Former Kay Fries Site

Rockland COUNTY

Stony Point, NEW YORK

SITE MANAGEMENT PLAN

NYSDEC Site Number: 344023

USEPA ID # Not Applicable

Prepared for:

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Revisions to Final Approved Site Management Plan:

Revision No.	Date Submitted	Summary of Revision	NYSDEC Approval Date
1	October 20, 2022	Revision to include Ground Water Monitoring Plan, SVI Approvals and Environmental Easement (EE)	

October 20, 2022

[MONTH YEAR]

CERTIFICATION STATEMENT

I, BRUCE MANGANIELLO, certify that I am currently Qualified Environmental Professional as in defined in 6 NYCRR Part 375 and that this Site Management Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

Bruce Manganiello QEP

October 20, 2022 DATE

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List of Acronyms

AS	Air Sparging
ASP	Analytical Services Protocol
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CAMP	Community Air Monitoring Plan
C/D	Construction and Demolition
CFR	Code of Federal Regulation
CLP	Contract Laboratory Program
COC	Certificate of Completion
CO2	Carbon Dioxide
CP	Commissioner Policy
DER	Division of Environmental Remediation
EC	Engineering Control
ECL	Environmental Conservation Law
ELAP	Environmental Laboratory Approval Program
ERP	Environmental Restoration Program
GHG	Green House Gas
GWE&T	Groundwater Extraction and Treatment
HASP	Health and Safety Plan
IC	Institutional Control
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYCRR	New York Codes, Rules and Regulations
O&M	Operations and Maintenance
OM&M	Operation, Maintenance and Monitoring
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PID	Photoionization Detector
PRP	Potentially Responsible Party
PRR	Periodic Review Report
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
RAO	Remedial Action Objective
RAWP	Remedial Action Work Plan
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RP	Remedial Party
RSO	Remedial System Optimization
SAC	State Assistance Contract
SCG	Standards, Criteria and Guidelines

SCO	Soil Cleanup Objective
SMP	Soil Management Plan
SOP	Standard Operating Procedures
SOW	Statement of Work
SPDES	State Pollutant Discharge Elimination System
SSD	Sub-slab Depressurization
SVE	Soil Vapor Extraction
SVI	Soil Vapor Intrusion
SVMS	Soil Vapor Mitigation System
TAL	Target Analyte List
TCL	Target Compound List
TCLP	Toxicity Characteristic Leachate Procedure
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VCA	Voluntary Cleanup Agreement
VCP	Voluntary Cleanup Program

ES EXECUTIVE SUMMARY

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

Site Identification:	Former Kay Fries Site, 50 Holt Drive, Stony Point, New York. Site No. 344023	
Institutional Controls:	The property may be used for commercial and industrial use	
	Environmental Easement	
	Ground Water Use Restriction	
Inspections:		Annually
1.		
Monitoring:		
1. Ground water monitoring wells: OU1: PZ-23, MW-24, MW-31, MW-36, MW-43, and MW-71. OU2: MW-54.		According to schedule presented in Appendix 1.
Maintenance:		As needed
Reporting:		
1. Periodic Review Report		Annually

Further descriptions of the above requirements are provided in detail in the latter sections of this Site Management Plan.

1.0 INTRODUCTION

1.1 General

This Site Management Plan (SMP) is a required element of the remedial program for the Former Kay Fries Site located in Stony Point, New York (hereinafter referred to as the "Site"). See Figure 1 – Site Location Map. The Site is currently in the New York State (NYS) Inactive Hazardous Waste Disposal Site Remedial Program Site No. 344023, which is administered by New York State Department of Environmental Conservation (NYSDEC).

Evonik Corporation (formerly Dynamit-Nobel of America) entered into an Order on Consent on May 13, 1994, with the NYSDEC to remediate the site. A figure showing the site location and boundaries of this site is provided in Figure 2. The boundaries of the site are more fully described in the metes and bounds site description that is part of the Environmental Easement provided in Appendix 2.

After completion of the remedial work, some contamination was left at this site, which is hereafter referred to as "remaining contamination". Institutional Controls (ICs) have been incorporated into the site remedy to control exposure to remaining contamination to ensure protection of public health and the environment. An Environmental Easement granted to the NYSDEC, and recorded with the Rockland County Clerk, requires compliance with this SMP and ICs placed on the site. The site Environmental Easement is presented in Appendix 2.

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

It is important to note that:

- This SMP details the site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of the Environmental Easement, which is grounds for revocation of the Certificate of Completion (COC).
- Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6NYCRR Part 375 and the Order on Consent, Site No. 344023) for the site, and thereby subject to applicable penalties.

All reports associated with the site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State. A list of contacts for persons involved with the site is provided in Appendix 3 of this SMP.

This SMP was prepared by Environmental Compliance Monitoring, Inc. (ECM), on behalf of Evonik Corporation (Evonik), in accordance with the requirements of the NYSDEC's DER-10 ("Technical Guidance for Site Investigation and Remediation"), dated May 3, 2010, and the guidelines provided by the NYSDEC. This SMP addresses the means for implementing the ICs that are required by the Environmental Easement for the site.

1.2 Revisions

Revisions to this plan will be proposed in writing to the NYSDEC's project manager. Revisions will be necessary upon, but not limited to, the following occurring: a change in media monitoring requirements, upgrades to or shut-down of a remedial system, post-remedial removal of contaminated sediment or soil, or other significant change to the site conditions. In accordance with the Environmental Easement for the site, the NYSDEC will provide a notice of any approved changes to the SMP and append these notices to the SMP that is retained in its files.

1.3 Notifications

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

- 60-day advance notice of any proposed changes in site use that are required under the terms of the Order on Consent, 6NYCRR Part 375, and/or Environmental Conservation Law.
- 7-day advance notice of any field activity associated with the remedial program.
- 15-day advance notice of any proposed ground-intrusive activity pursuant to the Excavation Work Plan.

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

- At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser/Remedial Party has been provided with a copy of the Order on Consent, and all approved work plans and reports, including this SMP.
- Within 15 days after the transfer of all or part of the site, the new owner's name, contact representative, and contact information will be confirmed in writing to the NYSDEC.

Table 1 on the following page includes contact information for the above notification. The information on this table will be updated as necessary to provide accurate contact information. A full listing of site-related contact information is provided in Appendix 3.

Table [1]: Notifications*

Name	**Contact Information**
Scott Deyette, NYSDEC, Chief, Environmental Remediation	(518) 402-9794 scott.deyette@dec.ny.gov
Edward Moore, Regional Hazardous Waste Engineer	(845) 256-3137 edward.moore@dec.ny.gov
Kelly Lewandowski, Chief, Site Control Section	(518) 402-9577 kelly.lewandowski@dec.ny.gov
Stephanie Selmer, Public Health Specialist	518-402-7860 stephanie.selmer@health.ny.gov

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

2.0 SUMMARY OF PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

2.1 Site Location and Description

The site is located in Stony Point, Rockland County, New York and is identified as Block 11 and Lot 25 on the Rockland County Tax Map (see Figure 3). The site is an approximately 85-acre area and is bounded by Cedar Pond Brook to the north, Haverstraw Municipal Landfill to the south, Minisceongo Creek to the east, and commercial properties to the west (see Figure 1 – Site Location Map). The boundaries of the site are more fully described in Appendix 2 –Environmental Easement. The owner(s) of the site parcel(s) at the time of issuance of this SMP is/are:

MBC Holdings LLC.

2.2 Physical Setting

2.2.1 Land Use

The Site consists of the following: a building and parking area. The Site is zoned commercial and/or industrial and is currently occupied. The site is suitable for re-development and recently occupied.

The properties adjoining the Site and in the neighborhood surrounding the Site primarily include industrial, commercial, and residential properties. The properties immediately south of the Site include industrial properties; the properties immediately north of the Site include industrial and commercial properties; the property to the east has been backfilled and regraded and planned for future development; and the properties to the west of the Site include commercial properties.

2.2.2 Geology

The former Kay Fries site is underlain by a thick sequence of glacial deposits which overlie Triassic-age sedimentary bedrock. These glacial deposits constitute several water-bearing and semi-confining hydrogeologic units beneath the site. While no one unit is clearly

continuous across the entire site, the predominant lithology consists of stratified drift overlying glacial till and is characteristic of a glaciolacustrine depositional environment.

The surficial layer in the upland terrace area consists of stratified glacial drift. This deposit is composed of brown-gray, fine to medium sand, green-gray silt, and clay. The base of this unit consists of interbedded silt and clay. The finer grain size of these sediments makes this unit act as a semi-confining layer at this location.

Underlying the stratified glacial drift is a dense glacial till which consists of a mixture of brown-gray, fine to medium sand, silt, and clay. The thickness of the till in this vicinity was not defined during the course of previous investigations. The sediments encountered in site soil borings consisted of brown, fine to very fine sand to a depth of 12 feet below grade. This sand layer was underlain by a clay layer extending to a depth of 50 feet below grade. This clay layer is underlain by interbedded, brown-gray, fine sands, silts, and clays.

A geologic cross section is presented as Figure 4. Site specific boring logs are provided in Appendix 4.

2.2.3 Hydrogeology

Ground water level measurements, tidal monitoring and permeability testing were performed during the seven phases of site investigation to obtain data on the hydrologic conditions. Site hydrology is summarized below.

Ground water across the site is generally towards the east with northeast and southeast components off of the OU1 escarpment which divides the upland (OU2) and lowland (OU1) areas. The hydraulic gradient steepens sharply in the vicinity of the escarpment. A hydraulic gradient of 0.13 ft/ft along the margin of the escarpment was calculated during the investigative phase of the project. The hydraulic gradient decreases in the lowlands, averaging 0.02 ft/ft. The most recent groundwater contour maps are

shown in Figures 5 and 5A. Groundwater elevation data is provided in Table 2. Groundwater monitoring well construction logs are provided in Appendix 4.

2.3 Investigation and Remedial History

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

The former Kay Fries Inc., facility is located in Stony Point in Rockland County, New York. The site occupies approximately 85 acres to the east of Route 9W at the town's southern boundary (Figure 1). The property is bounded on the north by Cedar Pond Brook and on the east by Minisceongo Creek; both are tidally-influenced tributaries of the Hudson River Estuary. The surrounding area west of the site is generally commercial and residential; large industrial complexes are located to the north and south of the site. Directly south of the property is the Haverstraw municipal landfill.

Operations as a specialty chemical plant reportedly began at the site by predecessor companies to Dynamit-Nobel of America (DNA) during the 1930s. During 1987, DNA sold the site to Universal Process Equipment (UPE). UPE sold the central portion of the facility to Insl-X Products Corporation (Insl-X), which manufactured industrial paints and coatings. Products were manufactured in one main building at the site. Two underground storage tanks (USTs) were located in the northern section of the building, which were used to store solvents for paint additives. Drummed waste solvents and paints were stored in a partially enclosed corrugated steel building in the southern portion of the facility. Site environmental investigation and remedial investigations of these activities were initiated in 1991. Based upon the site investigation findings, remedial alternatives were evaluated during the late 1990's, which selected ground water recovery and treatment as the remedial alternative for the site.

