipment used, equipment identification numbers, and calibration information;
- On-site measurement data;
- Field observations and remarks;
- Weather conditions;
- Decontamination procedures;
- Unusual circumstances or difficulties; and
- Initials of person recording information.

Corrections to Documentation Notebook

As with any data logbooks, no pages will be removed for any reason. If corrections are necessary, they must be made by drawing a single line through the original entry (so that the original entry can still be read) and writing the corrected entry alongside. The correction must be initialed and dated. Most corrected errors will require a footnote explaining the correction.

Photographs

Photographs will be taken as directed by the site specific Team Leader. Documentation of a photograph is crucial to its validity as a representation of an existing situation. The following information will be noted in the task log concerning photographs:

- Date, time, location, and direction photograph was taken;
- Description of the photograph taken;
- Reasons why the photograph was taken;
- Sequential number of the digital photo; and
- Camera system used.

1.6.2 Laboratory Data Reporting

The data packages for all CLP and similar Superfund analytical services are consistent with NYSDEC Analytical Services Protocol (ASP) Category B (July 2005) and, therefore, must include a full data package with all associated sample and QC results, calibrations, and raw data. The data packages for long-term monitoring events are consistent with NYSDEC ASP Category A, and therefore must consist of a case narrative, COC, summary table of sample identifications and sample

tracking information, a summary of analytical results, and a summary of QC results. The laboratory will provide a summary package of results for all data packages. The laboratory will provide a summary of the sample analyzed, methods used, and date and time of analysis. The laboratory will provide an electronic data deliverable that matches all data reported on the hard copy analytical report. Electronic data report requirements are described in Section 2.10.

Within 48 hours of sample receipt, the laboratory will provide a sample receipt file and copy of the completed COC.

The analytical summary report will include the sample aliquot analyzed, final extract volume, and dilution factor. The analytical summary data report also will include the laboratory reporting limit and method detection limit (MDL) for all target compounds. These limits will be corrected for percent moisture and all dilution factors. Any compounds found less than the reporting limit, but greater than the MDL will be reported and qualified with a "J" flag as estimated.

QC reports must provide a summary report or batch identifier clearly linking all QC results to actual field sample results. QC summary reports must include the laboratory control limits and flag any result reported outside control limits. The case narrative must include an explanation of all QC results reported outside control limits. The laboratory must provide copies of any nonconformance or corrective action forms associated with data in the laboratory report.

For Category A, the laboratory should provide copies of chromatograms for any samples for which elevated reporting limits are used because of sample matrix, but no target compounds are found above the reporting limit.

For organic analytes reported in both Category A and Category B deliverables, the laboratory must report results of the most concentrated extract analysis in order to achieve required quantitation limits.

1.6.3 Record Retention

All records related to the project must be stored in secure areas consistent with requirements in site specific QMP. All records related to the analytical effort must be maintained at the laboratory or in the office (for field screening data) in lockable filing cabinets for at least one year, except those stored in the computer (i.e., cost information, scheduling, custody transfers, and management records). All records must be maintained in a secure area for a period of six years after the end of the calendar year in which the final report is issued.

Types of records to be maintained in addition to the final technical reports for NYSDEC include the following:

- Field logbooks, sampling documents, photographs, QA/QC records, and any other supporting documentation for collection of field samples;

- Administrative records including time cards, costing, and scheduling information; and

- Client correspondence, subcontractor records, minutes of meetings, and any related project management records.

Types of records to be maintained by the laboratory in addition to the analytical report for the NYSDEC include the following:

- Complete COC records from sample receipt to destruction. Sample destruction records must contain information on the manner of final disposal;

- Supporting documentation for any nonconformance or corrective action forms supplied in the analytical report or related to the analysis of project samples;

- Computer records on disk with magnetic tape backup of cost information, scheduling, laboratory COC transfers, and laboratory management records;

- All laboratory notebooks including raw data such as readings, calibration details, and QC results; and

- Hard copies of data system printouts (i.e., chromatograms, mass spectra, and inductively coupled plasma [ICP] data files).

2 Data Generation and Acquisition

This section of the QAPP contains descriptions of all aspects of the implementation of field, laboratory and data handling procedures to meet the requirements of NYSDEC activities. The QAPP provides the basis for ensuring that appropriate methods are used and thoroughly documented. These procedures will be adapted, as appropriate, to meet the objectives of each NYSDEC project as described in the appropriate work plan.

2.1 Sampling Process Design

The sampling process design is documented in the work plan or in the FSP for each site. The FSP will include a project schedule and a summary table listing the type of samples collected, the sampling location, the rationale for selecting the location, sample handling procedures, analytical methods, and the number and type of QA/QC samples.

2.2 Sampling Methods

The sampling methods are documented in the work plan or in the FSP. The site specific monitoring firm's sampling SOPs serve as the basis for sampling procedures.

In general, sampling at a site will progress from clean areas to contaminated areas. This minimizes the potential for cross contamination of samples and, subsequently, eliminates data anomalies or misinterpretation of the extent of contamination. The order of sample collection at a specific location normally proceeds as follows:

1. Volatile organic compounds (VOCs) or other volatile parameters;

2. Extractable organics (including total recoverable petroleum hydrocarbons [TRPH]);

3. Oil and grease;

4. Total metals;

5. Dissolved metals;

6. Microbiological samples;

7. Other inorganics; and

8. Physical parameters (including ignitability, corrosivity, and reactivity).

This sequence helps maintain the representativeness of samples and analytical results.

The remainder of this section describes typical procedures for equipment decontamination and the handling of investigation-derived waste (IDW), and sample containers, preservatives, holding times, packing, and shipping. Specific procedures for each site are provided in the work plan or in the FSP.

2.2.1 Equipment Decontamination

Sampling methods and equipment are chosen to minimize decontamination requirements and the possibility of cross-contamination. Equipment or supplies that cannot be effectively decontaminated (e.g., sample tubing or rope) will be disposed of after sampling. Investigation/sampling equipment will be cleaned at the site prior to use, between sampling locations, and prior to transport off-site. Decontamination of field equipment will be noted in the field logbook. If it is necessary to make decontamination procedure changes in the field, the changes will be noted in the logbook. Otherwise, a notation will be made each day that decontamination was conducted as specified in the work plan or in the FSP. Rinsate blanks will be collected to verify the effectiveness of decontamination procedures. If field blanks indicate poor techniques, the QA Officer and Project Manager will ensure techniques are modified and samplers trained appropriately.

All decontamination will be performed in accordance with NYSDEC-approved procedures. Decontamination of large equipment will consist of the following:

- Removal of foreign matter; and

- High-pressure steam cleaning.

Decontamination of heavy equipment will be performed by the subcontractor and will be performed in a decontamination pad as described in the contract.

The following alternative procedures will be used for smaller equipment and may also be employed for downhole tooling such as split spoons and Geoprobe rods or routine sampling equipment:

- Initially remove all foreign matter;

- Scrub with brushes in a laboratory-grade detergent solution (e.g., Alconox);
- Rinse with potable water with a final deionized or distilled water rinse; and
- Allow to air dry.

If sampling for metals is conducted, then an additional rinse with a 10% nitric acid solution will be added between the potable and deionized water rinses.

Sensitive down-hole devices that only contact water (e.g., water level indicator and miniTROLL pressure transducer) may be decontaminated by triple rinsing with deionized or distilled water. A temporary decontamination area will be established in each work area using heavy plastic sheeting as a pad. The decontamination will be performed by the field team.

Fluids generated during decontamination will be handled according to procedures described in Section 2.2.2.

2.2.2 Investigation-Derived Waste (IDW)

Unless otherwise directed by NYSDEC staff, all IDW will be handled in a manner consistent with requirements in the work plan and applicable federal and state regulations. IDW includes disposable equipment and PPE, purge and development waters, drilling fluids, soil cuttings, and decontamination fluids. Waste streams will not be mixed and will be segregated to the maximum extent possible.

Investigation-derived soils and water will be field-screened for organic vapors with an organic vapor analyzer (OVA) or photoionization detector (PID) and visual inspected to initially determine whether these wastes are potentially contaminated. In order to minimize the generation of drummed wastes and the costs associated with storage, testing, transportation, and disposal of drums, IDW will be handled in the following manner:

- **Soil cuttings from boreholes:** as much of the soil cuttings as possible will be used as backfill. Remaining cuttings that are not significantly contaminated (OVA or PID readings of 5 parts per million [ppm] or less and lack of staining, sheen, etc.) will be spread on the ground near the site of generation if the location is in a suitably undeveloped area. If this is not possible or if contamination is suspected, the excess soil cuttings will be drummed;
- **Soil cuttings from monitoring well boreholes:** cuttings that are not significantly contaminated (OVA or PID readings of 5 ppm or less and lack of staining, sheen, etc.) will be spread on the ground near the site of generation if the location is in a suitably undeveloped area. If this is not possible or if contamination is suspected, the excess soil cuttings will be drummed;

- **Development and purge waters from monitoring wells and decontamination water:** water that is not significantly contaminated (OVA or PID readings of 5 ppm or less, lack of sheen, etc.) will be discharged to the surface in the area where it was generated only if the area is suitably undeveloped (e.g., not paved and not on residential property). If the water cannot be discharged to the surface, then it may be discharged to the municipal sanitary sewer system pending receipt of a temporary discharge permit from the local sewer department. Alternatively, significantly contaminated waters or waters that cannot be discharged will be drummed; and

- **Used sampling equipment and PPE:** unless field screening indicates that PPE and other solid wastes are contaminated to the level that they can not be disposed of as non-hazardous waste, this material will be double-bagged and disposed of off-site as non-regulated solid waste.

Wastes that need to be drummed will be placed in United States Department of Transportation (DOT) approved 55-gallon drums and stored at a central storage location selected by NYSDEC, pending analysis and disposal. Drums will be staged within secondary containment units and covered with a plastic tarp if stored outside. All drums containing IDW will be labeled as to their contents, the site name, location where the material was generated, and date the waste was generated. Composite samples of like wastes will be collected for toxicity characteristic leaching procedure (TCLP) VOCs, TCLP semivolatile organic compounds (SVOCs), TCLP pesticides/herbicides, TCLP metals, PCBs, and pH. A waste disposal firm will then be subcontracted to haul the waste off-site to an appropriate disposal facility as either solid or hazardous waste. The site specific monitoring firm will coordinate drum hauling with the NYSDEC project manager to ensure that NYSDEC or the BB&S property owner or responsible party is available to sign the waste shipping manifest(s), as legal waste generator.

2.3 Sample Handling and Custody

2.3.1 Sample Containers

The volumes and containers required for sampling activities are indicated in Table 2-1. Prewashed sample containers will be provided by the laboratory and will be wide-mouth jars with Teflon-lined caps unless otherwise indicated. The laboratory must use an approved specialty container supplier, which prepares containers in accordance with EPA bottle-washing procedures. The laboratory must maintain a record of all sample bottle lot numbers shipped in the event of a contamination problem. Trip blanks will be transported to the site inside the same box as volatile organic analysis (VOA) vials or as the air sampling canisters.

Table 2-1 Summary of Analytical Methods, Preservatives, and Holding Times, NYSDEC Projects

Parameter	Method	Containers/Preservative for Solid Samples[a]	Containers/Preservative for Aqueous Samples[a]	Holding Time for Solid Samples[a]	Holding Time for Aqueous or Air Samples[a]
Contract Laboratory Program Analysis					
TCL VOCs	OLM04.2/SOM01.0	Two pre-weighed 40-mL plus one pre-weighed 40-mL vial with stir bar and methanol and one 4-oz. glass vial with septum (if no other containers are shipped)	Three 40-mL glass vials with septa, preserved HCl < pH 2	48 hours for analysis or freezing to <7˚C and 12 days for analysis following freezing	12 days for waters with chemical preservative, and 5 days for unpreserved sample
TCL SVOCs	OLM04.2/SOM01.0	One 8-oz. glass jar	Two 1-L amber glass bottles	12 days/40 days[d]	5 days/40 days[d]
TCL Pest/PCB	OLM04.2/SOM01.0	One 8-oz. glass jar	Two 1-L amber glass bottles	12 days/40 days[d]	5 days/40 days[d]
TAL Metals/ Mercury	ILM05.3	One 8-oz. glass jar	One 1-L HDPE bottle, preserved HNO_3 to pH <2	180 days/26 days for mercury	180 days/26 days for mercury
TAL Cyanide	ILM05.3	One 8-oz. glass jar	One 1-L HDPE bottle, preserved NaOH to pH >12	180 days/12 days for cyanide	180 days/12 days for cyanide
Air/Vapor Samples					
Target VOCs	TO-15[g]	1.0, 1.4, or 6.0 L Minican (depending on lab availability	NA		30 Days
Solid Waste					
Ignitability	SW-846 Chapter 8 (8.1)	One 8-oz. glass jar	One 1-L HDPE bottle for both tests	40 days	40 days
Corrosivity (as pH)	SW-846 Chapter 8 (8.2)	One 8-oz. glass jar		28 days	28 days
Reactivity	SW-846 Chapter 8 (8.3)	One 8-oz. glass jar	Two 1-L HDPE bottles	28 days	28 days

Table 2-1 Summary of Analytical Methods, Preservatives, and Holding Times, NYSDEC Projects

Parameter	Method	Containers/Preservative for Solid Samples[a]	Containers/Preservative for Aqueous Samples[a]	Holding Time for Solid Samples[a]	Holding Time for Aqueous or Air Samples[a]
TCLP Extraction	1311	Two 8-oz. glass jars	Various (see below)	5 days for SVOCs and mercury, 7 days for VOCs, 180 days for metals	5 days for SVOCs and mercury, 7 days for VOCs, 180 days for metals
TCLP Metals/ Mercury	6010B/7471	One 8-oz. glass jar	One 1-L HDPE bottle[c]	26 days[b] for mercury, 180 days for metals	26 days[b] for mercury, 180 days for metals
TCLP Volatile Organics	8260B	One 125-mL VOA jar	Two 40-ml glass vials with septa	7 days	7 days
TCLP Base/ Neutral Acid Extractables	8270C	One 8-oz. glass jar	Two 1-L amber glass bottles	7 days, 40 days for analysis[b]	7 days, 40 days for analysis[b]
TCLP Pesticides	8081A	One 8-oz. glass jar	Two 1-L amber glass bottles	7 days, 40 days for analysis[b]	7 days, 40 days for analysis[b]
TCLP Herbicides	8151A	One 8-oz. glass jar	Two 1-L amber glass bottles	7 days, 40 days for analysis[b]	7 days, 40 days for analysis[b]
TCLP STARS Base/Neutral Extractables	8270C	One 8-oz. glass jar	Two 1-L amber glass bottles	7 days, 40 days for analysis[b]	7 days, 40 days for analysis[b]
TCLP STARS Volatile Organics	8021B or 8260B	One 125 mL VOA jar	Two 40-mL glass vials with septa	7 days[b]	7 days[b]
Additional Methods					
Hardness	130.1,130.2	NA	One 1-L HDPE bottle (can combine with metals) preserved HNO_3 to pH <2	NA	180 days
pH	150.1	NA	To be performed in the field	NA	ASAP
TDS	160.1	NA	One 1-L HDPE bottle	NA	24 hours
TSS	160.2	NA	One 1-L HDPE bottle	NA	5 days

Table 2-1 Summary of Analytical Methods, Preservatives, and Holding Times, NYSDEC Projects

Parameter	Method	Containers/Preservative for Solid Samples[a]	Containers/Preservative for Aqueous Samples[a]	Holding Time for Solid Samples[a]	Holding Time for Aqueous or Air Samples[a]
Priority Pollutant Metals	200.7	One 4-oz. glass jar	One 1-L HDPE bottle preserved HNO_3 to pH <2	180 days, 26 days for mercury	180 days, 26 days for mercury
Alkalinity	310.1, 310.2	NA	One 1-L HDPE bottle	NA	12 days
Nitrate or Nitrite	353.2/300,/9056	One 4-oz. glass jar	One 1-L HDPE bottle (can combine with pH and BOD_5)	24 hours	24 hours
Nitrate-Nitrite	353.2	One 4-oz. glass jar	One 1-L HDPE bottle preserved H_2SO_4 to pH <2	26 days	26 days
Orthophosphorus	365.2/300,/9056	NA	One 1-L HDPE bottle (can combine with pH and BOD_5)	NA	24 hours
Total Phosphorus	365.2	One 4-oz. glass jar	One 1-L HDPE bottle preserved H_2SO_4 to pH <2	26 days	26 days
Chloride, Bromide, Sulfate, Fluoride	300, 9056 or individual methods	One 4-oz. glass jar	One 1-L HDPE bottle	26 days	26 days
COD	410.1	NA	One 1-L HDPE bottle (can combine with ammonia and TKN) preserved H_2SO_4 to pH <2	NA	26 days
Oil/Grease	1664	One 4-oz. glass jar	One 1-L amber glass bottle preserved HNO_3 to pH <2	26 days	26 days
TRPH	1664	One 4-oz. glass jar	One 1-L amber glass bottle preserved H_2SO_4 to pH <2	26 days	26 days
Metals/Mercury	6010B	One 4-oz. glass jar	One 125-mL HDPE bottle preserved HNO_3 to pH <2	180 days/26 days for mercury	180 days/26 days for mercury
Chromium, Hexavalent	7196A	One 4-oz. glass jar	One 1-L HDPE bottle unpreserved or preserved pH of 9.3 to 9.7 with an ammonia sulfate buffer solution	24 hours from collection for unpreserved soils and 28 days for preserved soils	24 hours from collection for unpreserved water and 28 days for preserved water
PCBs	8082	One 4-oz. glass jar	Two 1-L amber glass bottles	12 days/40 days[d]	5 days/40 days[d]

Table 2-1 Summary of Analytical Methods, Preservatives, and Holding Times, NYSDEC Projects

Parameter	Method	Containers/Preservative for Solid Samples[a]	Containers/Preservative for Aqueous Samples[a]	Holding Time for Solid Samples[a]	Holding Time for Aqueous or Air Samples[a]
VOCs and related tests	8260B/8021B/8015B	Two pre-weighed 40-mL with deionized water and one pre-weighed 40-mL vial with stir bar and methanol and one 4-oz. glass vial with septum(if no other containers are shipped)	Three 40-mL glass vials with septa preserved HCl < pH 2	48 hours for analysis or freezing to <7˚C and 12 days for analysis following freezing	12 days for waters with chemical preservative, and 5 days for unpreserved sample
SVOCs and related tests	8270C	One 8-oz. glass jar	Two 1-L amber glass bottles	12 days/40 days[d]	5 days/40 days[d]
Chlorinated Dioxins and Furans	8280A or 8290	One 8-oz. glass jar	Two 1-L amber glass bottles	30 days/45 days[d]	30 days/45 days[d]
Cyanide	9010C/9012B	One 4-oz. glass jar	One 1-L HDPE bottle preserved NaOH to pH >12	12 days	12 days
TOX	9020B	One 4-oz. glass jar	One 1-L amber glass preserved H_2SO_4 to pH <2	7 days	7 days
pH	9045C/9040B	One 4-oz. glass jar	One 125-mL HDPE bottle	ASAP	ASAP
Total Phenols	420.1	One 4-oz. glass jar	One 1-L amber glass preserved H_2SO_4 to pH <2	26 days	26 days
Total Organic Carbon	Lloyd Kahn; 415.1; 9060	One 4-oz. glass jar	NA	26 days	26 days
Total Glycol	DEC 89-9	One 4-oz. glass jar	One 1-L glass	26 days	14 days
Specific Gravity	SM 22710 F	NA	Can combine with other analyses (requires 500 mL)	NA	40 days
TKN	351.3	One 4-oz. glass jar	One 1-L HDPE bottle (can combine with COD and ammonia) preserved H_2SO_4 to pH <2	26 days	26 days

Table 2-1 Summary of Analytical Methods, Preservatives, and Holding Times, NYSDEC Projects

Parameter	Method	Containers/Preservative for Solid Samples[a]	Containers/Preservative for Aqueous Samples[a]	Holding Time for Solid Samples[a]	Holding Time for Aqueous or Air Samples[a]
Ammonia	350.2	One 4-oz. glass jar	One 1-L HDPE bottle (can combine with COD and TKN) preserved H_2SO_4 to pH <2	26 days	26 days
BOD_5	405.1	NA	One 1-L HDPE bottle (can combine with pH and nitrates)	NA	24 hours

[a] All samples to be cooled to 4°C except for metals analysis samples shipped alone. Sample containers must have Teflon-lined lids. Holding times are based on verified times of sample receipt and are consistent with NYSDEC requirements. 0.008% Na2S2O3 to be added to water samples in the presence of residual chlorine.
[b] Time listed is from TCLP extraction.
[c] TCLP analysis of water samples assumes less than 0.5% solids.
[d] Holding time is 5 days from collection to extraction and 40 days from extraction to analysis.