The site is located at the terminus of Kay-Fries Drive, in Stony Point, New York (Figure 1). The portions of the site property subject to this SMP are referred to as Operable Unit 1 (OU1), located to the east of the railroad tracks (Figure 2), and Operable Unit 2 (OU2), where monitoring wells MW-53, MW-54, and MW-55 are located (Figure 2). During 1981, initial site environmental investigations identified Areas of Environmental Concern (AEC) at the facility. The New York State Department of Environmental Conservation (NYSDEC) required additional investigation and/or remedial activities as a result of environmental impacts as summarized below:

- Reported releases from the two USTs;
- Wastewater treatment and lagoon areas and;
- Alleged drum disposal and waste burning practices.

Based upon the site investigations, the constituents of concern affecting the site shallow ground water quality were volatile organic compounds (VOCs) specifically, benzene and chlorinated organics above the NYSDEC – Ground Water Quality Criteria (GWQC). Based upon the site investigation findings, remedial alternative were initiated during the late 1980's, which selected ground water recovery and treatment as the remedial alternative for the site.

During 1994, a Record of Decision (ROD) was executed by the NYSDEC for the OU1 section of the site. The ROD required the installation of three ground water recovery trenches and a ground water treatment system (GWTS) to address the identified area of ground water contamination.

During 1991, the initial Interim Remedial Measure (IRM) Construction Design document for the site ground water treatment system (GWTS) was submitted to the NYSDEC. During 1992 through 1994, revisions to the design were made and the details were submitted to the NYSDEC in several documents.

During 1994, the Interim Remedial Measure (IRM) Construction Design was implemented with the installation of one recovery trench (Trench 1) and the treatment system. During 1995, two additional trenches were installed. The linear footage of the three recovery trenches totaled 900-feet and extended across the eastern border of the site (Figure 6). The purpose of the IRM ground water recovery and treatment system was to prevent migration of VOCs in the shallow water bearing zone downgradient of the former benzene and 4-methyl-2-pentanone (MIBK) USTs.

Operation of the GWTS began continuous operation during 1995. During 1999, the GWTS was upgraded for increased flow to the system to improve the hydraulic control and capture of the recovery area. The GWTS discharged under a NPDES Discharge to Surface Water Permit to Cedar Pond Brook. Monthly and quarterly discharge monitoring and reporting to the NYSDEC was submitted during GWTS operation.

The distribution of ground water constituents below the site have been detected in the shallow monitoring zone above the NYSDEC – GWQC. Compound specific VOCs (benzene, chlorobenzene, toluene and MIBK) have been detected in the shallow zone upgradient of the three recovery trenches. Overall compound levels have decreased significantly from the inception of the GWTS operations. The range of primary VOCs from the site investigation compared to the present concentrations remaining in groundwater are presented in Appendix 5 Historical Summary of VOCs in Ground Water.

The GWTS operation from inception during 1995 has demonstrated that the recovery and treatment system has significantly decreased constituent levels and maintained effective hydraulic control of the site groundwater. The monitoring data upgradient of Trench 2 indicates levels above the NYSDEC – GWQC; however, also substantially below the levels reported during the site investigative phases. Monitoring data contour maps demonstrated that the GWTS was effectively maintaining hydraulic control and preventing off-site migration of contaminants.

During October 2002, a compound distribution assessment was conducted in the area proximal and upgradient of Trench 2. The monitoring results were evaluated relative to compound distribution, apparent migration, and attenuation potential. The results of the assessment indicated that the compound distribution and natural attenuation is occurring in the localized area upgradient of Trench 2.

Based upon the successful remediation conducted from 1995 through 2013 and the relatively low compound concentrations remaining at the site, a ground water monitoring program combined with the MW-31 in-situ remediation was proposed to evaluate ground water quality conditions.

The NYSDEC approved suspension of the GWTS as a result of significantly decreased contaminant levels impacting groundwater below the OU1 section of the site. The OU2 interceptor sump will be decommissioned with the OU1 GWTS as approved by the NYSDEC in their letter dated August 15, 2013. The current long term ground water monitoring program within OU1 was proposed in lieu of continued GWTS operation to evaluate ground water quality conditions. The NYSDEC approved permanent cessation of the GWTS in their 2012 PRR – Requested Modifications letter dated August 12, 2013 (Final NYSDEC PRR approval letter dated October 15, 2013). Subsequently, in their letter dated August 15, 2013, the NYSDEC approved the GWTS Decommissioning Plan dated August 2, 2013.

During 1999, the NYSDEC conducted additional investigations in a portion of the site west of the current GWTS operations. The investigations identified VOC's above the NYSDEC – GWQC in samples collected from seepage at the base of a railroad escarpment. Based on the levels detected remedial activity was required by the NYSDEC to mitigate the VOC constituents. Remedial options included:

- Recovery of the ground water seepage via an in-ground concrete sump and pumping the recovered water to a tank truck for transfer and treatment in the existing on-site GWTS.

- Installation of an interceptor sump which would allow ground water to infiltrate into the sump from the upgradient side and discharge through the downgradient side of the sump in a natural, flow through mode. Ground water accumulating in the sump would be aerated to strip the VOCs from the water.

After consideration of the remedial alternatives, the latter remedial option was selected due to the low maintenance required to operate the interceptor trench.

The interceptor sump was installed during 2000. Based on the discharge monitoring results, the interceptor sump had been effectively controlling compound levels detected in the ground water seepage. Due to effective operation of interceptor sump, the NYSDEC approved closure of the sump on a permanent basis in a NYSDEC letter dated July 8, 2004.

The monitoring program for the site was presented to the NYSDEC in the 2014 PRR and subsequently approved by the NYSDEC in their letter dated June 16, 2015. The NYSDEC approved ground water monitoring program schedule is presented in the Executive Summary and Appendix 1 of this SMP.

2.4 Remedial Action Objectives

The Remedial Action Objectives (RAOs) for the Site as listed in the Record of Decision (ROD) dated May 13, 1994 for OU1 and dated November 1997 for OU2 are as follows:

Groundwater

RAOs for Public Health Protection

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

RAOs for Environmental Protection

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

Remedy to Achieve the Groundwater RAOs

Operable Unit - 1

- Completed the remediation of groundwater on-site in the Operable Unit 1 area by collecting contaminated groundwater in three recovery trenches and treating the ground water on-site originally by air stripping and carbon adsorption. The GWTS was converted to strictly liquid carbon adsorption during 1996. These trenches collected all related contaminated ground water emanating from Operable Unit 1.

- Prevent the further spread of contaminated ground water by location of these recovery trenches at the leading (downgradient) edge of the contaminant plume.

- An institutional control was implemented that consists of the Record of Decision inserted into the hazardous waste files at the Rockland County Clerk's Office where the deed is recorded.

Operable Unit - 2

- The protection of the environmental receptors (flora and fauna) that could come into contact with contaminated groundwater seeps.

Soil

RAOs for Public Health Protection

- In OU-1, reduce, control, or eliminate the contamination present within the soils on site.

- Prevent ingestion/direct contact with contaminated soil.

- Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil.

RAOs for Environmental Protection

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

- Prevent impacts to biota from ingestion/direct contact with soil causing toxicity or impacts from bioaccumulation through the terrestrial food chain.

Remedy to Achieve the Soil RAOs

Operable Unit - 1

- Reduce, control, or eliminate the contamination present within the soils on-site.
- One soil area of concern (AOC) exists at the site, the location of MW-71, which a Dense Non-Aqueous Phase Liquid (DNAPL) was discovered during installation and subsequent sampling of the monitoring well. The DNAPL was fully delineated to an area proximal to MW-71.
- Based on the results, the DNAPL was delineated to area surrounding MW-71 as an approximate 17 feet by 20 feet elliptical area with a thickness of about 2.5 feet from 14.5 feet to 17 feet below grade.
- Site development in the area proximal to MW-71 is restricted if the development would affect the established AOC. As such, a condition of this SMP is that the area of the DNAPL is restricted to site development in the AOC surrounding MW-71 and at the depth of 14.5 to 17 feet below grade.

Surface Water

RAOs for Public Health Protection

- Prevent ingestion of water impacted by contaminants.
- Prevent contact or inhalation of contaminants from impacted water bodies.
- Prevent surface water contamination which may result in fish advisories.

RAOs for Environmental Protection

- Restore surface water to ambient water quality criteria for the contaminant of concern.
- Prevent impacts to biota from ingestion/direct contact with surface water causing toxicity and impacts from bioaccumulation through the marine or aquatic food chain.
- In OU-2, the protection of the environmental receptors (flora and fauna) that could come into contact with contaminated groundwater seeps.

Sediment

RAOs for Public Health Protection

- Prevent direct contact with contaminated sediments.
- Prevent surface water contamination which may result in fish advisories.

RAOs for Environmental Protection

- Prevent releases of contaminant(s) from sediments that would result in surface water levels in excess of (ambient water quality criteria).
- Prevent impacts to biota from ingestion/direct contact with sediments causing toxicity or impacts from bioaccumulation through the marine or aquatic food chain.
- Restore sediments to pre-release/background conditions to the extent feasible.

Soil Vapor

RAOs for Public Health Protection

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

2.5 Remaining Contamination

2.5.1 Soil

As previously stated, one soil area of concern (AOC) exists at the site, the location of MW-71, which a DNAPL was discovered during installation and subsequent sampling of the monitoring well. The DNAPL was fully delineated to an area proximal to MW-71.

The MW-71 Delineation Report was submitted to the NYSDEC on August 8, 2014 and subsequently approved by the NYSDEC in their letter dated October 9, 2014.

Based on the results, the DNAPL was delineated to area surrounding MW-71 as an approximate 17 feet by 20 feet elliptical area with a thickness of about 2.5 feet from 14.5 feet to 17 feet below grade. Figure 6 presents the AOC and extent of the DNAPL area.

As such, a condition of this SMP is that the area of the DNAPL is restricted from site development in the AOC surrounding MW-71 at the depth of 14.5 to 17 feet below grade. Figure 6 presents the Soil AOC at the site.

2.5.2 Groundwater

The constituents of concern impacting ground water quality at the Former Kay Fries site are VOCs. The wells from commencement of the monitoring program were analyzed for NYSDEC Target Compound List (TCL) VOCs plus 15 library search compounds, including a search for Methyl Isobutyl Ketones [MIBK] and 1,4-dioxane (TCL-VOC+15).

A summary of the site monitoring program results for the most recent round of ground water sampling and VOCs above the GWQS is presented as Table 3 Remaining Sample Exceedances. Figures 7 and 7A Remaining Sample Exceedances, depicts the monitoring well locations and a summary of results reported above the NYSDEC – GWQS.

Table 3 Remaining Ground Water Sample Exceedances and Figures 7 and 7A summarize the results of all samples of groundwater that exceed the SCGs after completion of the remedial action. Figures 8 through 12 present the Isoconcentration Maps for the COC remaining above the NYSDEC GWQS.