Key:

ASAP = As soon as possible.
BOD_5 = Biochemical oxygen demand-5.
BTX = Benzene, toluene, xylene.
COD = Chemical oxygen demand.
EPA = U.S. Environmental Protection Agency.
HDPE = High-density polyethylene.
HNO_3 = Nitric acid.
H_2SO_4 = Sulfuric acid.
L = Liter.
mL = Milliliter.
NA = Not applicable.
NaOH = Sodium hydroxide.
oz. = Ounce.
PCBs = Polychlorinated biphenyls.
SM = Standard Methods of Analysis for Water and Wastewater.
STARS = NYSDEC Spill Technology and Remediation Series (Memorandum No. 1 [1992]).
SVOCs = Semivolatile organic compounds.
TAL = Target Analyze List.
TCL = Target Compound List.
TCLP = Toxicity characteristic leaching procedure.
TDS = Total dissolved solids.
TKN = Total Kjeldahl nitrogen.
TOX = Total Organic Halides.
TRPH = total recoverable petroleum hydrocarbon.
TSS = Total suspended solids.
VOC = Volatile organic compounds.

For air samples, laboratories will follow cleaning procedures and checking for canisters as outlined in Method TO-15 and the NYSDOH Guidance for Soil Vapor Instrusion. Laboratories are required to certify that containers are clean and provide copies of the certification in the data package.

2.3.2 Samples Preservation and Holding Times

All samples requiring preservation will be collected in containers pre-preserved by the laboratory supplier. If field preservation is necessary, preservation will be immediately after collection and transportation to the site office. A clean, disposable pipette or a premeasured, single-use, glass ampule will be used to transfer liquid preservatives to the sample container. Care will be taken to avoid contact between the pipette or ampule and the sample or sample container. Solid preservatives will be transferred to the sample container using a clean, stainless-steel spoon. The sample preservation will be checked on representative samples by pouring the sample into a clean cup and testing with pH paper to determine if a sufficient amount of preservative has been used. Preserved samples for VOA will be tested on an extra vial at a rate of approximately 10%. Use of additional preservative also will be recorded in the logbook. Field blanks, which require preservation, will be preserved with a volume of reagent equal to the volume of reagent used in the samples that the blanks represent. A list of preservatives and holding times for each type of analysis are indicated in Table 2-1. Additional preservation requirements and holding times for non-target analyses are listed in the NYSDEC ASP.

Samples for soil VOCs will be collected in accordance with Method 5035. The laboratory must supply two pre-tarred VOA vials with 5 mL of deionized water, one pre-tarred vial with methanol, and one 2-ounce container for dry weight analysis (only if no other tests are required). The laboratory also must provide one coring device per sample for collection of a 5-gram plug. Soil samples for VOCs must arrive at the laboratory within 48 hours to be frozen at -7^{o}C.

Reagents used for preservation are reagent-grade and are supplied by the laboratory or approved chemical supplier. The laboratory must maintain traceability records on preservatives in the event of potential field contamination of samples. Each bottle is received from the laboratory and must be clearly labeled with laboratory name, type of chemical, lot number, and expiration date. Field personnel should record the date used in the field, site name, and site specific project number on the label or in the site logbook. Fresh sample containers and preservatives will be obtained from laboratory stocks prior to mobilization for each sampling event. Preservatives stored on site will be disposed of after use unless containers are sealed and stored under COC in a secure area. No preservatives will be used passed the expiration date.

Sample preservation will be verified at the laboratory at receipt or prior to analysis for VOCs. The preservation or pH will be recorded in the logbook. If samples are improperly preserved, a corrective action form will be submitted to the laboratory project manager for follow-up action. The laboratory will notify the Field Leader or Project Manager to implement corrective action in the field.

Methods for the analysis of soils, sediments, or solid matrices for VOCs will be used in conjunction with Method 5035A: Closed-System Purge-and-Trap and Extraction for Volatile Organics in Soil and Waste Samples. The recommended collection technique for Method 5035A calls for the transfer of a 5-gram aliquot of sample to a tarred empty 40-mL VOA vial. The sample is iced at 4°C for transport to the lab. The laboratory will refrigerate VOA vials at 4°C ± 2°C for 48 hours or less or preserve by freezing at < -7°C within 48 hours of receipt to extend holding time to 14 days.

2.3.3 Sample Handling

The transportation and handling of samples must be accomplished in a manner that not only protects the integrity of samples but also prevents any detrimental effects due to the possible hazardous nature of the samples. Regulations for packaging, marking, labeling, and shipping of hazardous materials are promulgated by the DOT in 49 CFR 171 through 177. The site specific monitoring firm needs to trains all staff responsible for the shipment of samples in these regulations. Procedures for sample packing and shipping are documented in the site specific monitoring firm's SOP.

Sample Packaging

Samples must be packaged carefully to avoid breakage or contamination and must be shipped to the laboratory at proper temperatures. The following sample packaging requirements will be followed:

- Sample bottle lids must never be mixed. All sample lids must stay with their original containers;
- Shipping coolers must be partially filled with packing materials and ice (when required) to prevent bottles from moving and breaking during shipping;
- Environmental samples are to be cooled. Wet ice packaged in sealable, plastic bags will be used to cool samples during shipping. Ice is not to be used as a substitute for packing materials;
- Any remaining space in the cooler should be filled with inert packing material such as bubble wrap. Under no circumstances should material such as sawdust or sand be used;

- A duplicate custody record must be placed in a plastic bag and taped to the inside of the cooler lid. Custody seals are affixed to the sample cooler; and

- All containers for a given sample will be shipped in the same cooler when possible. In cases where samples for volatile analysis would be shipped in several coolers on a single day, VOA vials will be consolidated into a single cooler to minimize the number of required trip blanks.

Shipping Containers

Environmental samples will be properly packaged and labeled for transport and dispatched to the laboratory facility. The SOP procedure will be followed to mark and label sample shipments. A separate COC record must be prepared for each shipping container. The following requirements for shipping containers will be followed.

Sample shipping containers will generally be commercially purchased coolers (e.g., Coleman coolers) or boxes provided from the laboratory for air canisters. Each container will be custody-sealed for shipment, as appropriate. The container custody seal will consist of filament tape wrapped around the package at least twice and custody seals affixed in such a way that access to the container can be gained only by cutting the filament tape and breaking a seal.

Field personnel will make arrangements for transportation of samples to the laboratory. In most cases, samples will be shipped using an overnight express carrier (e.g., Federal Express). Field monitoring personnel will provide the laboratory with a shipment schedule and notify them of deviations from planned activities. The field monitoring personnel will notify the laboratory of all of samples intended for Saturday delivery, no later than 3 p.m. (Eastern Standard Time) on Thursday.

2.3.4 Sample Custody

Formal sample custody procedures begin when the precleaned sample containers leave the laboratory or upon receipt from the container vendor. The laboratory must follow written and approved SOPs for shipping, receiving, logging, and internally transferring samples. Sample identification documents must be carefully prepared so that sample identification and COC can be maintained and sample disposition controlled. Sample identification documents include:

- Field notebooks;

- Sample labels;

- Custody seals; and

- COC records.

The primary objective of COC procedures is to provide an accurate written or computerized record that can be used to trace the possession and handling of a sample from sampling through completion of all required analyses. A sample is in custody if it is:

- In a team member's physical possession;
- In a team member's view;
- Locked up; or
- Kept in a secured area that is restricted to authorized personnel.

Field Custody Procedures

Precleaned sample containers will be relinquished by the laboratory to the Field monitoring personnel. The Field monitoring personnel will record receipt of the sample containers in the project logbook. The following field custody procedure will be used for collection of samples:

- As few persons as possible should handle samples;
- Coolers or boxes containing cleaned bottles should be sealed with a custody tape seal during transport to the field or while in storage prior to use;
- The sample collector is personally responsible for the care and custody of samples collected until they are transferred to another person or dispatched properly under COC rules;
- The sample collector will record sample data in the field logbook; and
- The Field monitoring personnel will determine whether proper custody procedures were followed during the fieldwork and decide if additional samples are required.

Chain-of-Custody Record

The COC form must be fully completed in duplicate by the field technician designated by the site specific monitoring firm's Project Manager as responsible for sample shipment to the appropriate laboratory for analysis. In addition, if samples are known to require rapid turnaround in the laboratory because of project time constraints or analytical concerns (e.g., extraction time or sample retention period limitations), the person completing the COC record should note these constraints. The custody record also should indicate any special preservation techniques necessary or whether samples need to be filtered. Copies of COC records are maintained with the project file.

Custody Seals

Custody seals are preprinted, adhesive-backed seals with security slots designed to break if the seals are disturbed. DOT-approved sample shipping containers are sealed in as many places as necessary to ensure security. Seals must be signed and dated before use. Upon receipt at the laboratory, the custodian must check and document on a cooler receipt form that seals on boxes are intact.

2.3.5 Laboratory Custody Procedures

All laboratory custody procedures must maintain a system that provides for sample log-in, sign-out and sign-in of samples to and from individual analysts, data storage and reporting, and sample disposal. These procedures must ensure continuous documentation of sample custody from receipt to disposal. Procedures used by the laboratory must meet all NYSDEC requirements. Laboratories must complete a cooler receipt form documenting the temperature and condition of samples on receipt. The form must be provided in the laboratory data package.

The laboratory must submit sample receipt documents for each set of samples received. A sample delivery group (SDG) is defined as a batch of up to 20 samples collected during one calendar week. Samples shipped on Friday will normally conclude an SDG. The sample receipt documents consist of the Sample Receipt file, a pdf of the COC, and a pdf of the laboratory log report showing the tests selected.

The laboratory must implement, practice, and maintain programs for managing waste disposal. The site specific monitoring firm's and NYSDEC markings must be removed from all sample containers prior to disposal. Waste disposal procedures must include use of a certified hauler and meet Federal and State regulations.

2.4 Analytical Method Requirements

Analytical method requirements will be documented in the appropriate work plan or FSP. The specific implementation of analytical methods will be documented in laboratory SOPs. Laboratory SOPs and the QA program will be reviewed and approved as part of the procurement process.

2.4.1 Standard Laboratory Analytical Procedures

Analytical methods in support of NYSDEC activities are referenced in NYSDEC's ASP. The protocol is based on the following methods:

1. 40 CFR Part 136, Guidelines Establishing Test Procedures for the Analysis of Pollutants under the Clean Water Act;

2. "Standard Methods for the Examination of Water and Wastewater," APHA/AWWA/WEF, 21st ed, 1992;

3. Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, Revised March 1983;

4. "Test Methods for Evaluating Solid Waste, Physical Chemical Methods," 3rd ed, SW-846, 1998, latest update;

5. "Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air," 2nd ed, EPA/625/R-96/010b, January 1999;

6. "USEPA Contract Laboratory Program Statement of Work for Organics Analysis, Multi-Media, Multi-Concentration, OLM04.3, 2003or SOM01.2, 2007";

7. "EPA Contract Laboratory Program, Statement of Work for Inorganic Analysis, Multi-Media, Multi-Concentration ILM05.4, 2007; and

8. American Society for Testing and Materials (ASTM).

The laboratory must be certified by the NYSDOH ELAP for all analytical methods for which the NYSDOH provides an approval program. Laboratories also must be National Environmental Laboratory Accreditation Program (NELAP) approved by NYSDOH or related accrediting authority.

Table 2-1 lists all analyses that may be performed for NYSDEC projects. Reporting limits for any additional methods will be included in the site-specific QAPP.

The site specific monitoring firm's anticipates that laboratories will use the most current method available and/or recommended by EPA. For example, EPA has promulgated the use of Standard Methods references instead of the water method reference listed above. The actual methods for the project will be reviewed and approved as part of the project planning process.

2.5 Quality Control

QC data are necessary to determine precision and accuracy and to demonstrate the absence of interferences and/or contamination of glassware and reagents. Field QC will include duplicates, trip blanks, field equipment blanks, and miscellaneous field QC samples. Field QC samples will be preserved, documented, and transported in the same manner as the samples they represent. Laboratory-based QC will consist of standards, replicates, spikes, and blanks. Method QC limits for analyses need to be provided by the site specific monitoring firm's laboratory or are included in NYSDEC ASP 2005. Quality control limits for any additional methods will be included in the site-specific work plan or FSP.

2.5.1 Field Quality Control Samples

The collection of field QC samples and the conditions, under which the samples were collected, will be documented in the field logbook. Unless otherwise directed by NYSDEC, the field QC samples listed below will be collected and analyzed at the frequency listed in Table 2-2.

Table 2-2 Field Quality Control Guidelines, NYSDEC Projects

QC Sample	Description
Field Duplicate	One per matrix per 20 samples for each analysis.
Field Equipment Blank	One per equipment per 20 samples for each analysis. Only equipment sets that are subject to decontamination require equipment blanks. Dedicated or disposal equipment does not require equipment blanks.
Field Background Samples	Per sampling day for indoor air samples as specified in the guidance for soil vapor intrusion.
Trip Blank	One per shipment for each cooler in which aqueous samples for VOC analysis are shipped or one per shipment batch for air samples. Trip blanks are analyzed for all VOC methods designated for samples. Trip blanks are shipped only for aqueous matrix.

Duplicate Samples

Duplicate samples will be collected at the rate one duplicate per 20 project samples of the same matrix. Duplicate soil samples will be prepared by collecting equal aliquots from the same sample source and placing them in separate sample bottles. Duplicate water samples will be prepared by collecting successive volumes of water and placing them in separate bottles. Duplicate air samples will collected with a tubing splitter. Duplicate samples will be shipped with the samples they represent and will be analyzed in the same manner.

The RPD between the concentration in the original and duplicate sample measures the overall precision of the field sampling and analytical method. Field duplicates are evaluated by using two times the laboratory QC criteria for duplicates (i.e., RPDs of 40% for water and air and 70% for soils). If all other laboratory QC criteria are met, RPD results outside control limits indicate potential matrix effects. Significant deviations in RPD results of field duplicates are assessed to evaluate whether data met all quality objectives for the project.

Trip Blanks

Trip blanks are collected to establish that the transport of sample bottles to and from the field does not result in contamination of the sample from external sources. Trip blanks will be collected for, and in conjunction with, only VOA for aqueous samples. If the 40-mililiter (mL) VOA vials are shipped to the field team by the laboratory sample custodian, a representative number of vials filled with analyte-free water (preserved, capped, and labeled) will accompany the shipment

to and from the laboratory. Trip blanks will be treated in the same manner as the VOA samples they represent and will be taken to representative field sample sites, but remain unopened. Trip blanks will be sent with each sample-shipping container that contains aqueous samples for VOA.

Field Equipment Blanks

Field equipment blanks are blank samples (also called rinsate blanks) designed to demonstrate that sampling equipment has been properly prepared and cleaned before field use and that cleaning procedures between samples are sufficient to minimize cross-contamination. Field equipment blanks will be prepared in the field using an approved water source. Sampling of the water source may also be required if analyte-free water is not obtained from the lab. The field equipment blank will be preserved, documented, shipped, and analyzed in the same manner as the samples it represents. Equipment blanks will be collected at the rate of one sample per day, per equipment set.

An equipment set is all sampling equipment required to collect one sample. For example, one soil sample equipment set may include a stainless-steel bowl, a stainless-steel trowel, and a bucket auger. Samples collected with dedicated or disposable equipment do not require equipment blank samples.

Field equipment and trip blanks serve to demonstrate contamination-free procedures in the field and during sample transport. The goal is for field blanks to be free of contamination. Low-level contamination may be present, but must be less than five times the level found in associated samples. If contamination is greater, the sample results are qualified as non-detect at an elevated-reporting limit. If field blank contaminants are also present in the method blank, or are typical laboratory contaminants, or are not present in project samples, then no further action is required. All other sources of contamination must be investigated as part of the corrective action process. Sample results that do not meet quality objectives after qualification, re-sampling may be required. The QA Officer, Project Chemist, and Project Manager must determine potential changes in field procedures to eliminate contamination sources prior to re-sampling.

Miscellaneous Field QC Samples

This type of QC sampling involves analysis of investigation water sources and monitoring well drilling fluids (if used). Because the water supply source is used in decontamination and well drilling activities, it may be necessary to determine the possibility for the introduction of outside contaminants. Drilling fluids (muds) that are used during well installation may also be analyzed in order to assess the possibility of such constituents affecting groundwater samples.

Field background samples are required for air sampling events. Results of the background sample are used in the assessment process to determine whether contamination is site-related or significant.

2.5.2 Laboratory Quality Control Analyses

Analytical performance is monitored through QC samples and spikes, such as laboratory method blanks, surrogate spikes, QC check samples, matrix spikes, matrix spike duplicates, duplicate samples, and duplicate injections (see Table 2-3). All QC samples are applied on the basis of a laboratory batch. Batches do not exceed 20 samples excluding associated field and laboratory QC samples. The QC samples associated with sample preparation include method blanks, laboratory control samples (LCSs) (also called matrix spike blanks [MSB] by NYSDEC), matrix spikes, and duplicates. The run batch represents all samples analyzed together in the run sequence. The run sequence is typically limited to 24 hours unless defined differently for the analytical method. For some analyses, such as volatile organics, the run batch is equivalent to the preparation batch. The QC samples associated with the run sequence include calibration standards, instrument blanks, and reference standards. Unless otherwise directed by NYSDEC staff, the laboratory QC samples listed below will be collected and analyzed at the frequency listed in Table 2-3.

Instances may arise where high sample concentrations, nonhomogeneity of samples, or matrix interferences preclude achieving detection limits or associated QC target criteria. In such instances, data will not be rejected *a priori* but will be examined on a case-by-case basis. The laboratory will report the reason for deviations from these detection limits or noncompliance with QC criteria in the case narrative.

Table 2-3 Laboratory Quality Control Sample Guidelines, NYSDEC Projects

QC Sample	Description
MB	One per matrix per preparation batch for each analysis.
LCS/MSB	One per matrix per preparation batch for each analysis. The LCS/MSB must contain all target analytes of concern at the site.
Surrogate Spikes	All samples analyzed for organic methods.
Internal Standards	All samples analyzed by GC/MS methods.
MS/MSD	One per matrix per SDG for each analysis. The spike solution must contain a broad range of the analytes of concern at the site. The overall frequency of MS/MSD on project samples must be at least one set per 20 samples.
MS/MD	One per matrix per SDG for metals and general chemistry methods. The spike solution must contain a broad range of analytes of concern at the site. The overall frequency of MS/MD on the project samples must be at least one set per 20 samples.
Serial Dilution/Post Digestion Spike	All samples analyzed for metals.

Table 2-3 Laboratory Quality Control Sample Guidelines, NYSDEC Projects

QC Sample	Description

Key:
SDG = Sample Delivery Group.
LCS = Laboratory Control Samples.
MSB = Matrix Spike Blank.
MS/MD = Matrix Spike/Matrix Duplicate.
MS/MSD = Matrix Spike/Matrix Spike Duplicate.
MB = Method Blank.
TAL = Target Analyte List.

Laboratory Method Blank

Laboratory method blanks serve to demonstrate a contamination-free environment in the laboratory. The goal is for method blanks to be free of contamination. Low-level contamination may be present, but must be less than the reporting limit. If contamination is greater, samples are reanalyzed. If contaminants are present in the method blank but not in project samples, no further action is required. All sources of contamination that are not common laboratory contaminants as defined in the method SOPs must be investigated as part of the corrective action process. Sample results must not be blank subtracted unless specifically required by the analytical method.

Surrogate Standards

Surrogate recoveries must be within QC criteria for method blanks and LCSs to demonstrate acceptable method performance. If surrogate recoveries are outside QC criteria for method blanks or LCSs, corrective action is required and the Project Chemist should be notified. Surrogate recoveries in the samples indicate the method performance on the particular sample matrix. Surrogate recoveries that are outside QC criteria for a sample indicate a potential matrix effect. Matrix effects must be verified based on review of recoveries in the method blank or LCS, sample reanalysis, or evaluation of interfering compounds. Sample clean-up procedures are required by the NYSDEC ASP must be implemented to alleviate potential matrix problems.

Laboratory Control Sample

LCS recoveries must be monitored on control charts for all non-CLP methods. Laboratory QC criteria must be established for each method and matrix using a minimum of 30 points. QC criteria should be updated annually for all non-CLP methods. The LCS recovery must be within the control limits to demonstrate acceptable method performance. Sporadic marginal failures of a few target analytes reported when greater than five target analytes are required are allowed as part of the data review guidance. If LCS recoveries are outside QC criteria for more than a few target analytes, recoveries are significantly low, or the compounds were detected in the samples, then corrective action is required. After corrective action is complete, sample re-analysis is required for failed parameters. If LCS recoveries exceed the QC criteria, and that parameter is not found in any samples, re-analysis is not necessary. For any other deviations from LCS control limits that can not be

resolved by sample re-analysis within holding times, the Project Chemist must be notified immediately. If critical samples are affected, the Project Manager may determine that re-sampling is required.

Matrix Spike Sample

MS recoveries are a measure of the performance of the method on the sample being analyzed. Field and trip blanks must not be chosen for spiking. MS recoveries outside the control limits applied to the LCS indicate matrix effects. Sample clean-up procedures may be warranted for samples with severe matrix effects. The laboratory should notify the Project Chemist of these instances to determine an appropriate corrective action.

Matrix Spike Duplicate Sample

The MSD sample is commonly prepared in conjunction with the MS sample. The MSD is prepared from a separate portion of the sample and processed with the same additions as the MS. The MSD is prepared for methods that do not typically show concentrations of target analytes above MDLs, such as organic methods. The RPD between the recoveries in the MS and MSD measures the precision of the analytical method on actual project samples. QC criteria for RPDs are 20% for waters and 35% for soils unless the laboratory provides additional statistical criteria.

Duplicate Sample

The duplicate is prepared for methods that typically show concentrations of target analytes above MDLs, such as metals and wet chemistry methods. The RPDs between recoveries in the original and duplicate measures the precision of the analytical method on the actual project samples. QC criteria for RPDs are 20% for waters and 35% for soils unless the laboratory provides additional statistical criteria.

If all other QC criteria are met, RPD results outside control limits indicate potential matrix effects. The laboratory should investigate significant deviations in the RPD results by observing the sample to determine any visual heterogeneity or reviewing sample chromatograms for matrix interference. If visual observation does not indicate a potential problem, the sample may be reanalyzed. Potential matrix effects are reported in the case narrative.

Instrument Blanks

Instrument or reagent blanks are analyzed in the laboratory to assess laboratory instrument procedures as possible sources of sample contamination. Instrument blanks are part of the laboratory corrective action if method blanks show contamination or the analyst suspects carryover from a high concentration sample. Instrument blank results are reported on a laboratory corrective action form.

QC Check Standards

A QC check standard is obtained from a different source or at a minimum a lot different from that of the calibration standard. A check standard result is used to validate an existing concentration calibration standard file or calibration curve. The check standard provides information on the accuracy of the instrumental analytical method, independent of various sample matrices. Check standards are analyzed with each new calibration curve.

Internal standard area counts for water and solid sample analysis for all samples must be in the inclusive range of 50% to 200%, and retention time must not marry more than +/- 30 seconds of its associated 12-hour calibration standard (i.e., opening Continuing Calibration Verification or mid-point standard from Initial Calibration).

The serial dilution analysis (a five-fold dilution) must agree within a 10% difference of the original determination after correction for the dilution if the analyte concentration is sufficiently high (concentration in the original sample is >50 times [50x] the MDL).

The post-digestion spike (%R) must be within the acceptance limits of 75% to 125%. However, spike recovery limits do not apply when the sample concentration is greater than 4x the spike added.

Other Laboratory QC Samples

The laboratory performs analysis of other QC samples or standards, depending on the analytical method. Method-specific QC samples or standards include internal standard spikes for gas chromatography/mass spectrometry (GC/MS) methods; post-digestion spikes and serial dilutions for metals analysis; and interference check samples (ICSs) for ICP analysis.

Blind QC Check Samples

Types of blind QC check samples include external performance evaluation (PE) samples provided by an outside certifying agency and internal QC samples submitted for routine analysis by the laboratory QA officer. The laboratory must pass NYSDOH samples as part of the approval process. If methods are used that are not included in NYSDOH approval process, blind QC samples may be submitted to the laboratory to evaluate method performance.

2.6 Instrument/Equipment Testing, Inspection, and Maintenance

All laboratory and field instruments and equipment used for sample analysis must be serviced and maintained only by qualified personnel. Laboratory instrument maintenance procedures will be evaluated to verify that there will be no impacts on analysis of project samples due to instrument malfunction. For example, the

laboratory must have duplicate instrumentation and/or major laboratory instruments (e.g., GC/MS, ICP, atomic absorption spectroscopy [AAS]) maintained under service agreements with the manufacturer that require rapid respond by manufacturer-approved service agents.

Field instruments will be rented through approved suppliers that have manufacturer-approved maintenance programs.

2.6.1 Field Equipment Maintenance

Field equipment will be checked upon receipt to verify that instruments are in working condition and that the rental company provided appropriate calibration records or certifications. On-site operation will be performed in accordance with manufacturer manuals. If any problems occur, the instrument will be replaced immediately. Equipment purchased for the contract will be maintained in accordance with manufacturer guidance.

2.6.2 Laboratory Equipment Maintenance

The laboratory must maintain a stock of spare parts and consumables for all analytical equipment. Routine preventive maintenance procedures should be documented in site specific monitoring firm's SOPs. Maintenance performed on each piece of equipment must be documented in a maintenance logbook. Daily checks of the laboratory deionized water and other support systems are required. The laboratory must operate backup instrumentation for most of its analytical equipment in the event of major instrument failure or have an alternative approached to ensure analytical work proceeds within holding times with no adverse impacts on data quality.

2.7 Instrument/Equipment Calibration and Frequency

All instruments and equipment used during sampling and analysis will be operated and calibrated according to the manufacturer's guidelines and recommendations, as well as criteria set forth in applicable analytical methodology references. Personnel properly trained in these procedures will perform operation and calibration of all instruments. Documentation of all field maintenance and calibration information will be maintained in the field logbook. Table 2-4 lists typical monitoring equipment used during fieldwork. This equipment is representative of instruments typically required for NYSDEC projects. All equipment used for the NYSDEC projects will be NYSDEC-owned or rented. All field personnel receive annual refresher training on the field operation of all health and safety related

Table 2-4 General Field Equipment and Calibration Procedures

Instrument or Equipment	Description[a]	Field Calibration Procedure	Acceptability/ Performance Criteria	Responsible Personnel
Organic Vapor Analyzer (OVA)	Flame Ionization Detector to provide continuous data on organic vapor concentrations. Unit must be Class I, Division 1, Grade A,B,C,D. Unit must have rechargeable battery, range of 0 to 1,000 ppm, and ultra-high purity hydrogen as fuel source.	Units are factory calibrated to remain with performance specification for an excess of 6 months. During field use, a carbon filter is used with the OVA to distinguish methane from other organics. The unit is checked daily with calibration gas to ensure the response is consistent. If needed, the unit will be re-calibrated to manufacturer specifications. When the OVA is used to screen samples (except samples for headspace analysis), periodic ambient air readings will also be recorded in the logbook.	A carbon filter must remove sources of organic vapors other than methane (i.e., marker). Instrument must detect organic vapors without filter. Response should be checked daily with calibration gas. The accuracy will depend on the application.	Site Safety Officer, Project Geologist
O_2 Explosimeter	Gas monitor designed to simultaneously monitor areas for oxygen deficiency and dangerous levels of combustible gas. Units must be equipped with sample pumps and hoses to measure gases in a confined space. Range O_2 - 0 to 25%, LEL - 0 to 100%, H_2S - 0 to 200 ppm, and CO - 0 to 999 ppm. Not all units have the additional capability to detect hydrogen sulfide or H_2S or carbon dioxide.	Procedures for field calibration of the O_2/explosimeter are as follows: ■ Inspect instrument to ensure entry and exit ports are clear; ■ Turn the switch to ON position; ■ Allow the meters to stabilize and then press the reset button; ■ Check the battery level; ■ Calibrate the oxygen meter to 20.8% by using the calibrate knob; ■ Adjust the explosimeter to zero by using the zero knob; and ■ Check alarm levels by adjusting the calibrate knob for oxygen levels and the zero knob for explosimeter levels and note the readings when the alarm sounds. Return readings to normal and depress the reset button.	Alarm must sound during calibration procedure. Battery must have sufficient charge for operation. Blocking the sample line probe and observing the drop of the flow indicator float checks flow system. If flow system is not functioning, return unit for repairs.	Site Safety Officer, Project Geologist

Table 2-4 General Field Equipment and Calibration Procedures

Instrument or Equipment	Description[a]	Field Calibration Procedure	Acceptability/ Performance Criteria	Responsible Personnel
pH/Conductivity, Temperature, Dissolved Oxygen (DO), Oxidation Reduction (REDOX) Meter	Meter designed for field use with battery operation. The unit must contain separate pH, temperature, conductivity, DO, and ORP probes in one unit.	Before use, pH, specific conductance, DO, and ORP probes need to be calibrated or tested for responsiveness. The pH probe will be calibrated first. This is done by placing the probe in pH 7, then pH 4, standard solutions and adjusting the pH calibration knobs until the correct measurement is obtained. The ORP probe is then calibrated with the ORP standard solution (Zobell), and the DO probe is checked in accordance with manufacturer guidelines. The probes should be rinsed with deionized water between each calibration solution and following calibration. Used calibration solution is to be discarded. Finally, the conductivity probe is checked with a solution of known conductivity.	Turbidity and DO ± 10% pH ± 0.01 pH Conductivity at ± 2% FSD The instrument will be checked with a pH standard every 4 hours and at the end of the sampling day. If the response is greater than 0.2 units more or less than the standard, complete calibration will be conducted.	Project Geologist, Sampler
Turbidity Meter	Nephelometer designed for field use with battery operation. Range 0.01 to 1,000 NTU.	The unit is factory calibrated. Field procedures involve checking the unit's responsiveness at least once a day using factory supplied standards. The responsiveness should be checked on the 0 to 10 range, 0 to 100 range, and 0 to 1,000 range.	± 10%	Sampler

Table 2-4 General Field Equipment and Calibration Procedures

Instrument or Equipment	Description[a]	Field Calibration Procedure	Acceptability/ Performance Criteria	Responsible Personnel
PID Meter	The PID is a portable, non-destructive trace gas analyzer. Units for site characterization must have a range of 0 to >2,000 ppm and a 10.6 or 11.7 eV lamp (e.g., MiniRAE 2000). Units for indoor air monitoring must have a range of 1 ppb to 2,000 ppm and a 10.6 eV lamp (e.g., ppb RAE Plus).Calibration check gas (e.g., isobutylene) must be provided with unit.	In the field, PIDs will be calibrated at the start of each field event by the manufacturer. Initial calibration must be verified by a certificate of calibration from the rental company or field calibration is required. There is no field calibration for a Mini-Rae 2000. If a significant change in weather occurs during the day (i.e., change in humidity or temperature) or if the unit is turned off for an extended period, then there is a field test, called a Bump Test. It consists of having the unit sniff 100ppm cal gas and determine the reading. If the unit is reading 100 ppm or close to it, then it is OK. If not, depending on how far off it is, either dry out the unit on a heater (due to potential fogging of the lamp), or send the unit back to the rental company for in-house calibration.	Meter must give consistent background readings.	Site Safety Officer, Project Geologist

[a] Description is for typical equipment; equivalent units may be used.

equipment, which includes calibration procedures. Brief descriptions of calibration procedures for major field instruments are listed on Table 2-4.

The site specific monitoring firm requires laboratories to use the most current method available for calibration criteria. For example, EPA no longer allows the use of the grand mean to evaluate calibration linerity for organic methods. The site specific monitoring firm requires that the most stringent method criteria be met for all compounds of concern at site. Unless modified by the method, the site specific monitoring firm requires at least a five point curve for all calibrations for organics and a minimum of three calibration points for inorganics; exclusion of points is not allowed to meet criteria without technical justification. Any manual integration performed for calibrations needs to be documented with the rationale and included in the data package. Manual integrations of internal standards or surrogates in calibrations are not allowed.

2.8 Inspection/Acceptance of Supplies and Consumables

Measures are established by the site specific monitoring firm's QMP to assure that purchased material, equipment, and services whether purchased directly or through contractors or subcontractors conform to procurement documents.

2.9 Non-Direct Measurements

For data acquired from non-direct measurement sources include the following:

- Physical information such as descriptions of sampling activities and geologic logs;
- State and local environmental agency files;
- Reference computer databases and literature files; and
- Historical reports on a site and subjective information gathered through interviews.

Data from non-direct measurements will be reviewed and used as indicated in the work plan. Data from all non-direct measurement sources are stored as indicated in Section 1.6.

2.10 Data Management

Data management procedures track samples and results from work plan generation to the final report. The field data include approved work planning tables, labels, field sampling forms, COC forms, and logbooks. The surveyor will provide coordinates for all sample locations. The field team leader of the monitoring firm will review all field data for accuracy. Any field data not provided by the laboratory will be entered into a database or spreadsheet.

Electronic data will be provided in accordance with the most recent version of EPA Region 2's standardized electronic data deliverable (EDD) format. The format is based on the Multimedia Electronic Data Deliverable, or MEDD format. Further information on MEDD is available at the Web site http://www.epa.gov/region02/superfund/medd.htm. Currently this is the EPA Region 2 EDD dated December 2003. If required for the project, the laboratory also may provide an alternative EDD consistent with the Corporate EDD or other approved format.

The site specific monitoring firm will process the EDD to verify that criteria established in this QAPP are met. The Project Chemist will review all laboratory and field data to verify the results against the hard copy and check for transcription errors. The Project Chemist will verify qualifiers added by data processing and add any data qualifiers. The individual SDG EDD files will be processed to a centralized data management system to store all reviewed and approved data. Data that will appear on data tables for the report will be generated from the centralized database, which will serve as the central, protected data source for all data handling operations.

The central database will be stored in a secure area on site specific monitoring firm's network with access limited to data management specialists designated by the Project Manager. Data users may enter additional electronic data such as risk-based criteria for comparison of results. This data will be stored in separate tables in the database and linked to the actual results. Any data from outside sources will include a description of the data, a reference to the source, and the date updated. Outside data will be checked prior to use verify that current values are used. The central database will be used to create tables for the final report.

3 Assessment and Oversight

The site specific monitoring firm's assessment and oversight procedures will be implemented in accordance with the QMP. The QMP outlines general roles and responsibilities for the project team.

3.1 Assessment and Response Actions

The site specific monitoring firm's overall assessment activities include management assessments, development of SOPs, and performance evaluations. Management assessments include weekly meetings and conference calls to evaluate project readiness and staff utilization. Assignment of qualified personnel, maintenance of schedules and budgets, and quality of project deliverables are verified as part of these assessments. The development of SOPs and performance evaluations are used to provide trained and qualified personnel for the project.

The site specific monitoring firm's technical assessment activities include peer review, data quality reviews, and technical system audits (i.e., laboratory and field). Procedures for assessment and audit of data quality are described in Section 4 of this QAPP. Procedures for peer review and technical assessments are summarized briefly below.

Both overall and direct technical assessment activities may result in the need for corrective action. The site specific monitoring firm's approach to implementing a corrective action response program for both field and laboratory situations is summarized briefly below. The NYSDEC QA Officer has stop work authority on all NYSDEC projects that may have negative quality impacts prior to completion of corrective actions.

3.1.1 Peer Review

The site specific monitoring firm's implements peer review for all project deliverables including work plans, QAPPs, draft and final reports, and technical memoranda. The peer review process provides for a critical evaluation of the deliverable by an individual or team to determine if the deliverable will meet established criteria, quality objectives, technical standards, and contractual obligations. The Project Manager will assign peer reviewers, when the publications schedule is established. The publications staff will be responsible for ensuring all peer reviewers participate in the review process and approve all final deliverables. For tech-

nical memoranda and other project documents, the Project Manager will be responsible for obtaining principal review and approval.

3.1.2 Technical Systems Assessments

The entire project team is responsible for ongoing assessment of the technical work performed by the team, identification of nonconformance with the project objectives, and initiation, implementation and documentation of corrective action. Independent performance and systems audits are technical assessments that are a possible part of the QA/QC program. The following describes types of audits conducted, frequency of these audits, and personnel responsible for conducting audits.

Field Audits

Field audits are performed under the direction of the QA Officer. The need for field audits will be determined during project planning and indicated in the work plan. Field audits will be documented on the site specific monitoring firm's field audit checklists. Field audits will be typically performed during the early field programs.

Field Inspections

The Project Manager will be responsible for inspecting all field activities to verify compliance of activities with project plans.

Laboratory Audits

The laboratory must implement a comprehensive program of internal audits to verify compliance of their systems with SOPs and QA manuals.