2.5.3 Soil Vapor

As approved by the NYSDEC/NYSDOH on December 17, 2020, the Final Soil Vapor Intrusion (SVI) investigation was conducted within the former OU-1 INSL-X building due to the planned redevelopment and re-occupation of the building. The SVI investigation was conducted in accordance with the NYSDOH *Guidance for Evaluating*

Soil Vapor Intrusion in the State of New York dated October 2006. The SVI investigation field activity was conducted on January 29, 2021.

Based on the results of the investigation and particularly the indoor and outdoor sample VOCs results below NYSDEC air guideline values and their respective BASE criteria, it was concluded that the indoor air quality is not impacted from soil vapor intrusion. Therefore, no further action relative to the air quality within the former INSL-X facility was warranted and/or proposed. The NYSDEC in consultation with the NYSDOH approved no further soil vapor investigation is necessary within the OU1 building in their letter dated September 29, 2021.

Table 4 and Figure 13 summarize the results of all samples of soil vapor that exceed the SCGs after completion of the remedial action.

3.0 INSTITUTIONAL AND ENGINEERING CONTROL PLAN

3.1 General

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

This plan provides:

- A description of all ICs/ECs on the site;
- The basic implementation and intended role of each IC/EC;
- A description of the key components of the ICs set forth in the Environmental Easement;
- A description of the controls to be evaluated during each required inspection and periodic review;
- A description of plans and procedures to be followed for implementation of IC, and

- Any other provisions necessary to identify or establish methods for implementing the IC required by the site remedy, as determined by the NYSDEC.

3.2 Institutional Controls

A series of ICs is required by the ROD to: (1) prevent future exposure to remaining contamination; and, (2) limit the use and development of the site to commercial and/or industrial uses only. Adherence to these ICs on the site is required by the Environmental Easement and will be implemented under this SMP. ICs identified in the Environmental Easement may not be discontinued without an amendment to or extinguishment of the Environmental Easement. The IC boundaries are shown on Figure [2]. These ICs are:

- The property may be used for : commercial, industrial use;
- The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Rockland County Department of Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department.
- Groundwater and other environmental or public health monitoring must be performed as defined in this SMP;
- Data and information pertinent to site management must be reported at the frequency and in a manner as defined in this SMP;
- All future activities that will disturb remaining contaminated material must be conducted in accordance with this SMP;
- Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in this SMP;
- Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical component of the remedy shall be performed as defined in this SMP;
- Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the Environmental Easement.

- The potential for vapor intrusion must be evaluated for any buildings developed in the area within the IC boundaries noted on Figure 2. The NYSDEC in consultation with the NYSDOH approved no further soil vapor investigation within the OU2 buildings in their Revised SVI Results Report - Approval letter dated October 21, 2013. The OU1 SVI investigation is complete as approved by the NYSDEC/NYSDOH in their letter for the OU1 – SVI Investigation Results and Findings OU1 – Former INSL-X Building dated September 29, 2021.

- Vegetable gardens and farming on the site are prohibited;

3.2.1 - Monitoring Wells associated with Monitored Natural Attenuation

Groundwater monitoring activities to assess natural attenuation will continue, as determined by the NYSDEC with consultation with NYSDOH, until residual groundwater concentrations are found to be consistently below ambient water quality standards, the site SCGs, or have become asymptotic at an acceptable level over an extended period. In the event that monitoring data indicates that monitoring for natural attenuation may no longer be required, a proposal to discontinue the system will be submitted by the remedial party. Monitoring will continue until permission to discontinue is granted in writing by the NYSDEC. If groundwater contaminant levels become asymptotic at a level that is not acceptable to the NYSDEC, additional source removal, treatment and/or control measures will be evaluated.

4.0 MONITORING AND SAMPLING PLAN

4.1 General

This Monitoring and Sampling Plan describes the measures for evaluating the overall performance and effectiveness of the remedy. This Monitoring and Sampling Plan may only be revised with the approval of the NYSDEC. Details regarding the sampling procedures, data quality usability objectives, analytical methods, etc. for all samples collected as part of site management for the site are included in the Quality Assurance Project Plan provided in Appendix 6.

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

- Sampling and analysis of all appropriate media (e.g., groundwater, indoor air, and soil vapor);
- Assessing compliance with applicable NYSDEC standards, criteria and guidance (SCGs), particularly groundwater standards, and;
- Evaluating site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment;

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

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

Reporting requirements are provided in Section 7.0 of this SMP.

4.2 Site – Wide Inspection

Site-wide inspections will be performed at a minimum of once per year. Modification to the frequency or duration of the inspections will require approval from the NYSDEC. Site-wide inspections will also be performed after all severe weather conditions that may affect monitoring devices. During these inspections, an inspection form will be

completed as provided in Appendix 7– Site Management/Monitoring Well Inspection Log. The form will compile sufficient information to assess the following:

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

- Compliance with requirements of this SMP and the Environmental Easement;

Reporting requirements are outlined in Section 7.0 of this plan.

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

4.3 Post-Remediation Media Monitoring and Sampling

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

Table A – Post Remediation Sampling Requirements and Schedule

Monitoring Well	***Frequency***	***Analytical Program***
PZ-23	Annually, September	TCL-VOC+15 w/search MIBK, 1,4-dioxane
MW-24	Annually, September	TCL-VOC+15 w/search MIBK, 1,4-dioxane
MW-31	Annually, September	TCL-VOC+15 w/search MIBK, 1,4-dioxane
MW-36	Annually, September	TCL-VOC+15 w/search MIBK, 1,4-dioxane
MW-43	Annually, September	TCL-VOC+15 w/search MIBK, 1,4-dioxane
MW-71	Annually, September	TCL-VOC+15 w/search MIBK, 1,4-dioxane
MW-54 (OU2)	Annually, September	TCL-VOC+15 w/search MIBK, 1,4-dioxane

Detailed sample collection and analytical procedures and protocols are provided in Appendix 6 – Quality Assurance Project Plan.

4.3.1 Groundwater Sampling

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

The network of monitoring wells has been installed to monitor upgradient, on-site and downgradient groundwater conditions at the site. The network of on-site wells has been designed based on the following criteria: NYSDEC Ambient Ground Water Quality Criteria (June 1998 TOGs 1.1.1 through June 2004 Addendum).

Table B below summarizes the wells identification number, as well as the purpose, location, depths, diameter and screened intervals of the wells. As part of the groundwater monitoring, 4 upgradient wells, 9 on-site wells, and 4 downgradient wells are sampled to evaluate the site ground water quality in accordance with the NYSDEC Technical and

Operational Guidance Series (TOGS 1.1.1), AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES AND GROUNDWATER EFFLUENT LIMITATIONS, June 1998 (through June 2004 Addendum) .

Table B – Monitoring Well Construction Details

Well ID	Purpose	Well Location/ Depth (BGS-ft.)	Coordinates Longitude/Latitude	Well Diameter Screen Type	Screen Interval (ft)
PZ-23	Monitor Shallow GW Quality	Downgradient/14.0	10190.24/10553.66	2”-0.01”slot	5.0 – 14.0
MW-24	Monitor Shallow GW Quality	Upgradient/22.0	10555.56/10423.25	4”-0.01”slot	10.0 – 20.0
MW-31	Monitor Shallow GW Quality	On-Site 7.50	10370.44/10411.13	4”-0.01”slot	2.0 – 7.0
MW-36	Monitor Shallow GW Quality	Downgradient/8.50	10423.00/10494.34	4”-0.01”slot	3.0 – 8.0
MW-43	Monitor Shallow GW Quality	Downgradient/14.0	10638.58/10675.72	4”-0.01”slot	9.0 -14.0
MW-71	Monitor Shallow GW Quality	Upgradient / 20.0	10421.61/10395.72	4”-0.01”slot	10.0 – 20.0
MW-54	Monitor Shallow GW Quality	On-Site OU-2 /20.0	10671.28/10090.66	4”-0.01”slot	10.0 – 20.0

Monitoring well construction logs are included in Appendix 4 of this document.

If biofouling or silt accumulation occurs in the on-site and/or off-site monitoring wells, the wells will be physically agitated/surged and redeveloped. Additionally, monitoring wells will be properly decommissioned and replaced, if an event renders the wells unusable.

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

The NYSDEC will be notified prior to any repair or decommissioning of any monitoring well for the purpose of replacement, and the repair or decommissioning and replacement process will be documented in the subsequent Periodic Review Report. Well decommissioning without replacement will be done only with the prior approval of the NYSDEC. Well abandonment will be performed in accordance with NYSDEC’s guidance entitled “CP-43: Groundwater Monitoring Well Decommissioning Procedures.” Monitoring wells that are decommissioned because they have been rendered unusable will

be replaced in kind in the nearest available location, unless otherwise approved by the NYSDEC.

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

Deliverables for the groundwater monitoring program are specified in Section 7.0 – Reporting Requirements.

4.3.3 Monitoring and Sampling Protocol

All sampling activities will be recorded in a field book and associated Field Activity Daily Log (FADL) provided in Appendix 8 - Site Management Forms. Other observations (e.g., groundwater monitoring well integrity, etc.) will be noted on the FADL. The sampling log will serve as the inspection form for the monitoring network. Additional detail regarding monitoring and sampling protocols are provided in the site-specific Quality Assurance Project Plan (QAPP) provided as Appendix 6 of this document.

5.0. REPORTING REQUIREMENTS

5.1 Site Management Reports

All site management inspection, maintenance and monitoring events will be recorded on the appropriate site management form provided in Appendix 7 and Field Activity Daily Log Form in Appendix 8. These forms are subject to NYSDEC revision.

All applicable inspection forms and other records, including media sampling data and system maintenance reports, generated for the site during the reporting period will be provided in electronic format to the NYSDEC in accordance with the requirements of Table C and summarized in the Periodic Review Report.

Table C: Schedule of Interim Monitoring/Inspection Reports

Task/Report	Reporting Frequency*
Site Management/Monitor Well Field Inspection Form	Annually, Inspection Forms will be included in Annual PRR.
Periodic Review Report	Annually, or as otherwise determined by the Department

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

Site Management/Monitoring Well Field Inspection Form

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

- Date of event or reporting period;
- Name, company, and position of person(s) conducting monitoring/inspection activities;
- Description of the activities performed;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet);
- Type of samples collected (e.g., sub-slab vapor, indoor air, outdoor air, etc);
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation, etc.);
- Sampling results in comparison to appropriate standards/criteria;
- A figure illustrating sample type and sampling locations;
- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled (to be submitted electronically in the NYSDEC-identified format);
- Any observations, conclusions, or recommendations; and
- A determination as to whether contaminant conditions have changed since the last reporting event.

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

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

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

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

Data will be reported in digital format as determined by the NYSDEC. Currently, data is to be supplied electronically and submitted to the NYSDEC EQuIS™ database in accordance with the requirements found at this link http://www.dec.ny.gov/chemical/62440.html.

5.2 Periodic Review Report

A Periodic Review Report (PRR) will be submitted to the Department annually after the Certificate of Completion or equivalent document e.g., Satisfactory Completion Letter, etc. is issued. After submittal of the initial PRR, the next PRR shall be submitted

annually to the Department or at another frequency as may be required by the Department. In the event that the site is subdivided into separate parcels with different ownership, a single Periodic Review Report will be prepared that addresses the site described in Appendix 2 - Environmental Easement. The report will be prepared in accordance with NYSDEC's DER-10 and submitted within 30 days of the end of each certification period. Media sampling results will also be incorporated into the Periodic Review Report. The report will include:

- Identification, assessment and certification of all ECs/ICs required by the remedy for the site.
- Results of the required annual site inspections and severe condition inspections, if applicable.
- All applicable site management forms and other records generated for the site during the reporting period in the NYSDEC-approved electronic format, if not previously submitted.
- A summary of any information generated during the reporting period, with comments and conclusions.
- Data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor, etc.), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data as part of an evaluation of contaminant concentration trends.
- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted in digital format as determined by the NYSDEC. Currently, data is supplied electronically and submitted to the NYSDEC EQuIS^{TM} database in accordance with the requirements found at this link: http://www.dec.ny.gov/chemical/62440.html.
- A site evaluation, which includes the following:
  - The compliance of the remedy with the requirements of the site-specific ROD;
  - The operation and the effectiveness of all treatment units, etc., including identifications of any needed repairs or modifications;

- Any new conclusions or observations regarding site contamination based on inspections or data generated by the Monitoring and Sampling Plan for the media being monitored;

- Recommendations regarding any necessary changes to the remedy and/or Monitoring and Sampling Plan; and

- Trends in contaminant levels in the affected media will be evaluated to determine if the remedy continues to be effective in achieving remedial goals as specified by the ROD.

- The overall performance and effectiveness of the remedy.

5.2.1 Certification of Institutional Controls

Following the last inspection of the reporting period, a [qualified environmental professional will prepare, and include in the Periodic Review Report, the following certification as per the requirements of NYSDEC DER-10:

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

- *The inspection of the site to confirm the effectiveness of the institutional required by the remedial program was performed under my direction;*

- *The institutional control employed at this site is unchanged from the date the control was put in place, or last approved by the Department;*

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

- *Nothing has occurred that would constitute a violation or failure to comply with any site management plan for this control;*

- *Access to the site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control;*

- *If a financial assurance mechanism is required under the oversight document for the site, the mechanism remains valid and sufficient for the intended purpose under the document;*

- *Use of the site is compliant with the environmental easement;*

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

- *The information presented in this report is accurate and complete.*

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

The Periodic Review Report will be submitted, in electronic format, to the NYSDEC Regional Office in which the site is located and the NYSDOH Bureau of Environmental Exposure Investigation. The Periodic Review Report may need to be submitted in hard-copy format, as requested by the NYSDEC project manager.

6.0 REFERENCES

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

NYSDEC DER-10 – "Technical Guidance for Site Investigation and Remediation".

NYSDEC, 1998. Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1. June 1998 (April 2000 addendum).

TABLES

Table 2
Evonik Corporation, Former Kay Fries Site, Stony Point, NY
Annual Water Level Measurements
ECM Project #1192
September 21, 2021

Well/Piezometer Number	PVC Elevation (Ft MSL) [a]	Depth to Water (Feet from top of PVC)	Groundwater Elevation (Ft MSL)	Survey Data [a]	
				Northing	Easting
PZ-23	24.82	5.04	19.78	10190.24	10553.66
TB-9	47.27	2.30	44.97	10733.06	10416.77
TB-23	53.75	7.47	46.28	10751.22	10349.58
MW-24	44.63	13.62	31.01	10555.56	10423.25
MW-31	34.13	7.80	26.33	10370.44	10411.13
MW-36	22.94	1.14	21.80	10423.01	10494.34
MW-37	21.80	1.65	20.15	10333.40	10534.38
MW-43	27.37	9.08	18.29	-	-
MW-70	31.18	6.44	24.74	10421.61	10322.10
MW-71	43.71	8.69	35.02	10314.62	10395.72
OU-2					
MW-53	53.31	13.40	39.91	11020.53	10189.13
MW-54	57.21	13.90	43.31	10671.28	10090.66
MW-55	53.66	16.17	37.49	11101.93	10233.91
MW-60S	50.06	N/A	--	10639.42	10243.82

N/A: not applicable as well was paved over

Table 3
Analytical Summary of Monitoring Results- OU1 & OU2; September 2021
Former Kay Fries Site – Evonik Corporation – Stony Point, New York
ECM Project #1192

							Operable Unit 2	
Sample Identification	**PZ-23**	**MW-24**	**MW-31**	**MW-36**	**MW-43**	**MW-71**	**MW-54**	**GWQC**
Sample Date	9/21/2021	9/21/2021	9/21/2021	9/21/2021	9/21/2021	9/21/2021	9/21/2021	
Laboratory Identification	460-243332-3	460-243332-7	460-243332-6	460-243332-5	460-243332-2	460-243332-8	460-243332-9	
TCL Volatile Organics								
1,1-Dichloroethane	ND < 0.26	ND < 0.26	0.42 J	ND < 0.26	ND < 0.26	3.3	ND < 0.26	5
1,1-Dichloroethene	ND < 0.26	ND < 0.26	ND < 0.26	ND < 0.26	ND < 0.26	ND < 0.26	ND < 0.26	5
1,4-Dioxane	83	ND < 28	ND < 28	ND < 28	170	ND <28	ND < 28	NA
Benzene	ND < 0.20	0.63 J	0.86 J	ND < 0.20	ND < 0.20	0.39 J	ND < 0.20	1
Chlorobenzene	ND < 0.38	***32***	***220***	ND < 0.38	ND < 0.38	***51***	ND < 0.38	5
Chloroethane	ND < 0.32	ND < 0.32	***9.2***	ND < 0.32	ND < 0.32	ND < 0.32	ND < 0.32	5
cis-1,2-Dichloroethene	ND < 0.22	***61***	0.37 J	ND < 0.22	ND < 0.22	ND < 0.22	ND < 0.22	5
Tetrachloroethene	ND < 0.25	ND < 0.25	ND < 0.25	ND < 0.25	ND < 0.25	ND < 0.25	***7.4***	5
Toluene	ND < 0.38	ND < 0.38	0.61 J	ND < 0.38	ND < 0.38	ND <0.38	ND < 0.38	5
trans-1,2-Dichloroethene	ND < 0.24	***34***	ND < 0.24	ND < 0.24	ND < 0.24	ND < 0.24	ND < 0.24	5
Trichloroethene	ND < 0.31	2.0	ND < 0.31	ND < 0.31	ND < 0.31	ND < 0.31	ND < 0.31	5
Vinyl chloride	ND < 0.17	2.1	ND < 0.17	ND < 0.17	ND <0.17	ND < 0.17	ND < 0.17	2
Xylenes, Total	ND < 0.30	ND < 0.65	ND < 0.65	ND < 0.65	ND < 0.30	ND < 0.65	ND < 0.65	5
Total VOC	83.0	131.73	232.33	0.0	170.0	54.69	7.4	NA
Total VOC TICs	0.0	0.0	243.5	0.0	0.0	17.0	0.0	NA

NOTES:
All results reported in micrograms per liter (ug/L).
GWQC :Ground Water Quality Criteria; NYSDEC, T.O.G.S. 1.1.1 (June 1998; June 2004)
TICs :Tentatively Identified Compounds.
ND :Compound Not Detected at indicated method detection limit.
BOLD :Concentration reported above the listed GWQC.
J :Estimated value greater than the Method Detection Limit but lower than the reporting limit.
NA :No applicable GWQC.

Table 4
OU1 SVI Summary of Air Sampling Results
Former Kay Fries Site
NYSDEC Site #344023
Stony Point, New York
ECM Project No. 1192
January 29, 2021