NYSDOH must certify the laboratory and will perform external systems audits at an approximate frequency of once a year. External audits include reviews of analytical capabilities and procedures, COC procedures, documentation, QA/QC, and laboratory organization. These audits also include analysis of blind PE samples.

The QA Officer or designee may also audit laboratories. These audits are typically performed to verify laboratory capabilities and implementation of any complex project requirements or in response to a QC nonconformance identified as part of the data review process.

3.1.3 Corrective Action

Corrective actions will be implemented as needed. In conjunction with the QA Officer and Laboratory QA Coordinator, the Project Manager is responsible for initiating corrective action and implementing it in the field and office, and the laboratory project manager is responsible for implementing it in the laboratory. It is their combined responsibility to see that all sampling and analytical procedures are followed as specified and that the data generated meet the prescribed ac-

ceptance criteria. Specific corrective actions necessary will be clearly documented in the logbooks or analytical reports.

Field Situations

The need for corrective action in the field may be determined by technical assessments or by more direct means such as equipment malfunction. Once a problem has been identified, it may be addressed immediately or an audit report may serve as notification to project management staff that corrective action is necessary. Immediate corrective actions taken in the field will be documented in the project logbook. Corrective actions may include, but are not limited to:

- Correcting equipment decontamination or sample handling procedures if field blanks indicated contamination;
- Recalibrating field instruments and checking battery charge;
- Training field laboratory personnel in correct sample handling or collection procedures; and
- Accepting data with an acknowledged level of uncertainty.

After a corrective action has been implemented, its effectiveness will be verified. If the action does not resolve the problem, appropriate personnel will be assigned to investigate and effectively remediate the problem. Corrective actions recommended by NYSDEC personnel will be addressed in a timely manner.

Laboratory Situations

Out-of-control QC data, laboratory audits, or outside data review may determine the need for corrective action in the laboratory. Corrective actions may include, but are not limited to:

- Reanalyzing samples, if holding times permit;
- Correcting laboratory procedures;
- Recalibrating instruments using freshly prepared standards;
- Replacing solvents or other reagents that give unacceptable blank values;
- Training additional laboratory personnel in correct sample preparation and analysis procedures; and
- Accepting data with an acknowledged level of uncertainty.

The laboratory corrective actions must be defined in analytical SOPs. Any deviations from approved corrective actions must be documented and approved by the Project Chemist.

Whenever corrective action is deemed necessary by the Project Chemist or NYSDEC technical staff, the laboratory project manager will ensure that the following steps are taken:

- The cause of the problem is investigated and determined;
- Appropriate corrective action is determined;
- Corrective action is implemented and its effectiveness verified by the laboratory QA officer; and
- Documentation of the corrective action verification is provided to the Project Chemist and NYSDEC staff in a timely manner.

3.2 Reports to Management

For reports to management include the following:

- **Audit Reports** - Audit reports are prepared by the audit team leader immediately after completion of the audit. The report will list findings and recommendations and will be provided to the Project Manager and QA Officer.
- **Data Usability Summary Report** - A DUSR will be completed by the Project Chemist and provided to the NYSDEC technical staff in the appendix of the report. Impacts on the usability of data will be tracked by adding qualifiers to individual data points as described in Section 4.

Upon completion of a project sampling effort, analytical and QC data will be included in a comprehensive technical report that summarizes field activities and provides a data evaluation. A discussion of the validity of results in the context of QA/QC procedures will be made and the DUSR will be provided.

Serious analytical problems will be reported immediately to NYSDEC personnel. Time and type of corrective action (if needed) will depend on the severity of the problem and relative overall project importance. Corrective actions may include altering procedures in the field, conducting an audit, or modifying laboratory protocol.

4 Data Validation and Usability

The site specific monitoring firm will implement procedures for data validation and usability described below. These procedures will be adapted, if necessary, to meet project-specific requirements as determined in the work plan or FSP. A generic data usability validation checklist report form is provided in Appendix A.

4.1 Data Review, Validation, and Verification Requirements

All data generated will be reviewed by comparing accuracy and precision results for the QC samples to QC criteria listed in NYSDEC ASP 2005. The following types of data will be reviewed:

- Analytical reporting limits and target compounds will be compared to limits listed in the site-specific QAPP;
- Holding times will be verified against Table 2-1;
- QC summary data for surrogates, method blanks, LCS, and MS/MSD samples will be compared to criteria listed in the site-specific QAPP;
- Field QC results for duplicates and blanks will be compared to criteria listed in Section 2.5.1;
- Calibration summary data will be checked by the laboratory to verify that all positive results for target compounds were generated under an acceptable calibration as defined by the analytical method. Any deviations will be noted in the case narrative and reviewed by the Project Chemist;
- Field data such as sample identifications and sample dates will be checked against the laboratory report; and
- Any raw data files from the field and laboratory will not be reviewed unless there is a significant problem noted with the summary information.

4.2 Validation and Verification Methods

The data review scheme for analytical results from the receipt of the analytical data through the validated report is described below. The laboratory is responsible for performing internal data review. The laboratory data review must include 100% analyst review, 100% peer review, and 100% review by the laboratory project manager or designated QC reviewer to verify that all project-specific requirements are met. All levels of laboratory review must be fully documented and available for review if requested or if a laboratory audit is performed.

After receipt from the laboratory, project data will be validated using the following steps:

Evaluation of Completeness

The Project Chemist checks the electronic files for compliance with required format and the project target compounds and units. If errors in loading are found, the EDD files will be returned to the laboratory and the Project Chemist will request resubmission via SubLab. The Project Chemist also verifies that the laboratory information matches the field information and that the following items are included in the data package:

- COC forms and laboratory sample summary forms;
- Case narrative describing any out-of-control events and summarizing analytical procedures;
- Data report forms (i.e., Form I);
- QA/QC summary forms; and
- Chromatograms documenting any QC problems.

If the data package is incomplete, the Project Chemist will request resubmission. The laboratory must provide all missing information within one day.

Evaluation of Compliance

The Project Chemist will review all processed files and add data qualifiers for outliers. If QC data are provided in the EDD, the results will be used to verify compliance electronically. If no QC data are provided in the EDD, the reports will checked manually. Additional compliance checks on representative portions of the data are briefly outlined below:

- Review chromatograms, mass spectra, and other raw data if provided as back-up information for any apparent QC anomalies;

- Review of calibration summaries or any other QC samples not provided in the EDD by the laboratory;

- Ensure that all analytical problems and corrections are reported in the case narrative and that appropriate laboratory qualifiers are added;

- For any problems identified, review concerns with the laboratory, obtain additional information if necessary, and check all related data to determine the extent of the error;

- Project chemists will follow qualification guidelines in EPA Region 2 data validation SOPs or *EPA CLP National Functional Guidelines for Organic Data Review, EPA 540/R-99-008* (October 1999) or *EPA CLP National Functional Guidelines for Inorganic Data Review*, EPA 540-R-04-004 (October 2004), but will use the specific method criteria for evaluation. The DUSR will be completed as specified in NYSDEC *Guidance of the Development of DUSRs* (July 1999); and

Data Review Reporting

The Project Chemist will perform the following reporting functions:

- Alert the Project Manager to any QC problems, obvious anomalous values, or discrepancies between the field and laboratory data, that may impact data usability; and

- Discuss QC problems in a DUSR for each laboratory report. DUSR will include a short narrative and print out of qualified data;

- Prepare analytical data summary tables of qualified data that summarize those samples and analytes for which detectable concentrations were exhibited including field QC samples; and

- At the completion of all field and laboratory efforts, summarize planned versus actual field and laboratory activities and data usability concerns in the technical report.

4.3 Reconciliation with User Requirements

For routine assessments of data quality, The site specific monitoring firm's will implement the data validation procedures described in Section 4.2 and assign appropriate data qualifiers to indicate limitations on the data. The Data Validation Chemist will be responsible for evaluating precision, accuracy, representativeness, comparability, and completeness of data using procedures described in Section 2.5 of this QAPP. Any deviations from analytical performance criteria or quality ob-

jectives for the project will be documented in the DUSR provided to the data users for the project.

The QA Officer or Project Chemist will work with the final users of the data in performing data quality assessments. The data quality assessment may include some or all of the following steps:

- Data that are determined to be incomplete or not usable for the project will be discussed with the project team. If critical data points are involved which impact the ability to complete project objectives, data users will report immediately to the Project Manager. The Project Manager will discuss resolution of the issue with NYSDEC technical staff and implement necessary corrective actions (for example re-sampling);

- Data that are non-detect but have elevated reporting limits due to blank contamination or matrix interference will be compared to screening values. If reporting limits exceed the screening values, then results will be handled as incomplete data as described above; and

- Data that are qualified as estimated will be used for all project decision making. If an estimated result is close to a screening value, then there is uncertainty in any conclusions as to whether the result exceeds the screening value. The data user must evaluate the potential uncertainty in developing recommendations for the site. If estimated results become critical data points in making final decisions on the site, the Project Manager and NYSDEC technical staff should evaluate the use of the results and may consider the data point incomplete.

The assessment process involves comparing analytical results to screening values and background concentrations to determine if the contamination present is site-related (i.e., above background levels) or significant (i.e., above screening values). Additional data assessment may be performed on a site-by-site basis.

A Data Usability Summary Report Model

Data Usability Summary Report	Project: BB&STreated Lumber Site
Date Completed:	Completed by:

The analytical data provided by the laboratory were reviewed for precision, accuracy, and completeness per NYSDEC Division of Environmental Remediation Guidance for the Development of DUSRs (June 1999). Specific criteria for QC limits were obtained from the project QAPP. Compliance with the project QA program is indicated on the in the checklist and tables. Any major or minor concerns affected data usability are summarized listed below. The checklist and tables also indicate whether data qualification is required and/or the type of qualifier assigned.

Reference:

Table 1 Sample Summary Tables from Electronic Data Deliverable

Work Orders, Tests and Number of Samples included in this DUSR

General Sample Information	
Do Samples and Analyses on COC check against Lab Sample Tracking Form?	
Did coolers arrive at lab between 2 and 6^{o}C and in good condition as indicated on COC and Cooler Receipt Form?	
Frequency of Field QC Samples Correct? Field Duplicate - 1/20 samples Trip Blank - Every cooler with VOCs waters only Equipment Blank - 1/ set of samples per day?	
All ASP Forms complete?	
Case narrative present and complete?	
Any holding time violations (See table below)?	

Insert Holding time table below.

The following tables are presented at the end of this DUSR and provided summaries of results outside QC criteria.

- Method Blanks Results (Table 2)
- Surrogates Outside Limits (Table 3)
- MS/MSD Outside Limits (Table 4)
- LCS Outside Limits (Table 5)
- Re-analysis Results (Table 6)
- Field Duplicate Results (Table 7)

Go to Tables List

Volatile Organics and Semi-volatile Organics by GCMS	
Description	**Notes and Qualifiers**
Any compounds present in method, trip and field blanks (see Table 2)?	

Data Usability Summary Report	Project: BB&STreated Lumber Site
Date Completed:	Completed by:

Volatile Organics and Semi-volatile Organics by GCMS	
Description	**Notes and Qualifiers**
For samples, if results are <5 times the blank or < 10 times blank for common laboratory contaminants then "U" flag data. Qualification also applies to TICs.	
Surrogate for method blanks and LCS within limits?	
Surrogate for samples and MS/MSD within limits? (See Table 3). All samples should be re-analyzed for VOCs? Samples should re-analyzed if >1 BN and/or > AP for BNAs is out. Matrix effects should be established.	
Laboratory QC frequency one blank and LCS with each batch and one set of MS/MSD per 20 samples?	
MS/MSD within QC criteria (see Table 4)? If out and LCS is compliant, then J flag positive data in original sample due to matrix?	
LCS within QC criteria (see Table 5)? If out, and the recovery high with no positive values, then no data qualification is required.	
Do internal standards areas and retention time meet criteria? If not was sample re-analyzed to establish matrix (see Table 6)?	
Is initial calibration for target compounds <15 %RSD or curve fit?	
Is continuing calibration for target compounds < 20.5%D.	
Were any samples re-analyzed or diluted (see Table 6)? For any sample re-analysis and dilutions is only one reportable result by flagged?	
For TICs are there any system related compounds that should not be reported?	
Do field duplicate results show good precision for all compounds except TICs (see Table 7)?	

Pesticide and PCBs by GC/ECD	
Description	**Notes and Qualifiers**
Any compounds present in method and field blanks as noted on Table 2?	
For samples, if results are <5 times the blank then "U" flag data.	
Surrogate for method blanks and LCS within limits?	
Surrogate for samples and MS/MSD within limits? (See Table 3). Matrix effects should be established.	
Laboratory QC frequency one blank and LCS with each batch and one set of MS/MSD per 20 samples?	
MS/MSD within QC criteria (see Table 4)? If out and LCS is compliant, then J flag positive data in original sample due to matrix?	
LCS within QC criteria (see Table 5)? If out, and the recovery high with no positive values, then no data qualification is required.	
Is initial calibration for target compounds <15 %RSD or curve fit?	
Is continuing calibration for target compounds < 15.5%D.	

Data Usability Summary Report	Project: BB&STreated Lumber Site
Date Completed:	Completed by:

Pesticide and PCBs by GC/ECD	
Description	**Notes and Qualifiers**
Were any samples re-analyzed or diluted (see Table 6)? For any sample re-analysis and dilutions is only one reportable result by flagged?	
Spot check retention time windows and second column confirmations as complete.	
Do field duplicate results show good precision for all compounds (see Table 7)?	

Metals by ICP and Mercury by CVAA	
Description	**Notes and Qualifiers**
Any compounds present in method and field blanks as noted on Table 2?	
For samples, if results are <5 times the blank then "U" flag data.	
Laboratory QC frequency one blank and LCS with each batch and one set of MS/MSD per 20 samples?	
MS/MSD within QC criteria (see Table 4)? QC limits are not applicable to sample results greater than 4 times spike amount. All N flagged data for MS are flagged J as estimated.	
Were elements recovered ≤30%? If so, “R” flag associated NDs on Form 1's.	
LCS within QC criteria (see Table 5)? If out, and the recovery high with no positive values, then no data qualification is required.	
Is there one serial dilution per 20 samples? Flag all data reported with an “E” as “J”.	
Spot check ICS recoveries 80-120%. Contact lab.	
Spot check ICV 95-105%. Contact lab.	
Spot check CCV 90-110% or 80-120% for Hg. Contact lab.	
Do field duplicate results show good precision for all compounds (see Table 7)?	

Data Usability Summary Report	Project: BB&STreated Lumber Site
Date Completed:	Completed by:

General Analytical Methods	
Description	**Notes and Qualifiers**
Any compounds present in method and field blanks as noted on Table 2?	
For samples, if results are <5 times the blank then "U" flag data.	
Laboratory QC frequency one blank and LCS with each batch and one set of MS/MSD per 20 samples?	
MS/MSD within QC criteria (see Table 4)? QC limits are not applicable to sample results greater than 4 times spike amount.	
LCS within QC criteria (see Table 5)? If out, and the recovery high with no positive values, then no data qualification is required.	
Do field duplicate results show good precision for all compounds (see Table 7)?	

Summary of Potential Impacts on Data Usability
Major Concerns
Minor Concerns

Table 2 - List of Positive Results for Blank Samples

Table 2A - List of Samples Qualified for Method Blank Contamination

Table 2B - List of Samples Qualified for Field Blank Contamination

Table 3 - List of Samples with Surrogates outside Control Limits

Table 4 - List MS/MSD Recoveries and RPDs outside Control Limits

Table 5 - List LCS Recoveries outside Control Limits

Table 6 –Samples that were Reanalyzed

Table 7 – Summary of Field Duplicate Results

Key:
A = Analyte
NC = Not Calculated
ND = Not Detected
PQL = Practical Quantitation Limit
RPD = Relative Percent Difference
T = Tentatively Identified Compound

L Generic Health and Safety Plan

GENERIC
HEALTH AND SAFETY PLAN

Project: BB&S Treated Lumber Corp., NYSDEC Project No. 152123

Project Location: 1348 Speonk-Riverhead Road, Town of Southampton, Suffolk County, New York 11960

Proposed Date of Field Activities:

Contract Manager(s):

Project Manager: Date Reviewed: _____

Prepared by: _____ **Date Prepared:** _____

Approved by: _____ **Date Approved:** _____

1. INTRODUCTION

1.1 POLICY

It is the CONSULTANT'S policy to ensure the health and safety of its employees, the public, and the environment during the performance of work it conducts. This generic health and safety plan (GHASP) establishes the procedures and requirements to ensure the health and safety of the Consultant's employees for the above-named project. The Consultant's overall safety and health program is described in the Consultant's *Corporate Health and Safety Program for Toxic and Hazardous Substances* (CHSP). After reading this plan, applicable field staff employees shall read and sign the Consultant's Site-Specific Health and Safety Plan Acceptance form.

This GHASP has been developed for the sole use of the Consultant's employees and is not intended for use by firms not participating in the Consultant's training and health and safety programs. Subcontractors are responsible for developing and providing their own safety plans.

This GHASP has been prepared to meet the following applicable regulatory requirements and guidance:

Applicable Regulation/Guidance
29 CFR 1910.120, Hazardous Waste Operations and Emergency Response (HAZWOPER)
Other:

1.2 SCOPE OF WORK

Description of Work: This project involves operation, maintenance, and monitoring of a NYSDEC inactive hazardous waste site, including site inspections and sampling of Hex-chromium, Chromium and Arsenic - contaminated environmental media, such as groundwater, surface water, and sediments.

Equipment/Supplies: Attachment 1 contains a checklist of equipment and supplies that will be needed for this work. Also see Appendices D, E, F, and K of the SMP for the equipment needed for each sampling plan.

The following is a description of each numbered task:

Task Number	Task Description
I	Long-Term Monitoring and Reporting
II	Operations and Maintenance

1.3 SITE DESCRIPTION

Site Map: **A site map or sketch is attached at the end of this plan**.

Site History/Description (see SMP for detailed description): The BB&S Treated Lumber Corp facility is located at 1148 Speonk – Riverhead Road, Town of Southampton, Suffolk County New York. From the early 1980s to 1996, the site operated as a lumber treatment and storage facility. Lumber was pressure treated on-site using a chromated copper arsenate (CCA) solution. CCA was documented to be released to the environment through surface spills and sump leakage (NYSDEC October 2009). BB&S conducted its own environmental study between 1985 and 1987 after the Suffolk County Department of Health Services (SCDHS) identified chromium contamination in an on-site water supply well. As a result, BB&S installed a network of on-site and off-site groundwater monitoring wells and three groundwater extraction wells. BB&S used the extraction wells to pump and treat groundwater at the site from 1987 to 1996. The groundwater treatment system frequently failed to meet surface water discharge requirements for chromium. Consequently, the Department placed the BB&S site on the New York State Registry of Inactive Hazardous Waste Disposal Sites in 1993 and negotiated with BB&S to have the company perform a Remedial Investigation/Feasibility Study (RI/FS). BB&S declined to perform additional investigations. Therefore, the Department performed the Remedial Investigation Report (Malcolm Pirnie, Inc. 1998) and the Engineering Feasibility Study in 1999 (Malcolm Pirnie, Inc. 1999) RI/FS using state superfund monies. Sample analysis revealed high concentrations of Hexavalent Chromium, Chromium, and Arsenic at various depths below ground surface in the area.