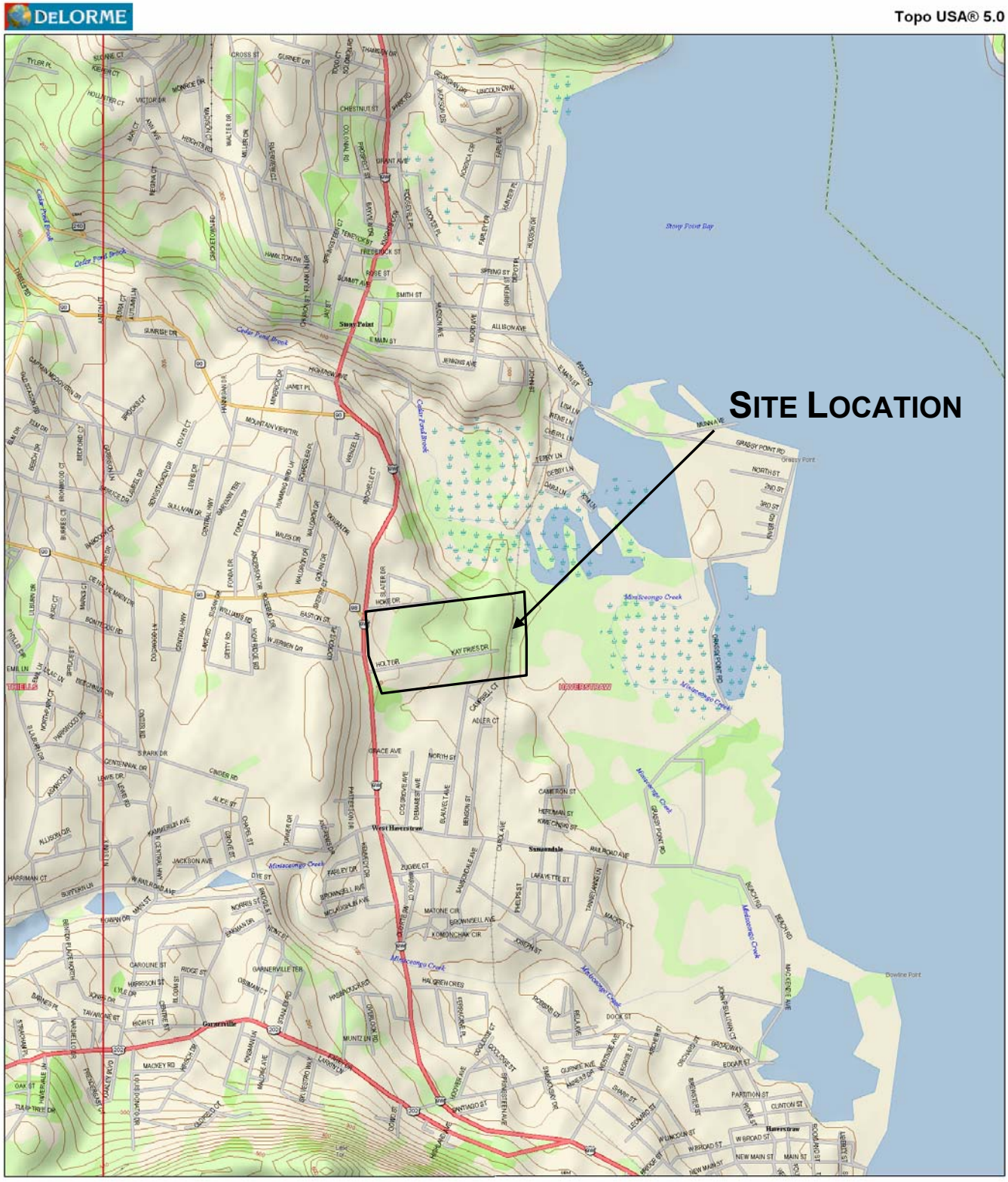
Field Sample ID	SS-1	SS-2	OD-1	Outdoor BASE Criteria (ug/m^3)	ID-1	ID-2	Indoor BASE Criteria (ug/m^3)
Laboratory Identification	E21-00707-04	E21-00707-05	E21-00707-01		E21-00707-02	E21-00707-03	
Dilution Factor	1.0	1.0	1.0		1.0	1.0	
Volatile Organics							
Acetone	***110 D***	14	3.2	43.7	4.4	7.0	98.9
Benzene	1.5	0.65	ND	6.6	4.8	1.9	9.4
Bromodichloromethane	ND	ND	ND	N/A	ND	ND	N/A
Bromoform	ND	ND	ND	N/A	ND	ND	N/A
Bromomethane	ND	ND	ND	<1.6	ND	ND	<1.7
1,3-Butadiene	ND	ND	ND	<3.4	ND	ND	<3.0
Chlorobenzene	ND	ND	ND	<0.8	ND	ND	<0.9
Chloroethane	ND	ND	ND	<1.2	ND	ND	<1.1
Chloroform	ND	***6.6***	ND	0.6	ND	ND	1.1
Chloromethane	ND	ND	ND	3.7	ND	ND	3.7
Carbon disulfide	1.8	0.84	ND	3.7	ND	ND	4.2
Carbon tetrachloride	ND	***3.5***	0.56	0.7	0.59	0.59	<1.3
Cyclohexane	ND	ND	ND	N/A	1.2	ND	N/A
Dibromochloromethane	ND	ND	ND	N/A	ND	ND	N/A
1,2-Dibromoethane	ND	ND	ND	<1.6	ND	ND	<1.5
1,2-Dichlorobenzene	ND	ND	ND	<1.2	ND	ND	<1.2
1,3-Dichlorobenzene	ND	ND	ND	<2.2	ND	ND	<2.4
1,4-Dichlorobenzene	ND	ND	ND	1.2	ND	ND	5.5
Dichlorodifluoromethane	ND	16	3.8	N/A	ND	ND	16.5
1,1-Dichloroethane	ND	***1.4***	ND	<0.6	ND	ND	<0.7
1,2-Dichloroethane	ND	ND	ND	<0.8	ND	ND	<0.9
1,1-Dichloroethene	ND	ND	ND	<1.4	ND	ND	<1.4
1,2-Dichloroethene (cis)	ND	ND	ND	<1.8	ND	ND	<1.9
1,2-Dichloroethene (trans)	ND	ND	ND	N/A	ND	ND	N/A
1,2-Dichloropropane	ND	ND	ND	<1.6	ND	ND	<1.6
1,3-Dichloropropene (cis)	ND	ND	ND	<2.2	ND	ND	<2.3
1,3-Dichloropropene (trans)	ND	ND	ND	<1.4	ND	ND	<1.3
1,2-Dichlorotetrafluoroethane	ND	ND	ND	N/A	ND	ND	N/A
1,4-Dioxane	ND	ND	ND	N/A	ND	ND	N/A
Ethylbenzene	2.9	***5.8***	ND	3.5	1.8	ND	5.7
n-Heptane	ND	ND	ND	N/A	1.7	1.0	N/A
1,3-Hexachlorobutadiene	ND	ND	ND	N/A	ND	ND	N/A
n-Hexane	ND	ND	ND	6.4	1.9	0.71	10.2
Methylene chloride	***26***	4.9	4.4	6.1	4.3	5.9	10.0
Methyl ethyl ketone	3.6	1.9	ND	N/A	ND	1.1	N/A
Methyl isobutyl ketone	1.7	ND	ND	N/A	ND	ND	N/A
Methyl tert-butyl ether	ND	ND	ND	6.2	ND	ND	11.5
Styrene	ND	ND	ND	1.3	ND	ND	1.9
Tert-butyl alcohol	8.7	1.3	ND	N/A	ND	ND	N/A
1,1,2,2-Tetrachloroethane	ND	ND	ND	N/A	ND	ND	N/A
Tetrachloroethene (PCE)	2.7	1.6	ND	30	ND	ND	30
Toluene	2.8	0.89	ND	33.7	7.0	2.4	43.0
1,2,4-Trichlorobenzene	ND	ND	ND	<6.4	ND	ND	<6.8
1,1,1-Trichloroethane	**5.6**	***28***	ND	2.6	ND	ND	20.6
1,1,2-Trichloroethane	ND	ND	ND	<1.6	ND	ND	<1.5
Trichloroethene (TCE)	ND	ND	ND	2.0	ND	ND	2.0
Trichlorofluoromethane	2.4	2.5	1.8	4.3	3.3	2.5	18.1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ND	ND	N/A	ND	ND	N/A
1,2,4-Trimethylbenzene	***20***	2.6	ND	5.8	2.6	1.3	9.5
1,3,5-Trimethylbenzene	***5.8***	1.8	ND	2.7	ND	ND	3.7
2,2,4-Trimethylpentane	ND	ND	ND	N/A	3.8	1.0	N/A
Vinyl bromide	ND	ND	ND	N/A	ND	ND	N/A
Vinyl chloride	ND	ND	ND	<1.8	ND	ND	<1.9
Xylenes (m&p)	***13***	***31***	0.90	12.8	5.7	1.9	22.2
Xylenes (o)	***5.5***	***13***	ND	4.6	2.1	ND	7.9
Xylenes - TOTAL	18.5	44	0.90	N/A	7.8	1.9	N/A

All results reported in micrograms per cubic meter (ug/m^3).

The results were comparatively evaluated to the NYSDOH Guidance for Evaluation of Soil Vapor Intrusion in the State of New York Table 3.1 and Appendix C Table C2 at the 90% Building Assessment and Survey Evaluation (BASE) database, SUMMA canister method.

BOLD : Concentrations reported above the NYSDOH BASE criteria.
D : Dilution Factor for this Compound, Acetone was 2.0.
N/A : Not Available.
ND : Not Detected at the Reporting Limit (RL).

FIGURES



ECM

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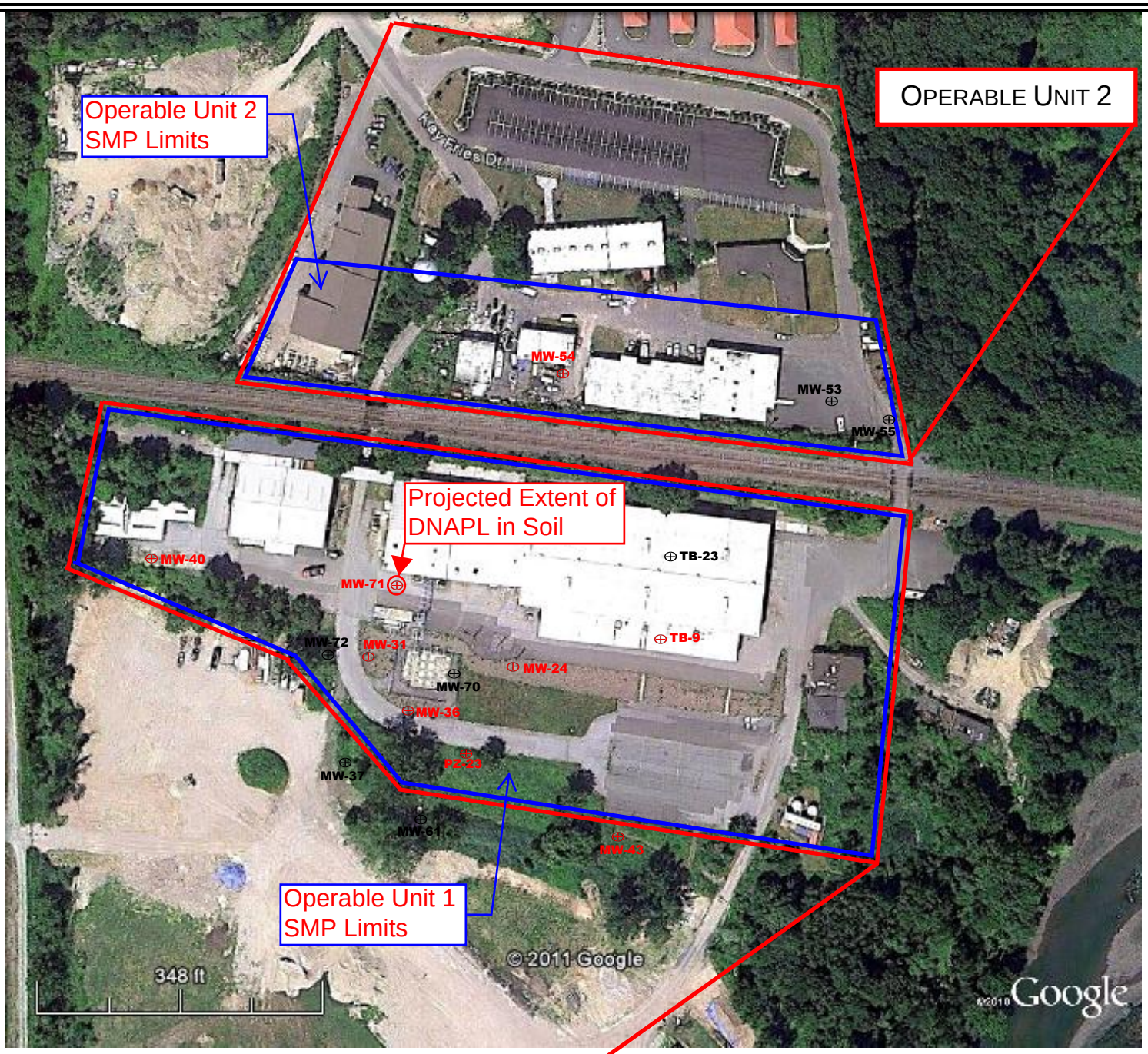
349 Route 206 • Hillsborough, NJ • 08844 • 908-874-0990

United States Department of the Interior
Geological Survey - 7.5 minute Quadrangle
Haverstraw, N.Y

FIGURE 1
SITE LOCATION MAP
FORMER KAY FRIES SITE
STONY POINT, NEW YORK

↑ North	Scale: 1" = 4,000'	Date: 3/15/11	ECM Project # 1192



⊕ Monitoring well sampled as part of the site Monitoring and Sampling Plan
⊕ Monitoring well utilized for collection of synoptic water gauging only

Source: "Stony Point, NY." **Google Earth**. 2011. March 15, 2011.

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FIGURE 2
OPERABLE UNIT 1 AND 2 LOCATION MAP
FORMER KAY FRIES SITE
STONY POINT, NEW YORK

North →	Scale: As Shown	Date: 3/15/11	ECM Project # 1192



COUNTY OF ROCKLAND

LEGEND

AMBULANCE DIST.	A	PROPERTY LINE	HISTORIC SUBDIV. LINE	TAX MAP BLOCK NUMBER	⑨
FIRE DIST.	F	ROAD ROW	DENOTES COMMON OWNER	REPEATED DIMENSION/ACRE	"
SEWER DIST.	S	UNSPECIFIED/ RR ROW	COUNTY LINE	DEED ACREAGE	1.03A
WATER DIST.	W	BLOCK LIMIT LINE	STATE LINE	CALCULATED ACREAGE	1.03A*
SCHOOL DIST.	SCH	GAS/POWER/ SEWER EASEMENT	TOWN LINE	DEED DIMENSION	50
REFUSE DIST.	R		VILLAGE LINE	SCALED DIMENSION	50 (S)
LIBRARY DIST.	LB	WATER COURSE	TAX MAP PARCEL NO. 43	ADD. REFERENCE DIMS.	(50)
LIGHTING DIST.	LT	EASEMENT LINE	COORD. VALUES NAD 83 (Feet) +	HISTORIC SUBDIV. LOT NO.	38

TAX MAP

TOWN OF STONY POINT

ROCKLAND COUNTY, NEW YORK

0 100 200 400 Feet

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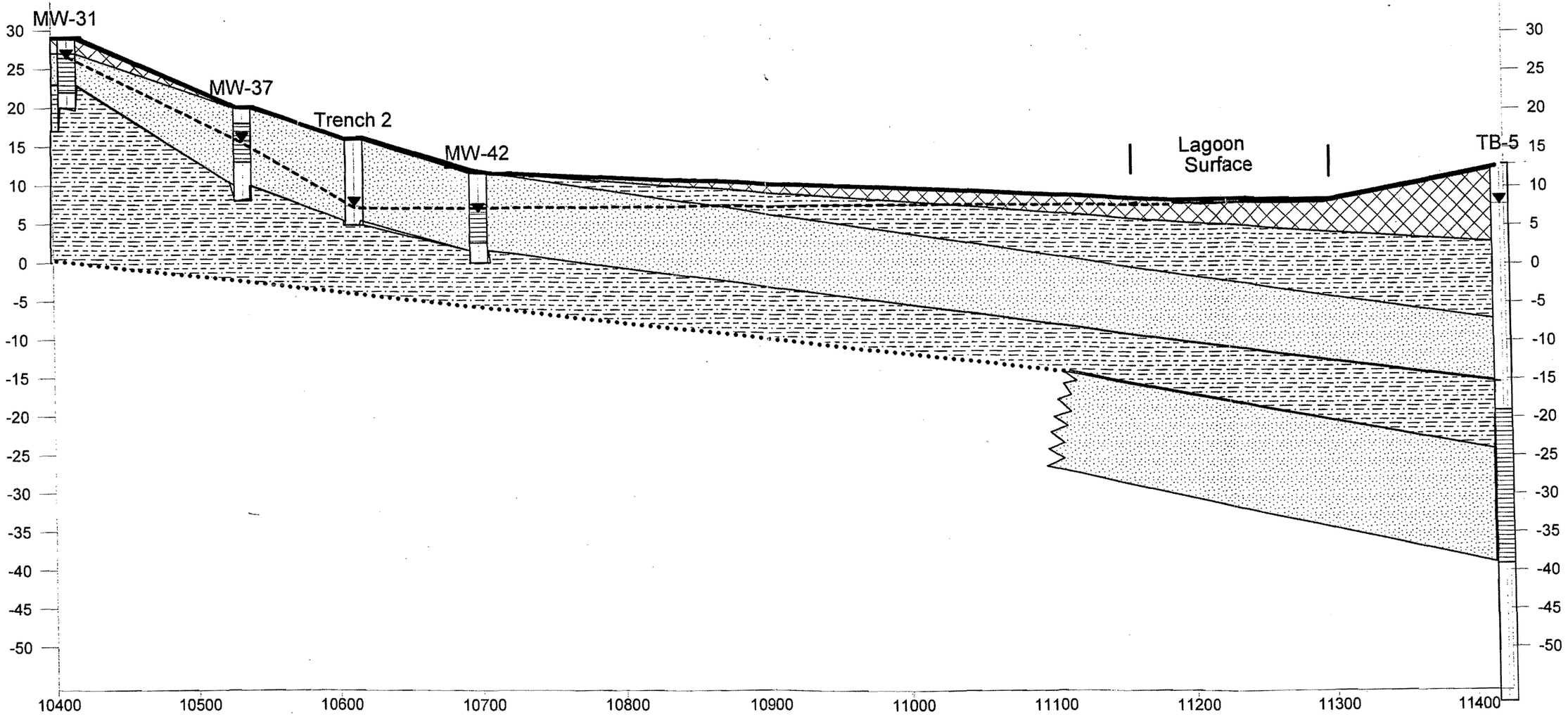
FIGURE 3

TAX MAP

Former Kay Fries Site – 15 Holt Drive, Stony Point, New York

Checked By: BTM	Approximate Scale: As Shown	ECM Project # 1192



DeGussa Corporation
Stony Point, NY
Former Kay Fries Site
Site No. 344023

Figure 4

Sand and Silt

Silt and Clay

Fill

Water Table

Grade

ECM

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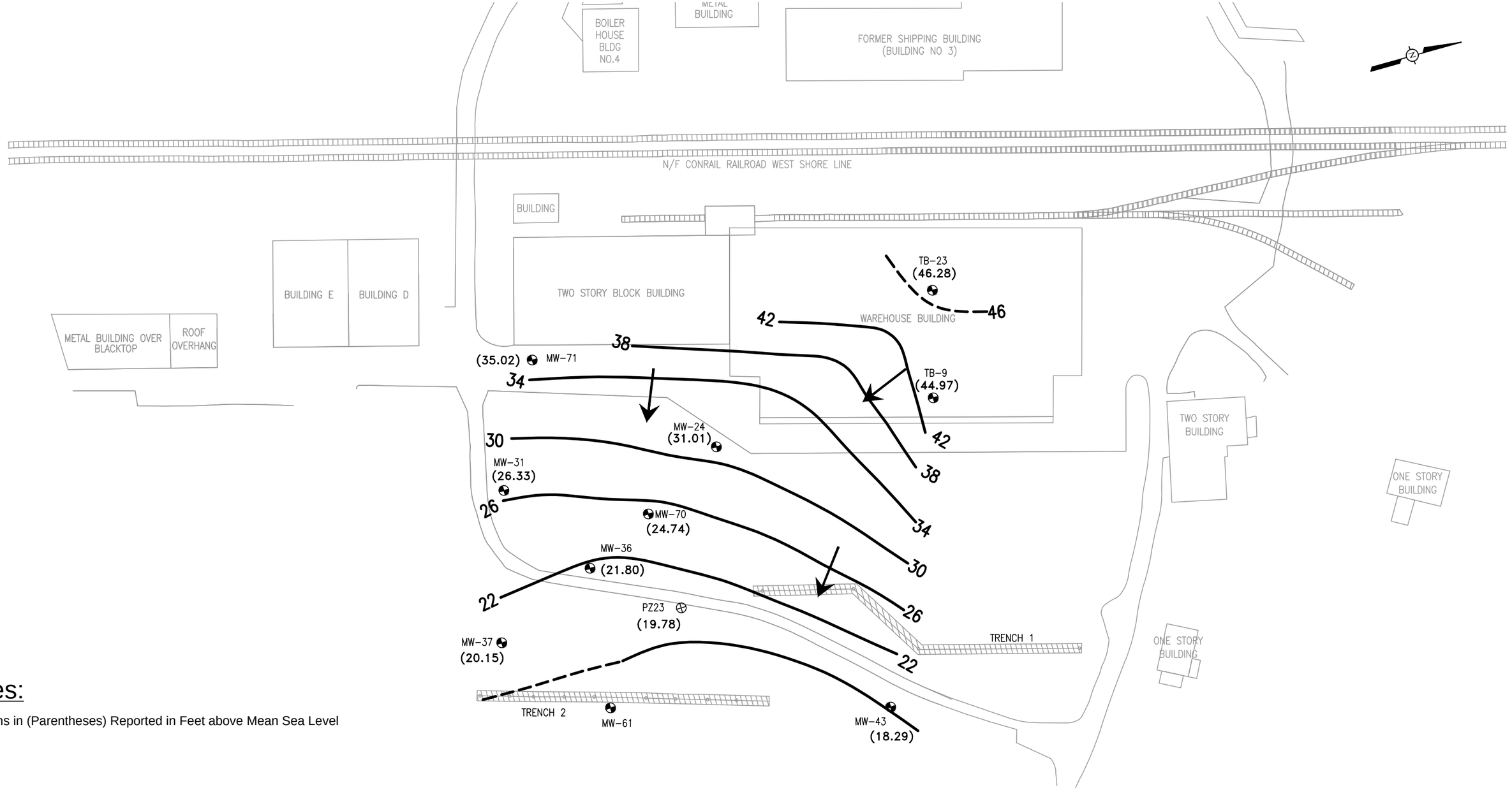
GEOLOGIC CROSS SECTION

Section West-East

12-14-2004 C:\Program Files\mtech2002\acegeo\1192J.cro



Notes:

Elevations in (Parentheses) Reported in Feet above Mean Sea Level

Legend:

- Existing Shallow Monitor Well
- Existing Piezometer
- Ground Water Flow Direction
- Inferred Ground Water Elevations

SCALE:	CHECKED BY:	
1" = 64'	CB	Former Kay Fries Site 50 Holt Drive Stony Point, NY
DATE:	PROJECT NO:	
03/2022	1192	