Is the site currently in operation? ☐ yes ☒ No

Locations of Contaminants/Wastes: Contaminated surface and subsurface soils around the property and subsurface soils in swales and drainage ways west of the manufacturing facility were removed during site remediation. Cleanup remediation was also performed in a building on-site. Contaminated soils remain on-site in the soils below and around site buildings.

Types and Characteristics of Contaminants/Wastes:

☒ Liquid	☒ Solid	☐ Sludge	☐ Gas/Vapor
☐ Flammable/Ignitable	☐ Volatile	☐ Corrosive	☐ Acutely Toxic
☐ Explosive	☐ Reactive	☒ Carcinogenic	☐ Radioactive
☐ Medical/Pathogenic	Other:		

2. ORGANIZATION AND RESPONSIBILITIES

The CONSULTANT'S team personnel shall have on-site responsibilities as described in the CONSULTANT'S standard operating procedure (SOP) for Site Entry Procedures (GENTECH 2.2) the project team, including qualified alternates, is identified below.

Name	Site Role/Responsibility
TBD based on actual field crew and activities	Project/Task Manager
TBD based on actual field crew and activities	Site Safety Officer
TBD based on actual field crew and activities	Field Tech

3. TRAINING

Prior to work, the CONSULTANT'S team personnel shall have received training as indicated below. As applicable, personnel shall have read the project work plan, sampling and analysis plan, and/or quality assurance project plan prior to project work.

E & E Staff Training	Required
40-Hour OSHA HAZWOPER Initial Training and Annual Refresher (29 CFR 1910.120)	X

E & E Staff Training	Required
Annual First Aid/CPR	X
Hazard Communication (29 CFR 1910.1200)	X
40-Hour Radiation Protection Procedures and Investigative Methods	
8-Hour General Radiation Health and Safety	
Radiation Refresher	
DOT and Biannual Refresher	X
Other:	

4. MEDICAL SURVEILLANCE

4.1 MEDICAL SURVEILLANCE PROGRAM

The CONSULTANT'S field personnel shall actively participate in the CONSULTANT'S medical surveillance program as described in the CHSP and shall have received, within the past year, an appropriate physical examination and health rating.

The CONSULTANT'S health and safety record (HSR) form will be maintained on site by each of the CONSULTANT'S employees for the duration of his or her work. The CONSULTANT'S employees should inform the site safety officer (SSO) of any allergies, medical conditions, or similar situations that are relevant to the safe conduct of the work to which this GHASP applies.

Is there a concern for radiation at the site? ف Yes X No
If no, go to 5.1.

5. SITE CONTROL

5.1 SITE LAYOUT AND WORK ZONES

Site Work Zones: None

Site Access Requirements and Special Considerations: None

Illumination Requirements: None

Sanitary Facilities (e.g., toilet, shower, potable water): None available onsite. Potable water shall be brought onsite by field personnel for activities onsite, as necessary.

On-Site Communications: Cell phone will be brought on site and maintained with either team member.

Other Site-Control Requirements: None known at this time. TBD.

5.2 SAFE WORK PRACTICES

Daily Safety Meeting: Safety meetings will be conducted as necessary.

Work Limitations: Work shall be limited to a maximum of 12 hours per day. If 12 consecutive days are worked, at least one day off shall be provided before work is resumed. Work will be conducted in daylight hours unless prior approval is obtained and the illumination requirements in 29 CFR 1910.120(m) are satisfied.

Weather Limitations: Work shall not be conducted during electrical storms. Work conducted in other inclement weather (e.g. severe rain or snow) will be approved by project management and the regional safety coordinator or designee.

Other Work Limitations: No confined entry allowed or will be performed in connection with this project.

Buddy System: Field work will be conducted in pairs of team members according to the buddy system.

Line of Sight: Each field team member shall remain in the line of sight and within verbal communication of at least one other team member.

Eating, Drinking, and Smoking: Eating, drinking, smoking, and the use of tobacco products shall be prohibited in the exclusion and contamination reduction areas, at a minimum, and shall only be permitted in designated areas.

Contamination Avoidance: Field personnel shall avoid unnecessary contamination of personnel, equipment, and materials to the extent practicable.

Sample Handling: Protective gloves of a type designated in Section 7 will be worn when containerized samples are handled for labeling, packaging, transportation, and other purposes.

Vermiculite Handling: None

Other Safe Work Practices: Hard hat, safety glasses, steel-toed boots, hearing protection and highly visibility vest are required at all times while on-site.

6. HAZARD EVALUATION AND CONTROL

6.1 PHYSICAL HAZARD EVALUATION AND CONTROL

Potential physical hazards and their applicable control measures are described in the following table for each task.

Hazard	Task Number	Hazard Control Measures
Biological (flora, fauna, etc.)	**I & II**	▪ Potential hazard: Animal bites or stings; poison ivy. ▪ Establish site-specific procedures for working around identified hazards. ▪ Other:
Cold Stress	**I & II**	▪ Provide warm break area and adequate breaks. ▪ Provide warm noncaffeinated beverages. ▪ Promote cold stress awareness. ▪ See *Cold Stress Prevention and Treatment* (attached at the end of this plan if cold stress is a potential hazard).
Compressed Gas Cylinders	**N/A**	▪ Use caution when moving or storing cylinders. ▪ A cylinder is a projectile hazard if it is damaged or its neck is broken. ▪ Store cylinders upright and secure them by chains or other means. ▪ Other:
Confined Space	**N/A**	▪ Ensure compliance with 29 CFR 1910.146. ▪ See SOP for Confined Space Entry. Additional documentation is required. ▪ Other:
Drilling	**N/A**	▪ See SOP for Health and Safety on Drilling Rig Operations. Additional documentation may be required. ▪ Landfill caps will not be penetrated without prior discussions with corporate health and safety staff. ▪ Other:
Drums and Containers	**I & II**	▪ Ensure compliance with 29 CFR 1910.120(j). ▪ Consider unlabeled drums or containers to contain hazardous substances and handle accordingly until the contents are identified.

Hazard	Task Number	Hazard Control Measures
		▪ Inspect drums or containers and assure integrity prior to handling. ▪ Move drums or containers only as necessary; use caution and warn nearby personnel of potential hazards. ▪ Open, sample, and/or move drums or containers in accordance with established procedures; use approved drum/container-handling equipment. ▪ Other:
Electrical	**I & II**	▪ Ensure compliance with 29 CFR 1910 Subparts J and S. ▪ Locate and mark energized lines. ▪ De-energize lines as necessary. ▪ Ground all electrical circuits. ▪ Guard or isolate temporary wiring to prevent accidental contact. ▪ Evaluate potential areas of high moisture or standing water and define special electrical needs. ▪ Other:
Excavation and Trenching	**I & 1I**	▪ Ensure that excavations comply with and personnel are informed of the requirements of 29 CFR 1926 Subpart P. ▪ Ensure that any required sloping or shoring systems are approved as per 29 CFR 1926 Subpart P. ▪ Identify special personal protective equipment (PPE) (see Section 7) and monitoring (see Section 8) needs if personnel are required to enter approved excavated areas or trenches. ▪ Maintain line of sight between equipment operators and personnel in excavations/trenches. Such personnel are prohibited from working in close proximity to operating machinery. ▪ Suspend or shut down operations at signs of cave in, excessive water, defective shoring, changing weather, or unacceptable monitoring results. ▪ Other:

Hazard	Task Number	Hazard Control Measures
Fire and Explosion	**II**	▪ Inform personnel of the location(s) of potential fire/explosion hazards. ▪ Establish site-specific procedures for working around flammables. ▪ Ensure that appropriate fire suppression equipment and systems are available and in good working order. ▪ Define requirements for intrinsically safe equipment. ▪ Identify special monitoring needs (see Section 8). ▪ Remove ignition sources from flammable atmospheres. ▪ Coordinate with local fire-fighting groups regarding potential fire/explosion situations. ▪ Establish contingency plans and review daily with team members. ▪ Other:
Heat Stress	**I & II**	▪ Provide cool break area and adequate breaks. ▪ Provide cool noncaffeinated beverages. ▪ Promote heat stress awareness. ▪ Use active cooling devices (e.g., cooling vests) where specified. ▪ See *Heat Stress Prevention and Treatment* (attached at the end of this plan if heat stress is a potential hazard).
Heavy Equipment Operation	**II**	▪ N/A ▪ Identify special PPE (Section 7) and monitoring (Section 8) needs.
Heights (Scaffolding, Ladders, etc.)	**N/A**	▪ N/A
Noise	**I &II**	▪ Establish noise level standards for on-site equipment/operations per OSHA standards for construction work sites. ▪ Inform personnel of hearing protection requirements (Section 7). ▪ Contractor to define site-specific requirements for noise monitoring (Section 8). ▪ Other:
Overhead Obstructions	**I & II**	▪ Wear hard hat. ▪ Other:

Hazard	Task Number	Hazard Control Measures
Power Tools	**I**	▪ N/A ▪ Other:
Sunburn	**I & II**	▪ Apply sunscreen. ▪ Wear hats/caps and long sleeves. ▪ Other:
Utility Lines	**I & II**	▪ Contractor to identify/locate existing utilities prior to work. ▪ Contractor to ensure that overhead utility lines are at least 25 feet away from project activities. ▪ Contact utilities to confirm locations, as necessary. ▪ Other: EQ Northeast shall have local utilities cleared and marked prior to ant intrusive task
Weather Extremes	**I & II**	▪ Potential hazards: high winds or heavy rains ▪ Establish site-specific contingencies for severe weather situations. Contractor to monitor and contact office for instruction. ▪ Provide for frequent weather broadcasts. ▪ Weatherize safety gear, as necessary (e.g., ensure eye wash units cannot freeze, etc.). ▪ Identify special PPE (Section 7) needs. ▪ Discontinue work during severe weather. ▪ Other:
Other: Structural	**II**	▪ Review of building access where columns will be replaced prior to entry.
Other: Slip, Trip and Fall	**I & II**	▪ Review of uneven and slippery surfaces prior to entry.

6.2 CHEMICAL HAZARD EVALUATION AND CONTROL

6.2.1 Chemical Hazard Evaluation

Potential chemical hazards are described by task number in Table 6-1. Hazard Evaluation **Sheets for major known contaminants are attached at the end of this plan.**

TABLE 6-1

CHEMICAL HAZARD EVALUATION

Task Number	Compound	Exposure Limits (TWA)			Dermal Hazard (Y/N)	Route(s) of Exposure	Acute Symptoms	Odor Threshold/ Description	FID/PID	
		PEL	REL	TLV					Relative Response	Ioniz. Poten. (eV)
I & II	Arsenic*	0.5 mg/m^3 organic		0.2 mg/m^3 inhalable	Yes	Inhalation, skin absorption, ingestion, skin and/or eye contact	Sensory irritant, lung & skin cancer, aplastic anemia and numbness.	N/A	N/A	N/A
I & II	Chromium III & Chromium VI*	0.5 mg/m^3 0.1 mg/m^3		0.5 mg/m^3 0.001 mg/m^3	Yes Yes	CR III –eye irritant & dermal sensitivity CR VI – irritant res. system, liver, kidney damage and dermal sensitivity	CRIII: Eyes and skin CR VI: Blood , respiratory system, liver, kidney, eyes, and skin – CARCINOGEN	N/A	N/A	N/A
I & II	Total Petroleum Hydrocarbons (as Diesel Fuel)*	NA		100ppm	Yes	Inhalation, ingestion, contact, and absorption	Irritant to eyes, skin and mucous membranes, dermatitis, headache, fatigue, blurred vision, possible liver and kidney damage; CARCINOGEN	N/A	5 mg/m	N/A
I & II	Copper	0.1 mg/m^3		0.1 mg/m^3	No	Inhalation and contact	Irritated eyes, upper respiratory system, mus. ache, fever dry throat	N/A	N/A	N/A
I & II	Zinc	5 mg/m^3		5 mg/m^3	No	Inhalation	Metal fume, fever, chills, mus. Ache, dry throat, cough, weak	N/A	N/A	N/A

Note: Use an asterisk (*) to indicate known or suspected carcinogens.

6.2.2 Chemical Hazard Control

An appropriate combination of engineering/administrative controls, work practices, and PPE shall be used to reduce and maintain employee exposures to a level at or below published exposure levels (see Section 6.2.1).

PPE: See Section 7.

7. LEVEL OF PROTECTION AND PERSONAL PROTECTIVE EQUIPMENT

7.1 LEVEL OF PROTECTION

The following levels of protection (LOPs) have been selected for each work task based on an evaluation of the potential or known hazards, the routes of potential hazard, and the performance specifications of the PPE. On-site monitoring results and other information obtained from on-site activities will be used to modify these LOPs and the PPE, as necessary, to ensure sufficient personnel protection. The authorized LOP and PPE shall only be changed with the approval of the regional safety coordinator or designee. Level A is not included below because Level A activities, which are performed infrequently, will require special planning and addenda to this GHASP.

Task Number	B	C	D	Modifications Allowed
I		(X)	X	Level C for atmospheres inside building exceeding the PEL band from Community Air Monitoring Program (CAMP). Modified level D for rest of remedial site activities
II		(X)	X	

Note: Use "X" for initial levels of protection. Use "(X)" to indicate levels of protection that may be used as site conditions warrant.

7.2 PERSONAL PROTECTIVE EQUIPMENT

The PPE selected for each task is indicated below. The CONSULTANT'S PPE program complies with 29 CFR 1910.120 and 29 CFR 1910 Subpart I and is described in detail in the CHSP. Refer to 29 CFR 1910 for the minimum PPE required for each LOP.

PPE	Task Number/LOP					
	I	II				
Full-face APR		(X)				
PAPR						
Cartridges:						
P100		(X)				
GMC-P100						
GME-P100						
Other:						
Positive-pressure, full-face SCBA						
Spare air tanks (Grade D air)						
Positive-pressure, full-face, supplied-air system						
Cascade system (Grade D air)						
Manifold system						
5-Minute escape mask						
Safety glasses	X	X				
Monogoggles						
Coveralls/clothing	X	X				
Protective clothing:						
Tyvek	X	X				
Saranex						
Other:						
Splash apron						
Inner gloves:						
Cotton	X	X				
Nitrile						
Latex	X	X				
Other:						

PPE	Task Number/LOP					
	I	II				
Outer gloves:						
Viton						
Rubber						
Neoprene						
Nitrile	X	X				
Other:						
Work gloves						
Safety boots (as per ANSI Z41)	X	X				
Neoprene safety boots (as per ANSI Z41)	X	X				
Boot covers (type: rubber_____)	X	X				
Hearing protection (type: muffs _)	X	X				
Hard hat	X	X				
Face shield						
Other:						

8. HEALTH AND SAFETY MONITORING

Health and safety monitoring will be conducted to ensure proper selection of engineering/administrative controls, work practices, and/or PPE so that employees are not exposed to hazardous substances at levels that exceed permissible exposure/dose limits or published exposure levels. Health and safety monitoring will be conducted using the instruments, frequency, and action levels described in Table 8-1. Health and safety monitoring instruments shall have been appropriately calibrated and/or performance-checked prior to use.

Table 8-1

HEALTH AND SAFETY MONITORING

Instrument	Task Number	Contaminant (s)	Monitoring Location	Monitoring Frequency	Action Levels	
☒ PID (e.g., HNu IS-101) □ FID (e.g., OVA 128-GC)					**Unknown Vapors** Background to 1 ppm: Level D 1 to 5 ppm above background: Level C 5 to 500 ppm above background: Level B >500 ppm above background: Level A	**Contaminant-Specific**
Oxygen Meter/Explosimeter					**Oxygen** <19.5% or >22.0%: Evacuate area; eliminate ignition sources; reassess conditions. 19.5 to 22.0%: Continue work in accordance with action levels for other instruments.	**Explosivity** ≤10% LEL: Continue work in accordance with action levels for other instruments; monitor continuously for combustible atmospheres. >10% LEL: Evacuate area; eliminate ignition sources; reassess conditions.
Other:						

[a]Unless stated otherwise, airborne contaminant concentrations are measured as a time-weighted average in the worker's breathing zone. Acceptable concentrations for known airborne contaminants will be determined based on OSHA/NIOSH/ACGIH and/or NRC exposure limits. As a guideline, 1/2 the PEL/REL/TLV, whichever is lower should be used.

9. DECONTAMINATION PROCEDURES

All equipment, materials, and personnel will be evaluated for contamination upon leaving the exclusion area. Equipment and materials will be decontaminated and/or disposed and personnel will be decontaminated, as necessary. Decontamination will be performed in the contamination reduction area or any designated area such that the exposure of uncontaminated employees, equipment, and materials will be minimized. Specific procedures are described below.

Equipment/Material Decontamination Procedures (specified by work plan): Prevent cross-contamination and decontaminate equipment after each use. Dedicated sampling equipment to be used whenever possible. All non-dedicated equipment will be steam cleaned or washed with laboratory-grade detergent and triple rinsed with deionized or distilled water.

Ventilation: All decontamination procedures will be conducted in a well-ventilated area or contractor supplied trailer.

Personnel Decontamination Procedures: Protective clothing to be removed in a manner that will minimize the potential of contaminant to skin contact.

PPE Requirements for Personnel Performing Decontamination: Appropriate splash protection to be worn during steam cleaning and/or a wet decontamination.

Personnel Decontamination in General: Following appropriate decontamination procedures, all field personnel will wash their hands and face with soap and potable water. Personnel should shower at the completion of each work shift.

Disposition of Disposable PPE: Disposable PPE must be rendered unusable and disposed of.

Disposition of Decontamination Wastes (e.g., dry wastes, decontamination fluids, etc.): Used PPE is to be double bagged if deemed non-hazardous. Potentially hazardous PPE will be drummed. Wastewater is to be containerized and tested.

10. EMERGENCY RESPONSE

This section contains additional information pertaining to on-site emergency response and does not duplicate pertinent emergency response information contained in earlier sections of this plan (e.g., site layout, monitoring equipment, etc.). Emergency response procedures will be rehearsed regularly, as applicable, during project activities.

10.1 EMERGENCY RESPONSIBILITIES

All Personnel: All personnel shall be alert to the possibility of an on-site emergency; report potential or actual emergency situations to the team leader and the SSO; and notify appropriate emergency resources, as necessary.

Team Leader: The team leader will determine the emergency actions to be performed by the CONSULTANT'S personnel and will direct these actions. The team leader also will ensure that applicable incidents are reported to appropriate CONSULTANT and client project personnel and government agencies.

SSO: The SSO will recommend health/safety and protective measures appropriate to the emergency.

Other:

10.2 LOCAL AND SITE RESOURCES (including phone numbers)

Ambulance: 911

Hospital: Peconic Bay Medical Center, 1300 Roanoke Avenue, Riverhead, New York 11901 – 631-548-6000

Directions to Hospital: Map attached as **Attachment 3**.