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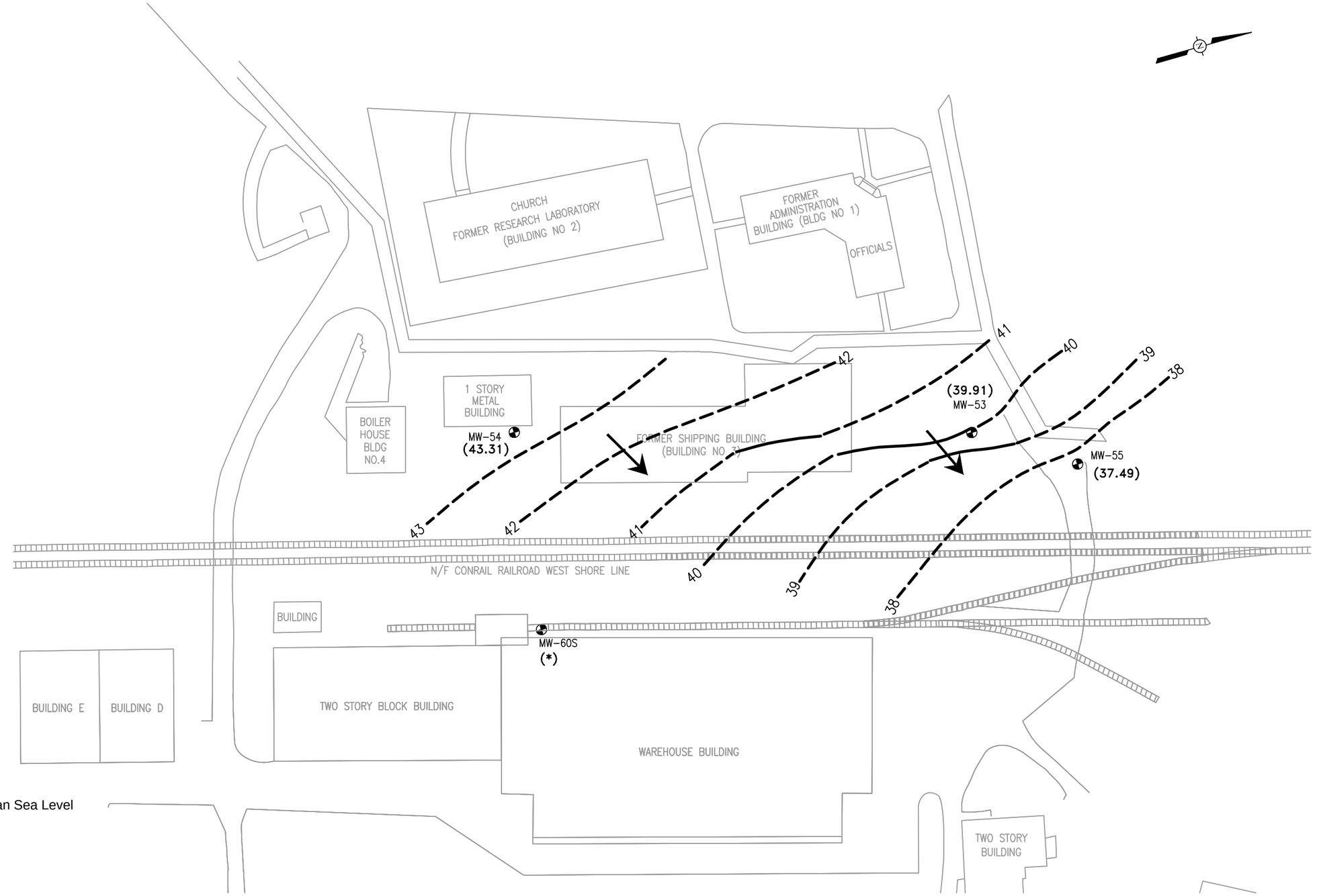
349 Route 206, Hillsborough, New Jersey, 08844 908-874-0990

FIGURE 5
OPERABLE UNIT-1
GROUND WATER CONTOUR MAP
SEPTEMBER 2021



Notes:

Elevations in (Parentheses) Reported in Feet Above Mean Sea Level

(*) Monitoring Well not accessible

Legend:

- Existing Shallow Monitor Well
- Ground Water Flow Direction
- Inferred Ground Water Elevations

SCALE:	CHECKED BY:		
1" = 64'	CB	Former Kay Fries Site 50 Holt Drive Stony Point, NY	ECM environmental compliance monitoring, inc. 349 Route 206, Hillsborough, New Jersey, 08844 908-874-0990
DATE:	PROJECT NO:		
03/2022	1192		

FIGURE 5A
OPERABLE UNIT-2
GROUND WATER CONTOUR MAP
SEPTEMBER 2021

MW-25

PZ-8

MW-24

TG14N

EDGE OF PAVEMENT

PZ-23

TG13NE

ASPHALT

TWO STORY
BLOCK
BUILDING

TG12NW

MW-70

Former
TANK FIELD

TG11N

MW-36

Projected Extent
of DNAPL

TG10N

TG05N

TG04N

MW-7 I

TG01E

TRUCK
WASH

TG06W

TG02E

TG03E

TG07S

TG08S (Refusal; No Log)

TG09SW

MW-31

MW-37

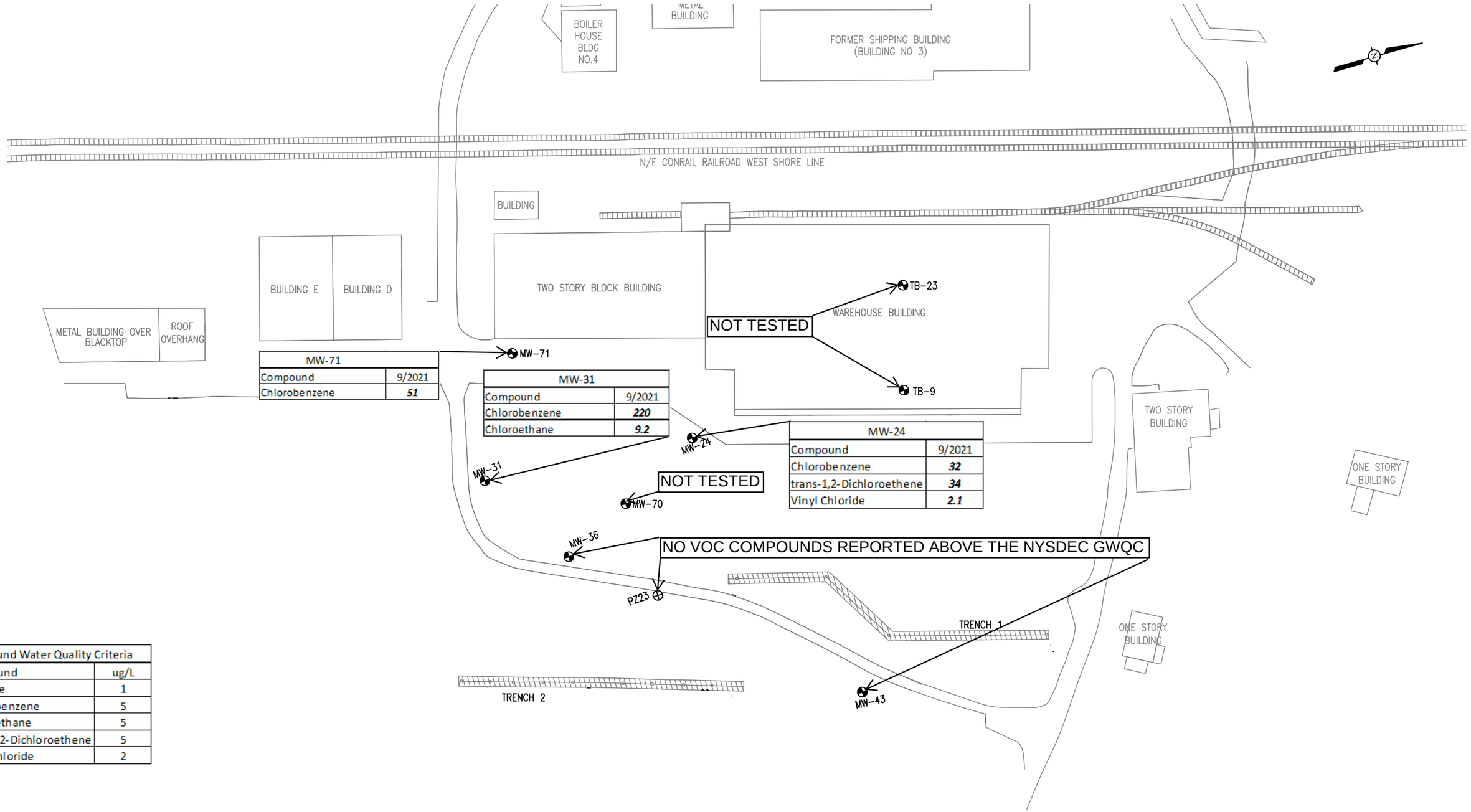
EDGE OF PAVEMENT

MW-72

Legend:

- Existing Monitoring Well
- Existing Piezemeter
- MW-71 Delineation Locations

SCALE:	CHECKED BY:		
1"= 30'	NM	ECM environmental compliance monitoring, inc. 349 Route 206, Hillsborough, New Jersey, 08844 908-874-0990	FIGURE 6 MW-71 & Projected Extent of DNAPL
DATE:	PROJECT NO:		
8/04/2014	1192		



Ground Water Quality Criteria	
Compound	ug/L
Benzene	1
Chlorobenzene	5
Chloroethane	5
trans-1,2-Dichloroethene	5
Vinyl Chloride	2

Legend:

- Existing Shallow Monitor Well
- Existing Piezometer

SCALE:	CHECKED BY:	
1" = 64'	CB	Former Kay Fries Site 50 Holt Drive Stony Point, NY
DATE:	PROJECT NO:	
10/2021	-1192	