Poison Control: 911

Police Department: 911

Fire Department: TBD

Client Contact: David Chuisano NYSDEC, 625 Broadway, Albany, NY 12233 – 518-402-9814

Site Contact: None

On-Site Telephone Number: Field Crew to be equipped with cell phone

Cellular Telephone Number(s): TBD

Radios Available: TBD

Other:

10.3 The CONSULTANT'S EMERGENCY CONTACTS

Corporate Health and Safety Director,:	(office)
	(home)
Regional Office Contact:	(office)
	(home)

Other: (office)

a. The CONSULTANT'S Emergency Response Center:

b. Corporate Health and Safety Director,: (office)
(home)

c. Corporate Safety Officer, (office)
(home)

10.4 OTHER EMERGENCY RESPONSE PROCEDURES

On-Site Evacuation Signal/Alarm (must be audible and perceptible above ambient noise and light levels):

On-Site Assembly Area:

Emergency Egress Route to Get Off Site:

Off-Site Assembly Area: Near Main Entrance on Speonk-Riverhead Road.

Preferred Means of Reporting Emergencies: Team leader will contact emergency personnel and project manager, as necessary.

Site Security and Control: In an emergency situation, personnel will attempt to secure the affected area and control site access

Emergency Decontamination Procedures: Wash hands and remove contaminated outer wear.

PPE: Personnel will wear appropriate PPE when responding to an emergency situation. The SSO and Section 7 of this plan will provide guidance regarding appropriate PPE.

Emergency Equipment: Appropriate emergency equipment is listed in Attachment 1. Adequate supplies of this equipment shall be maintained in the support area or other approved work location.

Incident Reporting Procedures: Report using telephone to appropriate authorities. All incidents will be reported to the CONSULTANT'S corporate health and safety director, client and others, as necessary.

ATTACHMENT 1
EQUIPMENT/SUPPLIES CHECKLIST

INSTRUMENTATION	No.	**EMERGENCY EQUIPMENT**	No.
OVA		First aid kit	X
Thermal desorber		Stretcher	
O_2/explosimeter w/cal. kit		Portable eye wash	
Photovac tip		Blood pressure monitor	
HNu (probe: _____eV)		Fire blanket	
Magnetometer		Fire extinguisher	
Pipe locator		Thermometer (medical)	
Weather station		Spill kit	
Draeger tube kit (tubes: _____)			
Brunton compass			
Real-time cyanide monitor			
Real-time H_2S monitor			
Heat stress monitor			
Noise equipment		**DECONTAMINATION EQUIPMENT**	
Personal sampling pumps and supplies		Wash tubs	
MiniRam dust monitor		Buckets	
Mercury monitor		Scrub brushes	
Spare batteries (type: _____)		Pressurized sprayer	
		Spray bottle	X
		Detergent (type: Alconox/Liquinox)	
RADIATION EQUIPMENT/SUPPLIES		Solvent (type: _____)	
Documentation forms		Plastic sheeting	
Portable ratemeter		Tarps and poles	
Scaler/ratemeter		Trash bags	X
1" NaI gamma probe		Trash cans	
2" NaI gamma probe		Masking tape	
ZnS alpha probe		Duct tape	X
GM pancake probe		Paper towels	X
Tungsten-shielded GM probe		Face mask	
Micro R meter		Face mask sanitizer	
Ion chamber		Step ladders	
Alert monitor		Distilled water	
Pocket dosimeter		Deionized water	

ATTACHMENT 1
EQUIPMENT/SUPPLIES CHECKLIST

Dosimeter charger			
Radiation warning tape			
Radiation decon supplies			
Spare batteries (type:_____)			
SAMPLING EQUIPMENT		**MISCELLANEOUS (Cont.)**	
8-oz. bottles	X	Gatorade or equivalent	
Half-gallon bottles		Tables	
VOA bottles	X	Chairs	
String		Weather radio	
Hand bailers		Two-way radios	
Thieving rods with bulbs		Binoculars	
Spoons		Megaphone	
Knives		Cooling vest	
Filter paper			
Bottle labels	X		
		SHIPPING EQUIPMENT	
		Coolers	X
MISCELLANEOUS		Paint cans with lids, 7 clips each	
Pump		Vermiculite	
Surveyor's tape		Shipping labels	X
100' Fiberglass tape	X	DOT labels:	
300' Nylon rope		"Up"	
Nylon string		"Danger"	
Surveying flags		"Inside Container Complies ..."	
Camera (Digital) and battery charger or batteries	X	Hazard Group	
Film		Strapping tape	X
Bung wrench		Baggies	X
Soil auger		Custody seals	X
Pick		Chain-of-custody forms	X
Shovel		Federal Express forms	

ATTACHMENT 1 EQUIPMENT/SUPPLIES CHECKLIST			
MISCELLANEOUS	No.	**SHIPPING EQUIPMENT**	No.
Pump		Coolers	X
Surveyor's tape		Paint cans with lids and clips	
100' Fiberglass tape	X	Bubble Wrap	X
300' Nylon rope		Shipping labels	X
Nylon/polyethylene string	X	DOT labels:	
Surveying flags	X	"Up"	
Camera	X	"Danger"	
Film	X	"Inside Container Complies ..."	
Bung wrench/ratchet	X	Hazard Group	
Soil auger		Strapping tape	X
Pick		Baggies	X
Shovel		Custody seals	X
Catalytic heater		Chain-of-custody forms	X
Propane gas		Federal Express forms	X
Banner tape		Clear packing tape	X
Surveying meter stick		Permanent markers	X
Chaining pins and ring			
Logbooks (_X_ large, ___ small)	X		
Required MSDSs	X		
Intrinsically safe flashlight			
Potable water	X		

M Material Safety Data Sheets

Chromic acid and chromates

Synonyms & Trade Names Chromic acid (CrO_3): Chromic anhydride, Chromic oxide, Chromium(VI) oxide (1:3), Chromium trioxide
Synonyms of chromates (i.e., chromium(VI) compounds) such as zinc chromate vary depending upon the specific compound.

CAS No. 1333-82-0 (CrO_3)	**RTECS No.** GB6650000 (CrO_3) (/niosh-rtecs/GB657890.html)	**DOT ID & Guide** 1755 154 (http://wwwapps.tc.gc.ca/saf-sec-sur/3/erg-gmu/erg/guidepage.aspx?guide=154) (acid solution) 1463 141 (http://wwwapps.tc.gc.ca/saf-sec-sur/3/erg-gmu/erg/guidepage.aspx?guide=141) (acid, solid)
Formula CrO_3 (acid)	**Conversion**	**IDLH** Ca [15 mg/m³ {as Cr(VI)}] See: 1333820 (/niosh/idlh/1333820.html)

Exposure Limits

NIOSH REL (as Cr): Ca TWA 0.001 mg/m³ See Appendix A (nengapdxa.html) See Appendix C (nengapdxc.html)
OSHA PEL (as CrO_3): TWA 0.005 mg/m³ See Appendix C (nengapdxc.html)

Measurement Methods
NIOSH 7600 (/niosh/docs/2003-154/pdfs/7600.pdf) , 7604 (/niosh/docs/2003-154/pdfs/7604.pdf) , 7605 (/niosh/docs/2003-154/pdfs/7605.pdf) , 7703 (/niosh/docs/2003-154/pdfs/7703.pdf) , 9101 (/niosh/docs/2003-154/pdfs/9101.pdf) ;
OSHA ID103 (http://www.osha.gov/dts/sltc/methods/inorganic/id103/id103.html) , ID215 (http://www.osha.gov/dts/sltc/methods/inorganic/id215/id215.html) , W4001 (http://www.osha.gov/dts/sltc/methods/validated/t-w4001-fv-02-0104-m/t-w4001-fv-02-0104-m.html)
See: NMAM (/niosh/docs/2003-154/) or OSHA Methods (http://www.osha.gov/dts/sltc/methods/index.html)

Physical Description CrO_3: Dark-red, odorless flakes or powder. [Note: Often used in an aqueous solution (H_2CrO_4).]

MW: 100.0	**BP:** 482°F (Decomposes)	MLT: 387°F (Decomposes)	**Sol:** 63%	**VP:** Very low	**IP:** NA
Sp.Gr: 2.70 (CrO_3)	**Fl.P:** NA	**UEL:** NA	**LEL:** NA		

CrO_3: Noncombustible Solid, but will accelerate the burning of combustible materials.

Incompatibilities & Reactivities Combustible, organic, or other readily oxidizable materials (paper, wood, sulfur, aluminum, plastics, etc.); corrosive to metals

Exposure Routes inhalation, ingestion, skin and/or eye contact

Symptoms irritation respiratory system; nasal septum perforation; liver, kidney damage; leukocytosis (increased blood leukocytes), leukopenia (reduced blood leukocytes), eosinophilia; eye injury, conjunctivitis; skin ulcer, sensitization dermatitis; [potential occupational carcinogen]

Target Organs Blood, respiratory system, liver, kidneys, eyes, skin

Cancer Site [lung cancer]

Personal Protection/Sanitation (See protection codes (protect.html))
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet or contaminated
Change: Daily
Provide: Eyewash, Quick drench

First Aid (See procedures (firstaid.html))
Eye: Irrigate immediately
Skin: Soap flush immediately
Breathing: Respiratory support
Swallow: Medical attention immediately

Respirator Recommendations

NIOSH

At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator with an N100, R100, or P100 filter.
Click here (pgintrod.html#nrp) for information on selection of N, R, or P filters.
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection (pgintrod.html#mustread)

See also: INTRODUCTION (/niosh/npg/pgintrod.html) See ICSC CARD: 1194 (/niosh/ipcsneng/neng1194.html) See MEDICAL TESTS: 0051 (/niosh/docs/2005-110/nmed0051.html)

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Centers for Disease Control and Prevention 1600 Clifton Rd. Atlanta, GA 30333, USA
800-CDC-INFO (800-232-4636) TTY: (888) 232-6348, 24 Hours/Every Day - cdcinfo@cdc.gov

COPPER (II) ORTHOARSENATE

0648
April 1993

CAS No: 10103-61-4
RTECS No: None
UN No: 1557
EC No: 033-005-00-1

Arsenic acid, copper salt
Copper arsenate
$As_2Cu_3H_8O_{12}$ / $Cu_3(AsO_4)_2$ò $4H_2O$
Molecular mass: 540.5

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/SYMPTOMS	PREVENTION	FIRST AID/FIRE FIGHTING
FIRE	Not combustible. Gives off irritating or toxic fumes (or gases) in a fire.		In case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION			
EXPOSURE		**PREVENT DISPERSION OF DUST! AVOID ALL CONTACT!**	**IN ALL CASES CONSULT A DOCTOR!**
Inhalation	Cough. Headache. Laboured breathing. Weakness. See Ingestion.	Closed system and ventilation.	Fresh air, rest. Refer for medical attention.
Skin	MAY BE ABSORBED!	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap. Refer for medical attention.
Eyes	Redness. Pain.	Face shield or eye protection in combination with breathing protection if powder.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
Ingestion	Abdominal pain. Diarrhoea. Vomiting. Burning sensation behind breastbone and in the mouth.	Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth. Give a slurry of activated charcoal in water to drink. Induce vomiting (ONLY IN CONSCIOUS PERSONS!). Refer for medical attention.

SPILLAGE DISPOSAL	PACKAGING & LABELLING	
Personal protection: P3 filter respirator for toxic particles. Do NOT let this chemical enter the environment. Do NOT wash away into sewer. Vacuum spilled material. Carefully collect remainder, then remove to safe place.	T Symbol N Symbol R: 45-23/25-50/53 S: 53-45-60-61 Note: A, E UN Hazard Class: 6.1	Unbreakable packaging; put breakable packaging into closed unbreakable container. Do not transport with food and feedstuffs. Marine pollutant.

EMERGENCY RESPONSE	SAFE STORAGE
Transport Emergency Card: TEC (R)-61GT5-II	Separated from acids, food and feedstuffs. Cool. Well closed. Keep in a well-ventilated room.

IPCS
International Programme on Chemical Safety

Prepared in the context of cooperation between the International Programme on Chemical Safety and the European Commission

IMPORTANT DATA

Physical State; Appearance
BLUE OR BLUISH-GREEN POWDER.

Chemical dangers
The substance decomposes on heating producing toxic fumes of arsenic (see ICSC 0013). Reacts with acids releasing toxic arsine gas (see ICSC 0222).

Occupational exposure limits
TLV: (as As) 0.01 mg/m^3; A1 (confirmed human carcinogen); BEI issued; (ACGIH 2004).
MAK: Carcinogen category: 1; Germ cell mutagen group: 3A; (DFG 2004).

Routes of exposure
The substance can be absorbed into the body by inhalation of its aerosol, through the skin and by ingestion.

Inhalation risk
Evaporation at 20/C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.

Effects of short-term exposure
The substance and the aerosol is irritating to the eyes and the respiratory tract. The substance may cause effects on the central nervous system, digestive tract, circulatory system, resulting in severe haemorrhagic, losses of fluids and electrolytes, collapse, shock and death. Exposure at low level may result in death. The effects may be delayed.

Effects of long-term or repeated exposure
Repeated or prolonged contact with skin may cause dermatitis. The substance may have effects on the peripheral nervous system, skin, mucous membranes, and liver, resulting in neuropathy, pigmentation disorders, perforation of nasal septum, and cirrhosis. This substance is carcinogenic to humans.

PHYSICAL PROPERTIES

Solubility in water: none

ENVIRONMENTAL DATA

This substance may be hazardous to the environment; special attention should be given to water. It is strongly advised that this substance does not enter the environment.

NOTES

Temperature of decomposition unknown in literature.
Do NOT take working clothes home.
Card has been partly updated in October 2005. See sections Occupational Exposure Limits, EU classification, Emergency Response.

ADDITIONAL INFORMATION

MATERIAL SAFETY DATA SHEET

UNITED MINERAL & CHEMICAL CORPORATION
1100 VALLEY BROOK AVENUE
LYNDHURST, NJ 07071
TEL: 201-507-3300 FAX: 201-507-1506

FOR EMERGENCY CALL:
C H E M T R E C
1-800-424-9300

SECTION A - PRODUCT INFORMATION

TRADE NAME : ARSENIC METAL:
MBE CHARGES, ARSENIC CHUNK & GRANULE
REVISION DATE : NOVEMBER 16, 2007

CAS NUMBER : 7440-38-2
SYNONYMS : METALLIC ARSENIC; GREY ARSENIC; ARSENIA
CHEMICAL FAMILY : METALS - GROUP 5a
FORMULA : As

SECTION B - HAZARDOUS COMPONENTS

COMPONENT	CAS NO.	%	PEL/TLV
ARSENIC METAL (As)	7440-38-2	100	0.01mg/m^3 ACGIH TWA AS As 0.01mg/m^3 OSHA TWA, INORGANIC COMPOUNDS AS As (SEE 29 CFR 1910.1018) 0.5 mg/m^3 OSHA TWA, ORGANIC COMPOUNDS AS As 0.002 mg/m^3/15 min. CEILING-NIOSH, INORGANIC CMPD. 5 mg As/m^3 IDLH-CARCINOGEN, INORGANIC COMPOUNDS

TWA – Time Weighted Average over 8 hours
IDLH - Immediately dangerous to life & health

See the OSHA Inorganic Arsenic Standard at 29 CFR 1910.1018 before processing.

SECTION C - PHYSICAL PROPERTIES

BOILING POINT (°C) : SUBLIMES @ 615
MELTING POINT (°C) : 817 @ 3.6477 Mpa
VAPOR PRESSURE (mm Hg) : 1mm @ 372ºC
VAPOR DENSITY (AIR=1) : N/A
SOLUBILITY IN WATER : INSOLUBLE
ODOR THRESHOLD : N/A
APPEARANCE & ODOR : SILVER GRAY CRYSTALLINE CHUNKS, RODS, OR GRANULES; NO ODOR AS METAL AS COMPOUND, AsH_3 HAS GARLIC ODOR

SPECIFIC GRAVITY : 5.72
FREEZING POINT (°) : N/A
PERCENT VOLATILE (BY WT.) : N/A
EVAPORATION RATE : N/A
pH (0 % IN WATER) : NONE

SECTION D - FIRE & EXPLOSION DATA

FLASH POINT (°) : NONE

FLAMMABLE LIMITS : **LEL** : **(N/A)** **UEL : (N/A)** **AUTO IGNITION TEMP (° F)**: **(UNKNOWN)**
EXTINGUISHING MEDIA : **WATER** : **()** **FOAM** : **(X)** **CO_2**: **(X)** **DRY CHEMICAL**: **(X)**

SPECIAL FIRE FIGHTING PROCEDURES : ARSENIC IN MASS FORM IS NON-FLAMMABLE. IN THE EVENT OF A FIRE, RESTRICT PERSONS NOT WEARING PROTECTIVE EQUIPMENT FROM AREA. TRY TO SNUFF FIRE WITH SAND, DRY MEDIA, FOAM OR CO_2. IF NO OTHER OPTIONS AVAILABLE, USE WATER & ALWAYS WEAR SELF CONTAINED BREATHING APPARATUS OR NIOSH TOXIC VAPOR RESPIRATOR. POISONOUS GASES ARE PRODUCED IN FIRE, INCLUDING ARSENIC OXIDES.

UNUSUAL FIRE & EXPLOSION HAZARDS : ARSENIC, WHEN HEATED OR IN CONTACT WITH ACID OR ACID FUMES, CAN PRODUCE HIGHLY TOXIC FUMES (SUCH AS ARSINE). ARSENIC REACTS VIGOROUSLY WITH OXIDIZING MATERIALS. ARSENIC IS FLAMMABLE IN THE FORM OF DUST WHEN EXPOSED TO HEAT OR FLAME OR BY CHEMICAL REACTION WITH POWERFUL OXIDIZERS (SEE SECTION E). SLIGHT EXPLOSION HAZARD EXISTS IN THE FORM OF DUST WHEN EXPOSED TO FLAME. IN THE EVENT OF A FIRE OR SPILL, CONTACT THE STATE DEPT. OF THE ENVIRONMENT & YOUR REGIONAL OFFICE OF THE FEDERAL ENVIRONMENTAL PROTECTION AGENCY.

SECTION E - REACTIVITY DATA

STABILITY : STABLE
INCOMPATIBILITY : HYDROGEN GAS CAN REACT WITH INORGANIC ARSENIC TO FORM THE HIGHLY TOXIC GAS ARSINE. INCOMPATIBLE WITH BROMINE AZIDE, DIRUBIDIUM ACETYLIDE, HALOGENS, PALLADIUM ZINC, PLATINUM, NCl_3, $AgNO_3$, CrO_3, Na_2O_2, HEXAFLUOROISOPROPYLIDENEAMINO LITHIUM. CAN REACT WITH ACIDS OR ACID FUMES AND POWERFUL OXIDIZERS SUCH AS BROMATES, CHLORATES, IODATES, PEROXIDES, LITHIUM, $NaCl_3$, KNO_3, $KMnO_3$, Rb_2C_2, $AgNO_4$, NOCl, IF_5, CrO_3, CIF_3, ClO, BrF_3, BrF_5, BrN_3, RbC_3BCH, CsC_3BCH.
HAZARDOUS DECOMPOSITION PRODUCTS : ARSENIC FUMES, ARSINE, OTHER ARSENIC COMPOUNDS
HAZARDOUS POLYMERIZATION : WILL NOT OCCUR
CONDITIONS TO AVOID : AVOID OPEN CONTAINERS AND CONTACT WITH INCOMPATIBLE MATERIALS

N/A = NOT APPLICABLE

SECTION F - PERSONAL PROTECTIVE EQUIPMENT INFO

RESPIRATORY EQUIPMENT : FOR HANDLING ELEMENTAL ARSENIC IN CHUNK, ROD, OR GRANULES USE NIOSH APPROVED, AIR PURIFYING, TOXIC VAPOR RESPIRATOR FOR PARTICULATE & FUME/ AIR LEVEL. IF PROCESSING MATERIAL INTO INORGANIC ARSENIC COMPOUNDS, CHOOSE PROPER RESPIRATORY PROTECTION IN ACCORDANCE WITH THE OSHA INORGANIC ARSENIC STANDARD AT 29 CFR 1910.1018 (h). FOR UNKNOWN CONCENTRATIONS OF INORGANIC ARSENIC OR UNDER FIRE-FIGHTING CONDITIONS USE FULL FACEPIECE SELF-CONTAINED BREATHING APPARATUS OPERATED IN POSITIVE PRESSURE MODE.

PROTECTIVE GLOVES : NEOPRENE OR PLASTIC

EYE PROTECTION : FACE SHIELD OR VENTED GOGGLES FOR WHEN DUST/ FUME OR INORGANIC COMPOUNDS ARE GENERATED.

VENTILATION : LOCAL EXHAUST/MECHANICAL(GENERAL) SCRUBBER OR TRAP IF POSSIBLE TO MAINTAIN EXPOSURE TO LESS THAN PERMISSIBLE LIMITS FOR ELEMENTAL ARSENIC AND ANY COMPOUNDS BEING GENERATED (SEE SECTION B)

OTHER PROTECTIVE EQUIPMENT : LAB COAT, COVERALLS, COVERLETS FOR SHOES, AND ACCESS TO EYEWASH FOUNTAIN FOR DUST OR INORGANIC COMPOUND GENERATION

SECTION G - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE : 0.01mg/m^3 TWA ARSENIC, ELEMENTAL & INORGANIC COMPOUNDS(EXCEPT ARSINE), AS As

PRIMARY ROUTES OF EXPOSURE : INHALATION OF FUMES, DUST, REACTION GASES; INGESTION; SKIN CONTACT

ORAL LD_{50} : 763 mg/m^3 RAT; ORAL RAT TDLo 605 micrograms/kg – REPRODUCTIVE EFFECTS; ORAL-MAN TDLo 7857 mg/kg/55 year old – SKIN & GASTROINTESTINAL EFFECTS

DERMAL IRRITATION-RABBIT : UNKNOWN; SUBCUTANEOUS RABBIT LDLo: 300 mg/kg

EYE IRRITATION-RABBIT : UNKNOWN

OSHA PEL : 0.01mg/m^3 TWA INORGANIC COMPOUNDS AS As; 0.5 mg/m^3 TWA ORGANIC COMPOUNDS AS As.

ACGIH TLV : 0.01mg/m^3 TWA ELEMENTAL ARSENIC & INORGANIC COMPOUNDS (EXCEPT ARSINE), AS As

EFFECTS OF OVEREXPOSURE : ARSENIC METAL IS NOT AS READILY AVAILABLE IN THE BODY AS ARSENIC IN THE FORM OF DUST OR VAPOR OR WHEN PROCESSED INTO ARSENIC COMPOUNDS (ARSENICALS). INORGANIC ARSENICALS ARE MORE TOXIC THAN ORGANIC ARSENICALS.

ACUTE EFFECTS: ARSENIC IS A POISON BY SUBCUTANEOUS, INTRAMUSCULAR, AND INTRAPERITONEAL ROUTES. ACUTE ARSENIC POISONING FROM INGESTION RESULTS IN BURNING LIPS, THROAT CONSTRICTION, ABDOMINAL PAIN, MARKED IRRITATION OF THE STOMACH AND INTESTINES WITH NAUSEA, VOMITING, AND DIARRHEA. IN SEVERE CASES THE STOOLS AND VOMIT ARE BLOODY AND THE PATIENT MAY GO INTO COLLAPSE AND SHOCK WITH WEAK, RAPID PULSE, COLD SWEATS, COMA, AND DEATH. INHALATION MAY CAUSE ULCERATION OF NASAL SEPTUM, RESPIRATORY IRRITATION (COUGH, SORE THROAT), SHORTNESS OF BREATH AND WEAKNESS. SKIN OR EYE CONTACT MAY CAUSE DERMATITIS, SKIN AND EYE IRRITATION. AFTER ABSORPTION, ARSENIC MAY CAUSE MULTI-ORGAN FAILURE AS DELAYED EFFECTS. ARSENIC IS AN EXPERIMENTAL TERATOGEN (MAY CAUSE DAMAGE TO THE DEVELOPING FETUS) AND MAY CAUSE SPONTANEOUS ABORTION OR STILLBIRTH WITH EITHER ACUTE OR CHRONIC POISONING.

CHRONIC EFFECTS: ARSENIC IS A CONFIRMED HUMAN CARCINOGEN AND HAS BEEN ASSOCIATED WITH LUNG, BLADDER, SKIN, AND OTHER CANCERS IN HUMANS. CHRONIC ARSENIC POISONING MAY INCLUDE ANY OR ALL OF THE FOLLOWING: DIGESTIVE SYSTEM DISTURBANCES, LOSS OF APPETITE, CRAMPS, NAUSEA, CONSTIPATION, DIARRHEA; LIVER DAMAGE WHICH MAY RESULT IN JAUNDICE; DISTURBANCES OF THE BLOOD, KIDNEYS AND NERVOUS SYSTEM; SKIN ABNORMALITIES INCLUDING ITCHING, PIGMENTATION, AND POSSIBLE CANCEROUS CHANGES. ARSENIC HAS INDUCED DNA DAMAGE IN HUMAN CELLS.

TARGET ORGANS (NIOSH) : (FOR INORGANIC COMPOUNDS AS As): LIVER, KIDNEYS, SKIN, LUNGS, LYMPHATIC SYSTEM

KNOWN EFFECTS ON OTHER ILLNESSES : EXPECTED TO AGGRAVATE PRE-EXISTING GASTROINTESTINAL, NERVOUS SYSTEM, SKIN, LIVER & KIDNEY PROBLEMS.

LISTED CARCINOGEN : NONE **()** OSHA **(YES)** NTP **(YES)** IARC **(YES)** OTHER **(YES)**

SECTION H – EMERGENCY & FIRST AID DATA

SKIN : FLUSH WITH SOAP & WATER. AVOID RUBBING INTO THE SKIN. CONTACT PHYSICIAN IMMEDIATELY.

EYES : FLUSH WITH WATER FOR AT LEAST 15 MINUTES, LIFTING UPPER AND LOWER EYELIDS. CONTACT PHYSICIAN IMMEDIATELY.

INHALATION : REMOVE TO FRESH AIR. PROVIDE OXYGEN IF NECESSARY. CONTACT PHYSICIAN IMMEDIATELY.

INGESTION : IMMEDIATELY CALL POISON CONTROL OR A PHYSICIAN. DO NOT INDUCE VOMITING UNLESS DIRECTED TO DO SO BY POISON CONTROL OR EMERGENCY MEDICAL PERSONNEL. TAKE TO HOSPITAL IMMEDIATELY.

MEDICAL NOTE: AGGRESSIVE DECONTAMINATION WITH GASTRIC LAVAGE IS RECOMMENDED. IF AN X-RAY INDICATES THE PRESENCE OF ARSENIC IN THE LOWER GI TRACT, WHOLE BOWEL IRRIGATION SHOULD BE CONSIDERED. ACTIVATED CHARCOAL MAY NOT BIND SIGNIFICANT AMOUNTS BUT IS RECOMMENDED UNTIL DEFINITIVE QUANTITATIVE DATA IS AVAILABLE. FLUID REPLETION SHOULD BEGIN AS SOON AS POSSIBLE.

SECTION I - SPILL & DISPOSAL INFORMATION

STEPS TO BE TAKEN IN CASE OF SPILL OR LEAK:

EVACUATE THE DANGER AREA. WEARING FULL PROTECTIVE EQUIPMENT (RESPIRATOR, GLOVES, GOGGLES, LAB COAT), GATHER UP CHUNKS, RODS, OR GRANULES WITH VACUUM OR UTENSILS RESERVED FOR POISONOUS SOLIDS AND PLACE IN SUITABLE CONTAINER AND SEAL. DO NOT RELEASE TO THE ENVIRONMENT. AVOID GENERATING DUST. VENTILATE THE AREA AFTER CLEANUP OF MATERIAL AND RESIDUE IS COMPLETE.

WASTE DISPOSAL INFORMATION:

SOLID WASTES SHOULD BE VITRIFIED, PLACED IN LABELED CONTAINER & BURIED IN AN EPA SUPERVISED FACILITY. ETCHING SOLUTIONS & CUTTING WASTES SHOULD BE PRECIPITATED, CEMENTED/VITRIFIED & PLACED IN METAL/PLASTIC LABELED CONTAINERS & BURIED IN EPA SUPERVISED FACILITY. PASS GAS THROUGH POTASSIUM PERMANGANATE, PRECIPITATE & TREAT AS ABOVE. WASTE MAY BE CONSIDERED HAZARDOUS DEPENDING ON LEVEL OF TOXICITY CHARACTERISTIC OF ARSENIC. SEE 40 CFR 261.24 FOR DETERMINATION.

RCRA HAZARDOUS WASTE : NO **()** YES **(**X)** **RCRA # : (****D004**)**

**** -** IF TESTED POSITIVE AS CHARACTERISTIC OF TOXICITY FOR ARSENIC

CERCLA : NO **()** YES **(X)** **RQ (**1 LB. RQ IS APPLICABLE ONLY IF THE DIAMETER OF THE PIECES OF THE SOLID METAL RELEASED IS LESS THAN 100 MICROMETERS OR 0.004 INCH. THIS PRODUCT FORM IS LARGER THAN 100 MICROMETERS AND HAS NO RQ IN ITS CURRENT FORM. IF AS HAZARDOUS WASTE CHARACTERISTIC OF ARSENIC, THEN RQ=1 LB.**)**

FOLLOW ALL LOCAL, STATE AND FEDERAL INFORMATION AND REGULATIONS

SECTION J - OTHER REGULATORY INFORMATION

TSCA: WE CERTIFY THAT ALL COMPONENTS OF THIS PRODUCT ARE REGISTERED UNDER THE REGULATIONS OF THE TOXIC SUBSTANCES CONTROL ACT.

SARA TITLE III, SECT. 313: **LISTED (X) UNLISTED ()**

DOT REGULATED: YES: (X**)** **NO: ()** **RQ: (**N/A - PIECES ARE LARGER THAN 100 MICROMETERS IN DIAMETER**)**

IF REGULATED, PROPER SHIPPING NAME: ARSENIC **HAZARD CLASS: (**6.1**)**

IDENTIFICATION NO.: (UN1558**)** **PACKING GROUP: (**II**)** **LABEL REQUIRED: (**POISON**)**

INLAND B/L: UN1558, ARSENIC, 6.1, PACKING GROUP II, POISON

EMERGENCY RESPONSE GUIDE NO.: (152**)**

SECTION K - SPECIAL PRECAUTIONS

FOR INDUSTRIAL USE ONLY

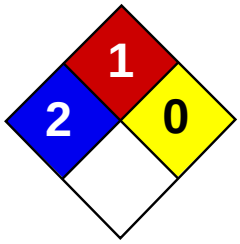
HANDLING & STORAGE INFORMATION:

PRIOR TO WORKING WITH ARSENIC, PERSONNEL SHOULD BE TRAINED IN PROPER HANDLING & STORAGE. STORE IN ORIGINAL PACKAGING IN COOL DRY AREA. WHEN HANDLING, WEAR FULL PROTECTIVE EQUIPMENT (SEE SECTION F). PLACE INTO INERT ATMOSPHERE IMMEDIATELY. IF PROCESSING INTO INORGANIC ARSENIC COMPOUNDS, FOLLOW THE OSHA STANDARD AT 29 CFR 1910.1018. DO NOT INGEST. DO NOT INHALE DUST OR ANY PROCESSING FUMES. AVOID SKIN AND EYE CONTACT.

NOTE: MAINTENANCE PERSONNEL OF PROCESSING AND EXTRACT EQUIPMENT MUST ALSO WEAR FULL PROTECTIVE EQUIPMENT (SEE SECTION F) AND OBSERVE THE REQUIREMENTS OF THE OSHA INORGANIC ARSENIC STANDARD (29 CFR 1910.1018) AS RESIDUES MAY CONTAIN ARSENIC PARTICLES AND VARYING COMPOUNDS OF ARSENIC.

OTHER PRECAUTIONS :

MINIMUM - HAVE QUARTERLY MEDICAL CHECKS INCLUDING URINE TESTS OF PERSONNEL WORKING WITH ARSENIC OR ARSENIC COMPOUNDS. DO NOT EAT, DRINK OR SMOKE IN THE WORK AREA.



Health	2
Fire	1
Reactivity	0
Personal Protection	E

Material Safety Data Sheet
Chromium MSDS

Section 1: Chemical Product and Company Identification

Product Name: Chromium

Catalog Codes: SLC4711, SLC3709

CAS#: 7440-47-3

RTECS: GB4200000

TSCA: TSCA 8(b) inventory: Chromium

CI#: Not applicable.

Synonym: Chromium metal; Chrome; Chromium Metal Chips 2" and finer

Chemical Name: Chromium

Chemical Formula: Cr

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Chromium	7440-47-3	100

Toxicological Data on Ingredients: Chromium LD50: Not available. LC50: Not available.

Section 3: Hazards Identification

Potential Acute Health Effects:
Hazardous in case of skin contact (irritant), of eye contact (irritant), of inhalation. Slightly hazardous in case of ingestion.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to kidneys, lungs, liver, upper respiratory tract. Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

Skin Contact:
In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation: Not available.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: 580°C (1076°F)

Flash Points: Not available.

Flammable Limits: Not available.

Products of Combustion: Some metallic oxides.

Fire Hazards in Presence of Various Substances:
Slightly flammable to flammable in presence of open flames and sparks, of heat. Non-flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards:
Moderate fire hazard when it is in the form of a dust (powder) and burns rapidly when heated in flame. Chromium is attacked vigorously by fused potassium chlorate producing vivid incandescence. Pyrophoric chromium unites with nitric oxide with incandescence. Incandescent reaction with nitrogen oxide or sulfur dioxide.

Special Remarks on Explosion Hazards:
Powdered Chromium metal +fused ammonium nitrate may react violently or explosively. Powdered Chromium will explode spontaneously in air.

Section 6: Accidental Release Measures

Small Spill:
Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Large Spill:
Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, acids, alkalis.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection:
Splash goggles. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 0.5 (mg/m3) from ACGIH (TLV) [United States] TWA: 1 (mg/m3) from OSHA (PEL) [United States] TWA: 0.5 (mg/m3) from NIOSH [United States] TWA: 0.5 (mg/m3) [United Kingdom (UK)] TWA: 0.5 (mg/m3) [Canada]Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid. (Metal solid.)

Odor: Odorless.

Taste: Not available.

Molecular Weight: 52 g/mole

Color: Silver-white to Grey.

pH (1% soln/water): Not applicable.

Boiling Point: 2642°C (4787.6°F)

Melting Point: 1900°C (3452°F) +/- !0 deg. C

Critical Temperature: Not available.

Specific Gravity: 7.14 (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility:
Insoluble in cold water, hot water. Soluble in acids (except Nitric), and strong alkalies.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Excess heat, incompatible materials

Incompatibility with various substances: Reactive with oxidizing agents, acids, alkalis.

Corrosivity: Not available.

Special Remarks on Reactivity:
Incompatible with molten Lithium at 180 deg. C, hydrogen peroxide, hydrochloric acid, sulfuric acid, most caustic alkalies and alkali carbonates, potassium chlorate, sulfur dioxide, nitrogen oxide, bromine pentafluoride. It may react violently or ignite with bromine pentafluoride. Chromium is rapidly attacked by fused sodium hydroxide + potassium nitrate. Potentially hazardous incompatibility with strong oxidizers.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Inhalation. Ingestion.

Toxicity to Animals:
LD50: Not available. LC50: Not available.

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC. May cause damage to the following organs: kidneys, lungs, liver, upper respiratory tract.

Other Toxic Effects on Humans:
Hazardous in case of skin contact (irritant), of inhalation. Slightly hazardous in case of ingestion.

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans:
May cause cancer based on animal data. There is no evidence that exposure to trivalent chromium causes cancer in man.

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: May cause skin irritation. Eyes: May cause mechanical eye irritation. Inhalation: May cause irritation of the respiratory tract and mucous membranes of the respiratory tract. Ingestion: May cause gastrointestinal tract irritation with nausea, vomiting, diarrhea. Chronic Potential Health Effects: Inhalation: The effects of chronic exposure include irritation , sneezing, reddness of the throat, bronchospasm, asthma, cough, polyps, chronic inflammation, emphysema, chronic bronchitis, pharyngitis, bronchopneumonia, pneumoconoisis. Effects on the nose from chronic chromium exposure include irritation, ulceration, and perforation of the nasal septum. Inflammation and ulceration of the larynx may also occur. Ingestion or Inhalation: Chronic exposure may cause liver and kidney damage.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The product itself and its products of degradation are not toxic.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: Not a DOT controlled material (United States).

Identification: Not applicable.

Special Provisions for Transport: Not applicable.

Section 15: Other Regulatory Information

Federal and State Regulations:
Connecticut hazardous material survey.: Chromium Illinois toxic substances disclosure to employee act: Chromium Illinois chemical safety act: Chromium New York release reporting list: Chromium Rhode Island RTK hazardous substances: Chromium Pennsylvania RTK: Chromium Minnesota: Chromium Michigan critical material: Chromium Massachusetts RTK: Chromium Massachusetts spill list: Chromium New Jersey: Chromium New Jersey spill list: Chromium Louisiana spill reporting: Chromium California Director's List of Hazardous Substances: Chromium TSCA 8(b) inventory: Chromium SARA 313 toxic chemical notification and release reporting: Chromium CERCLA: Hazardous substances.: Chromium: 5000 lbs. (2268 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada): Not controlled under WHMIS (Canada).

DSCL (EEC):
R40- Limited evidence of carcinogenic effect S36/37/39- Wear suitable protective clothing, gloves and eye/face protection. S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 1

Reactivity: 0

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 1

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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APG

Analytical Products Group, Inc.

2730 Washington Blvd., Belpre, OH 45714
740-423-4200 800-272-4442 Fax 740-423-5588

Material Safety Data Sheet

Date prepared on: 9/14/95

Last revised on: 1/20/08

Page **1**

Section I: Product Identification

CATALOG NUMBER: 1400/4180/4182/4183/224180/6250/6252	PRODUCT NAME: Hexavalent Chromium

Section II - Hazardous Ingredients/Identity Information

Chemical Name	CAS Reg. No.	OSHA PEL (TWA)	% Composition*
Nitric Acid	7697-37-2	2 ppm	1.2%

Non-Hazardous Ingredients/Identity Information

Chemical Name	CAS Reg. No.	OSHA PEL (TWA)	% Composition*
Potassium Dichromate	7778-50-9		<0.02%
Water			>98%

* Components are calculated on a weight/weight basis.

Section III - Physical/Chemical Characteristics of Hazardous Ingredients
Nitric Acid

BOILING POINT: >83°C	SPECIFIC GRAVITY: Water = 1.5027 @ 25 °C	
VAPOR PRESSURE: 47.9 mm @ 20°C	SOLUBILITY IN WATER: Complete	APPEARANCE/ODOR: Colorless to pale yellow liquid with suffocating odor.

Section IV - Fire and Explosion Hazard Data

FLASH POINT (Method used): Not available	AUTO IGNITION TEMPERATURE: Not available	FLAMMABLE LIMITS Not available	LEL NA	UEL NA
EXTINGUISHING MEDIA: Non-flammable, use extinguisher media appropriate for surrounding the fire.				
SPECIAL FIRE FIGHTING PROCEDURES: NA				
UNUSUAL FIRE AND EXPLOSION HAZARDS: NA				

Section V - Reactivity Data

STABILITY:	Unstable ☐	Stable ☒	Conditions to Avoid: None known
INCOMPATIBILITY (Materials to avoid): Concentrated Nitric Acid will react violently with organic and hydrophobic compounds.			
HAZARDOUS DECOMPOSITION PRODUCTS: None known			
HAZARDOUS POLYMERIZATION:	May Occur ☐	Will Not Occur ☒	Conditions to Avoid: NA

Section VI - Health Hazard Data

ROUTES OF ENTRY	Inhalation? YES	Skin? YES	Ingestion? YES
HEALTH HAZARDS (Acute and Chronic): ACUTE: No CHRONIC: Chromium is a human poison by ingestion. Long term effects are localized itching, burning and dermatitis. Individuals with bronchial asthma can be affected. The metal is a severe irritant of the mucous membranes.			

COMPONENTS LISTED AS CARCINOGENS OR POTENTIAL CARCINOGENS: Chromate is listed in the IARC Monograph as carcinogen. The concentrations of chromate in the analytical standards are less than 0.1%
SIGNS AND SYMPTOMS OF EXPOSURE: See under chronic health hazards.
MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Individuals with dermatitis.
EMERGENCY AND FIRST AID PROCEDURES: Seek medical assistance for treatment, observation and support if necessary. EYE CONTACT: Wash immediately with large amounts of water, occasionally lifting upper and lower eyelids (15-20 minutes). SKIN CONTACT: Wash affected area with soap and large amount of water (15-20 minutes). In case of chemical burns, cover area with sterile, dry pad. INHALATION: N/A INGESTION: Drink large quantities of water or milk. If vomiting persists administer fluids repeatedly.

Section VII - Precautions for Safe Handling and Use

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Add neutralizing agent, flush to sewer.
WASTE DISPOSAL METHOD: Observe all federal, state, and local regulations. Samples should be diluted for disposal unless local practice procedures specify otherwise.
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: These analytical standards may be stored in a non-hazardous chemical storage.
OTHER PRECAUTIONS* Never heat or evaporate analytical standards to dryness.

Section VIII - Control Measures

RESPIRATORY PROTECTION (Please specify): Depends on contamination levels in the workplace.	
VENTILATION: Local exhaust.	
PROTECTIVE GLOVES: Employee should wear appropriate protective gloves.	EYE PROTECTION: Safety glasses.
OTHER PROTECTIVE EQUIPMENT: N/A	
EMERGENCY WASH FACILITIES: Maintain eye wash and quick drench showers in work area.	

Section IX – WHMIS Class: E – Corrosive Material

The information stated in this Material Safety Data Sheet (MSDS) is believed to be correct on the date of publication and must not be considered all conclusive. The information has been obtained only by a search of available literature and is only a guide for handling the chemicals. Persons not specifically and properly trained should not handle this chemical or its container. This MSDS is provided without any warranty expressed or implied, including merchantability or fitness for any particular purpose.

This product is furnished for laboratory use ONLY! Our standards may not be used as drugs, cosmetics, agricultural or pesticidal products, food additives or as house hold chemicals.

* Various Government agencies (i.e., Department of Transportation, Occupational Safety and Health Administration, Environmental Protection Agency, and others) may have specific regulations concerning the transportation, handling, storage or use of this product which may not be contained herein. The customer or user of this product should be familiar with these regulations.

Ace Pole Co., Inc.
P.O. Box 1323 • Waycross, Ga. 31501 • (912) 449-4011

MATERIAL SAFETY DATA SHEET
Revised September 1, 2009

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Identifier: **Wolmanized® Heavy Duty™ Wood**
General Use:
Synonyms: Chromated Copper Arsenic (CCA) treated poles, piles, timber, posts, or plywood

MANUFACTURER: Ace Pole Company
5263 Timber Lane
Waycross, Ga 31501
1-800-422-2149

EMERGENCY TELEPHONE NUMBERS:
Brad Thomas - 912-614-6540
Jesse Ivey – 912-337-1312

2. COMPOSITION / INFORMATION ON INGREDIENTS

HAZARDOUS INGREDIENTS	PERCENT[1]	CAS #	EXPOSURE LIMITS (mg/m3 except where noted)		
			OSHA-PEL	ACGIH-TLV	OSHA-STEL
Chrome III (as Cr)	<3	7440-47-3	0.5	0.5	None
Chrome VI[2]	Trace	18540-29-9	5µg/m^3 2. 5µg/m^3 (action level)	0.01 (as Cr)	0.1 (as CrO_3) Ceiling
Arsenic V (as As) [3]	<3	7440-38-2	0.01	0.01	None
Copper Oxide (as Cu) (dusts/mists)	<3	7440-50-8	1.0	1.0	None
Wood Dust[4] Western Red Cedar All other Species	>91	N/A	 15(total) 5.0 (respirable) 15(total) 5.0 (respirable)	 0.5 (inhalable) 1.0 (inhalable)	None
Formaldehyde[5]	<0.1	50-00-0	0.75ppm	0.37 (Ceiling)	2ppm

Notes: Chromic Acid, Arsenic Acid, and Copper oxide are present in the preservative used to treat this wood
[1]Actual retention may vary due to differences in wood stock and treatment retention levels.
[2]Although the Chrome VI present in the Chromic Acid used to treat this wood is reduced to Chrome III during the treating and fixation processes, some Chrome VI may be present. Due to this, OSHA's Hexavalent Chromium Rule (29 CFR 1910.1026) may apply. The manufacturer of this treated wood has monitoring data indicating the levels will be below the established limits and action levels when used under usual conditions. If unusual circumstances exist, monitoring may be required.
[3]The arsenic pentoxide present in this product is not subject to the OSHA Arsenic standard 29CFR 1910.1801
[4]A state-run OSHA program may have more stringent limits for wood dust and/or PNOR.
[5]Only applies to Plywood Products

3. HAZARDS IDENTIFICATION

WARNING! MAY FORM COMBUSTIBLE DUST CONCENTRATIONS IN AIR (DURING PROCESSING)

Inhalation: Airborne treated or untreated wood dust may cause nose, throat or lung irritation. Various species of untreated wood dust can elicit allergic respiratory response in sensitized persons.
Eye Contact: Treated or untreated wood dust may cause mechanical irritation.
Skin Contact: Handling wood may result in skin exposure to splinters. Prolonged and/or repeated contact with treated or untreated wood dust may result in mild irritation. Various species of untreated wood dust can elicit allergic type skin irritation in sensitized persons.
Ingestion: Not anticipated to occur. A single ingestion of a very large dose of treated wood dust may require immediate medical attention.

Chronic Wood Dust (treated or untreated) Effects: Wood dust, depending on species, may cause dermatitis on prolonged, repetitive contact; may cause respiratory sensitization and/or irritation.

4. FIRST AID MEASURES

Inhalation: Remove from wood dust exposure. If breathing has stopped, administer artificial respiration. Seek medical aid if symptoms persist.
Eye Contact: Gently flush any particles from the eyes with large amounts of water for at least 15 minutes. DO NOT RUB THE EYES. Seek medical aid if irritation persists.
Skin Contact: Rinse wood dust off with water. DO NOT RUB. Once the skin is free of the wood dust, wash thoroughly with soap and water. Seek medical aid if severe irritation develops.
Ingestion: Rinse the victim's mouth out with water. Do not induce vomiting. If symptoms develop, call a physician. One ounce of treated wood dust per 10 pounds of body weight ingested may cause acute arsenic intoxication.

5. FIRE FIGHTING MEASURES

Flash Point	NA	**Lower Explosive Limit**	NA
Auto-ignition	NA	**Upper Explosive Limit**	NA

Extinguishing Agents: Not applicable
Fire-Fighting Procedures: Fire from a separate fuel source may be intense enough to cause thermal decomposition releasing toxic fumes and/or gases. Wear complete fire service protective equipment, including full-face NIOSH/NFPA – approved self-containing breathing apparatus.
Fire and Explosion Hazard: Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. High airborne levels of wood dust may burn rapidly in the air when exposed to an ignition source.

6. ACCIDENTAL RELEASE MEASURES

Spill or Leak Procedures: Not applicable.
Waste Disposal: See Section 13.
Other: Dust Deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). Nonsparking tools should be used.

7. HANDLING AND STORAGE

Storage Conditions: Minimize dust generation and accumulation. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres. Maintain good housekeeping. Protect from physical damage.

Caution: DO NOT BURN TREATED WOOD. Do not use pressure treated chips or sawdust as mulch. Whenever possible, sawing or machining treated or untreated wood should be performed outdoors to avoid accumulations of airborne wood dust. Wash hands thoroughly before eating, drinking, using tobacco products, and/or using restrooms.
NOTE: For plywood products only, provide adequate ventilation to reduce the possible buildup of formaldehyde vapors.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Respiratory Protection: None normally required. When sawing or cutting treated or untreated wood, wear a NIOSH approved N95 or better dust mask.
Eye Protection: Wear safety glasses with side shields or safety goggles when sawing or cutting.
Skin/Foot Protection: Wear leather or comparable gloves to prevent splinters. Wear long sleeve shirt, pants and steel toed shoes when handling treated or untreated wood
Ventilation: Saw, cut or machine wood outdoors or in well ventilated areas. Due to the explosive potential of dust when suspended in air, precautions should be taken when sawing, sanding, or machining wood or wood products to prevent sparks or other ignition sources. If required, use wet methods and/or explosion suppression systems to reduce generation of dust. Local exhaust ventilation is recommended when sawing, sanding, or machining this product. General dilution ventilation is recommended in processing and storage areas.
Other Protective Equipment: Wear ear plugs or muffs when using power tools.

NOTE: For plywood products only, if Formaldehyde vapor level exceeds OSHA PEL or STEL, then a NIOSH approved respirator is required.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Light to dark green	**Specific Gravity (Water =1)**	NA
Odor	None	**Boiling Point**	NA
Solubility in Water	NA	**Vapor Density (Air=1)**	NA
Physical State	Solid	**Vapor Pressure**	NA
pH	NA	**Freezing Point**	NA

10. STABILITY AND REACTIVITY

Conditions Contributing to Instability: None known.
Incompatibilities: Strong acids, open flame and oxidizers.
Hazardous Reactions/Decomposition/Combustion Products: Contact with strong acid may release metals. Combustion products may include smoke, oxides of carbon, nitrogen and copper. If the fire is intense enough, some arsenic trioxide may be released into the smoke. The metals will remain in the ash if the wood is burned.
Hazardous Polymerization: Does not occur.

11. TOXICOLOGICAL INFORMATION

Study Abstracts: In Hawaii, where over 45,000 homes have been built almost entirely of CCA-treated wood, a study was conducted by the Pacific Biomedical Center of the University of Hawaii (the Budy-Rashad study) in 1977 to determine any possible effect on the health of carpenters. The study concluded that exposure to CCA-treated sawdust is not associated with increased risk of total cancer, lung cancer or lymphatic cancer and shows that excess respiratory cancer mortality was not observed in the carpenters.

A study was conducted by the University of Alabama to evaluate the teratogenicity of CCA-impregnated sawdust when exposed to rabbits and mice. Sawdust from CCA-treated wood has been shown not to cause chromosome damage or teratogenic effects in mice fed sawdust nor to cause birth defects in rabbits receiving sawdust applied to their skin.

According to a Human Health Risk Assessment conducted by Gradient Corporation in August 2004, potential health risks to workers and residents do not exceed U.S. Environmental Protection Agency acceptable risk limits. Although the arsenic complex (the predominate chemical form of arsenic in CCA-treated wood is chromium III arsenate) is present on the surface of CCA-treated utility poles and in surrounding soils, the arsenic in these poles is chemically bonded to the wood and is not readily absorbed in the body. This risk assessment evaluated exposures to arsenic complex on the surface of CCA treated utility poles and in soil adjacent to the poles. Exposure was evaluated for both hand to mouth contact and skin contact for a child resident age 2-6 and an adult utility pole worker. The assessment results also indicate that the amount of arsenic complex potentially taken into the body from exposures to CCA-treated utility poles and adjacent soils for a child resident is approximately 8 fold less than the intake of naturally occurring inorganic arsenic in food and drinking water at the new federal drinking water standard for arsenic. An adult worker is exposed to over 24 fold less arsenic complex associated with CCA-treated utility poles, compared to intake of inorganic arsenic form food and drinking water.

Carcinogenic status: IARC, the NTP, OSHA and California Proposition 65 do not consistently distinguish among arsenic or chrome species but list inorganic arsenic and chromium and certain chromium compounds as human carcinogens. Cancers in humans have followed from long term consumption of Fowler's Solution, a medicinal trivalent arsenical; inhalations and skin contact with inorganic trivalent arsenical sheep-dust; the combined inhalation of arsenic trioxide (trivalent arsenical), sulfur dioxide, and other particulates from ore smelting in arsenic trioxide production; and occupational exposure to nonwater-soluble hexavalent chromium.

Carcinogenicity Data: IARC has classified untreated hardwood and hardwood/softwood mix wood dust as a Group I human carcinogen. The wood dust classification is based primarily on IARC's evaluation of increased risk in the

occurrence of adenocarcinomas of the nasal cavities and paranasal sinuses associated with occupational exposures to untreated wood dust. NTP has classified all untreated wood dust as a carcinogen.

12. ECOLOGICAL INFORMATION

Study Abstracts: A technical paper published in the Forest Products Journal (September, 1974) by Levi, Huisingh and Nesbitt described a study conducted to determine if CCA wood preservative in grapevine support posts might be absorbed by the vines, leaves and/or grapes. This study concluded that "... CCA preservatives are bound in wood, are not readily leached and are not concentrated in plants growing close to the treated wood."

The Springborn Laboratories Environmental Sciences Division in 1993 conducted a sediment exposure study using leachate from CCA treated and untreated marine pilings and exposing Ampelisca abdita for a period of 10 days. Survival of the organisms during the 10-day exposure period was the biological endpoint used to establish the effects of exposure. Results indicated that leachate from treated pilings had no adverse effect on organism survival. It was concluded that the primary constituents of the CCA-treated wood piling were not present in the leachate at concentrations which would adversely affect the survival of the organisms.

Testing has been conducted to evaluate the use of treated wood in raised vegetable gardens. Vegetables harvested from gardens in raised bed structures built of CCA-treated wood were compared with vegetables grown in untreated raised bed structures and with vegetables purchased at a local grocery store. Testing revealed that all vegetables contained minuscule amounts of each element in CCA. In some cases, the levels of metals were actually higher in the vegetables grown in untreated bins, and in one case the store-purchased vegetable had the highest level of arsenic. The report concluded that there was "no uptake of the metal constituents into the vegetables."

The Food and Drug Administration's (FDA) "Market Basket Survey" has consistently shown that arsenic in tomatoes is below the analytical level of detection despite the increased usage of arsenically-treated wood for tomato stakes. Moreover, even though CCA-treated wood has been increasingly used in applications such as cattle bunks and stalls and poultry brooders for the last ten years, the FDA survey has shown a decrease in the arsenic content of dairy, meat and poultry products.

A study funded in part by the National Oceanic and Atmospheric Administration (NOAA) and prepared by the Marine Resources Division of the South Carolina Department of Natural Resources in 1995 measured the impact of wood preservative leachate from docks in an estuarine environment. Copper, chromium, arsenic, and polynuclear aromatic hydrocarbons (PAHs) were measured in composite samples of sediments and naturally occurring oyster populations from creeks with high densities of docks, and from nearby reference creeks with no docks. Sediments from all but one site had metal and total PAH concentrations which were below levels reported to cause biological effects, and the oysters showed no significant difference in their physiological condition. Bioassays were also conducted on four common estuarine species and hatchery-reared oysters. The results suggest that wood preservative leachates from dock pilings have no acutely toxic effects on these common species, nor do they affect the survival or growth of juvenile oysters over a six-week period. In some cases, metal leachates may accumulate in sediments and oysters immediately adjacent to pilings, but do not appear to become concentrated in sediments or oysters elsewhere in the same creeks.

13. DISPOSAL CONSIDERATIONS

Disposal Guidance: DO NOT BURN TREATED WOOD. Do not use pressure treated chips or sawdust as mulch. Dispose of in accordance with local, state and federal regulations. This product is exempted as a hazardous waste under any sections of the RCRA regulations as long as the product is being utilized for its intended end use as stated in 40 CFR 261.4 (b) (9). State run hazardous waste programs may be more stringent.

14. TRANSPORT INFORMATION

DOT Hazardous Material Classification: This material is not regulated as a hazardous material by the DOT.

15. REGULATORY INFORMATION

RCRA (40 CFR 261): DO NOT BURN TREATED WOOD. Do not use pressure treated chips or sawdust as mulch. Dispose of in accordance with local, state and federal regulations. This product is exempted as a hazardous waste under any sections of the RCRA regulations as long as the product is being utilized for its intended end use as stated in 40 CFR 261.4 (b) (9). Under RCRA, it is the responsibility of the user of the product to determine at the time of disposal, whether the product meets RCRA criteria for hazardous waste. Check local and state regulations, as they may be more stringent.
OSHA (29 CFR 1910.1200): This product is regulated under the Hazard Communication Standard.
SARA 313 (40 CFR 372): Unless exempted, this product may require a Toxic Release Inventory reporting for individual material uses of 25,000 pounds or more. Reporting is under Copper Compounds, Chromium Compounds and Arsenic Compounds. It is the user's responsibility to determine applicability of reporting requirements and exemptions.
California Proposition 65: This product contains chemicals known to the state of California to cause cancer, birth defects or other reproductive harm. (This statement issued in accordance with California Proposition 65).
NFPA: Refer to NFPA 654, *Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids*, for safe handling.

ABBREVIATIONS

OSHA	Occupational Safety and Health Administration	**TLV**	Threshold Limit Value
NFPA	National Fire Protection Association	**STEL**	Short-Term Exposure Limit
FIFRA	Federal Insecticide, Fungicide and Rodenticide Act	**RCRA**	Resource Conservation and Recovery Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	**ACGIH**	American Conference of Governmental Industrial Hygienists
SARA	Superfund Authorization and Reauthorization Act	**NIOSH**	National Institute of Occupational Safety and Health
PEL	Permissible Exposure Limit	**TSCA**	Toxic Substances Control Act
DOT	Department of Transportation	**IARC**	International Agency for Research on Cancer
NTP	National Toxicology Program	**IBC**	International Building Code
CFR	Code of Federal Regulations	**mg/m3**	Milligrams per cubic meter
CWA	Clean Water Act	**CAA**	Clean Air Act
CAS	Chemical Abstracts Service		

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