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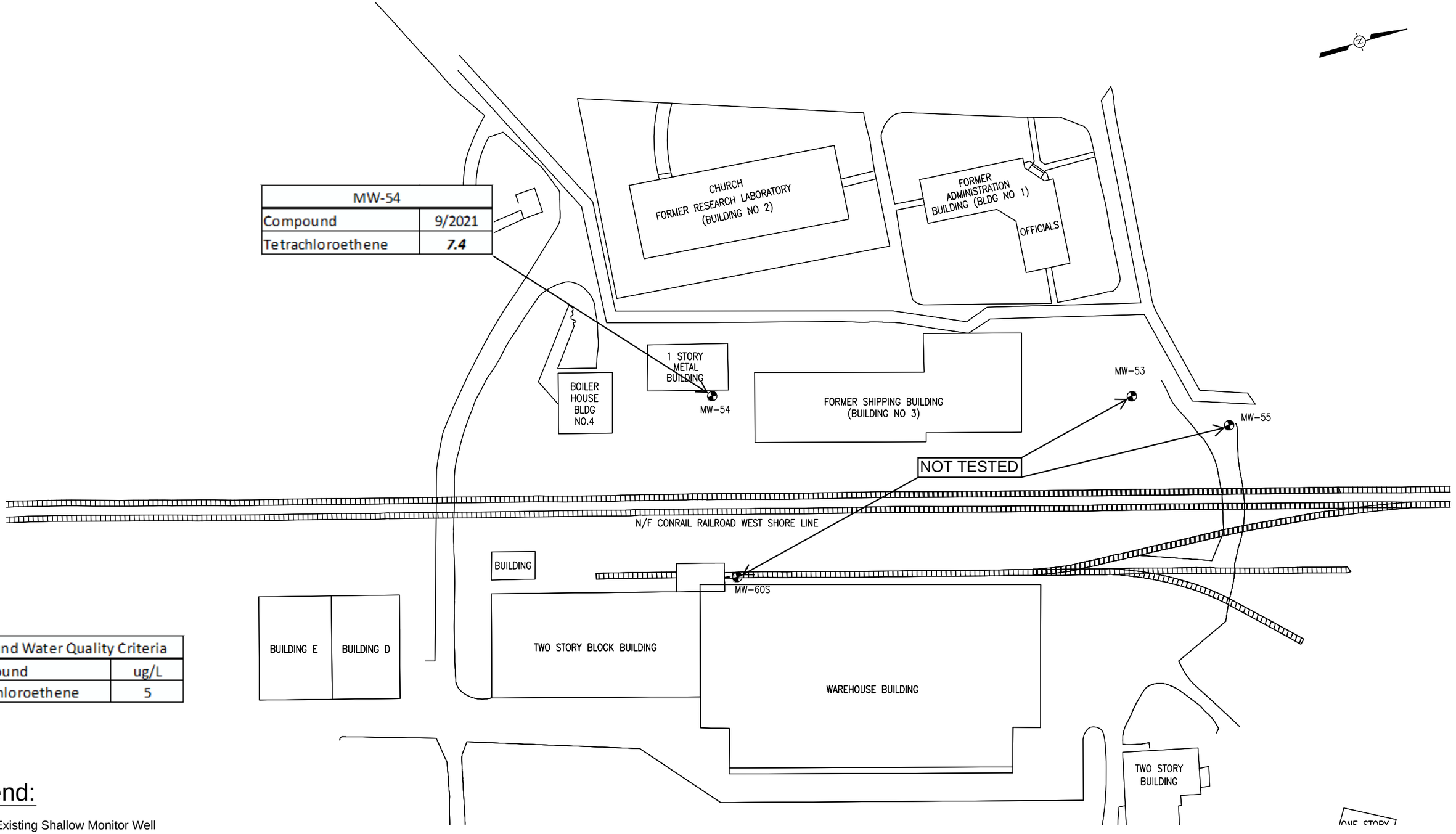
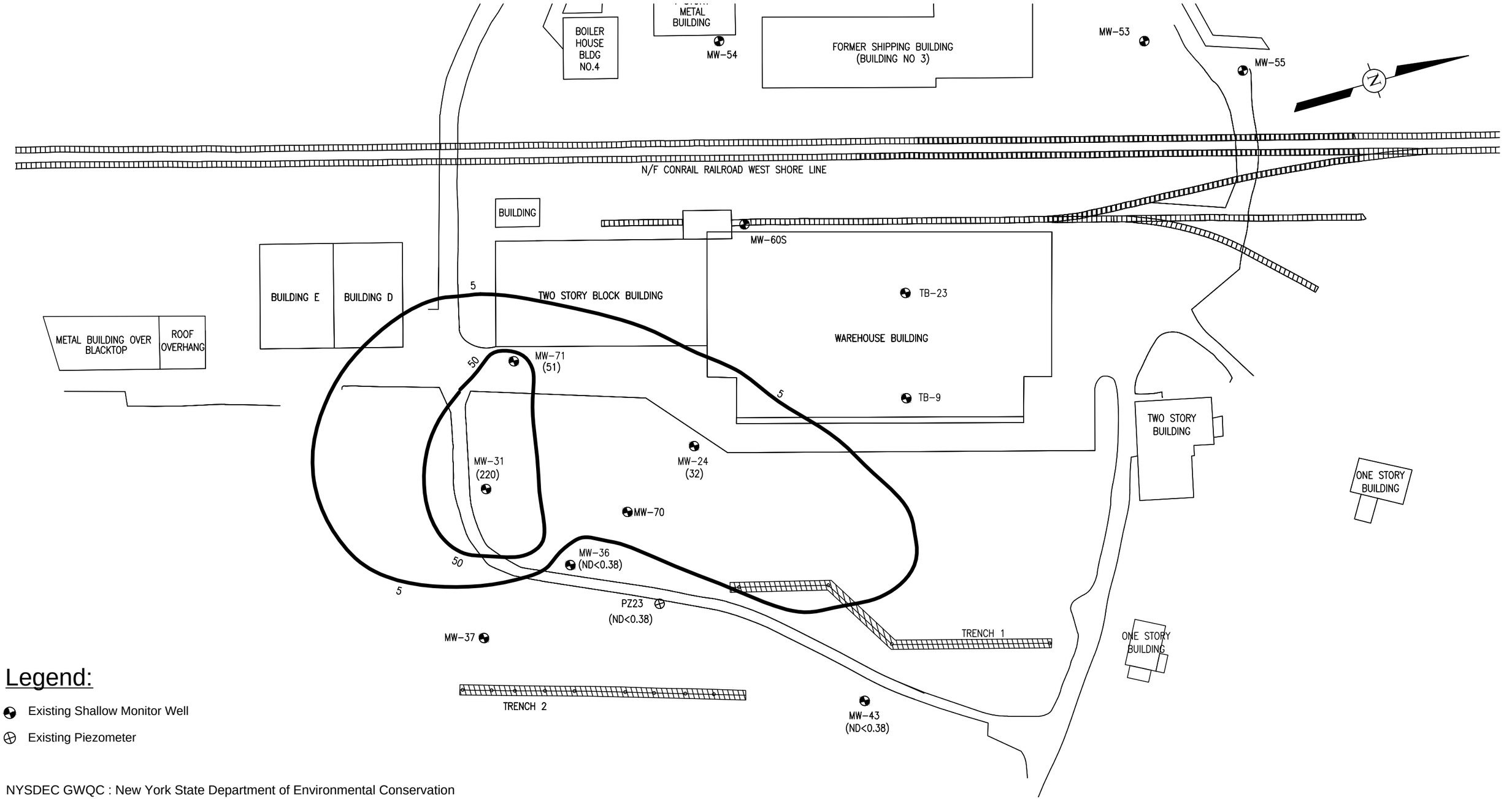
349 Route 206, Hillsborough, New Jersey, 08844 908-874-0990

FIGURE 7
Analytical Results Summary for OU1
September 2021



SCALE:	CHECKED BY:		
1" = 64'	CB	Former Kay Fries Site 50 Holt Drive Stony Point, NY	ECM environmental compliance monitoring, inc. 349 Route 206, Hillsborough, New Jersey, 08844 908-874-0990
DATE:	PROJECT NO:		
10/2021	1192		

FIGURE 7A
Analytical Results Summary for OU2
September 2021



Legend:

- Existing Shallow Monitor Well
- Existing Piezometer

NYSDEC GWQC : New York State Department of Environmental Conservation
Ground Water Ambient Water Quality Standards

Concentrations (in parentheses) are reported in micrograms per liter (ug/L).

Chlorobenzene GWQC = 5 ug/L

SCALE:	CHECKED BY:	
1" = 64'	CB	Former Kay Fries Site 50 Holt Drive Stony Point, NY
DATE:	PROJECT NO:	
12/2021	1192	

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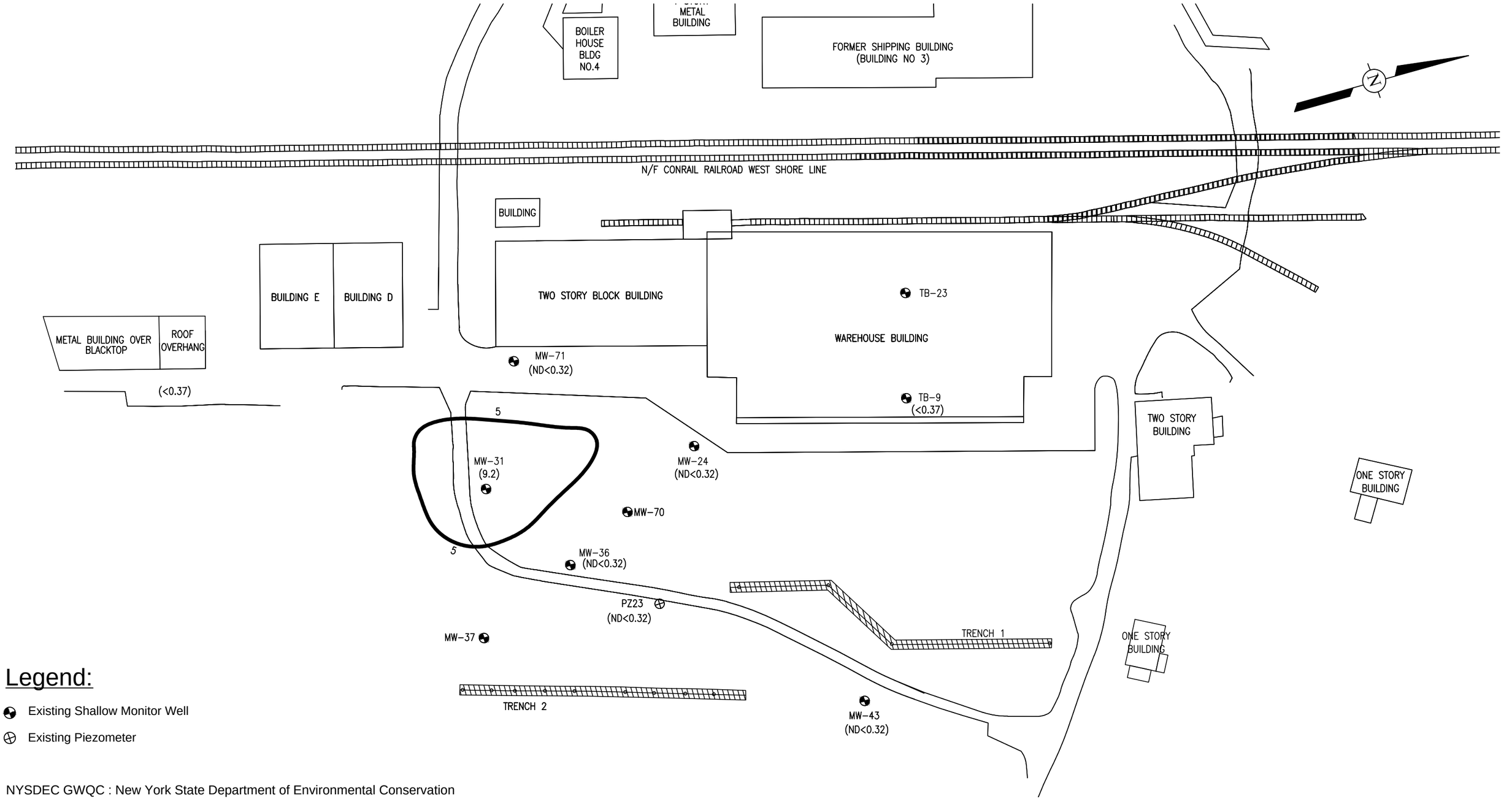
environmental compliance monitoring, inc.
349 Route 206, Hillsborough, New Jersey, 08844 908-874-0990

FIGURE 8
OPERABLE UNIT-1
Chlorobenzene Isoconcentration Map
September 2021



Legend:

- Existing Shallow Monitor Well
- Existing Piezometer

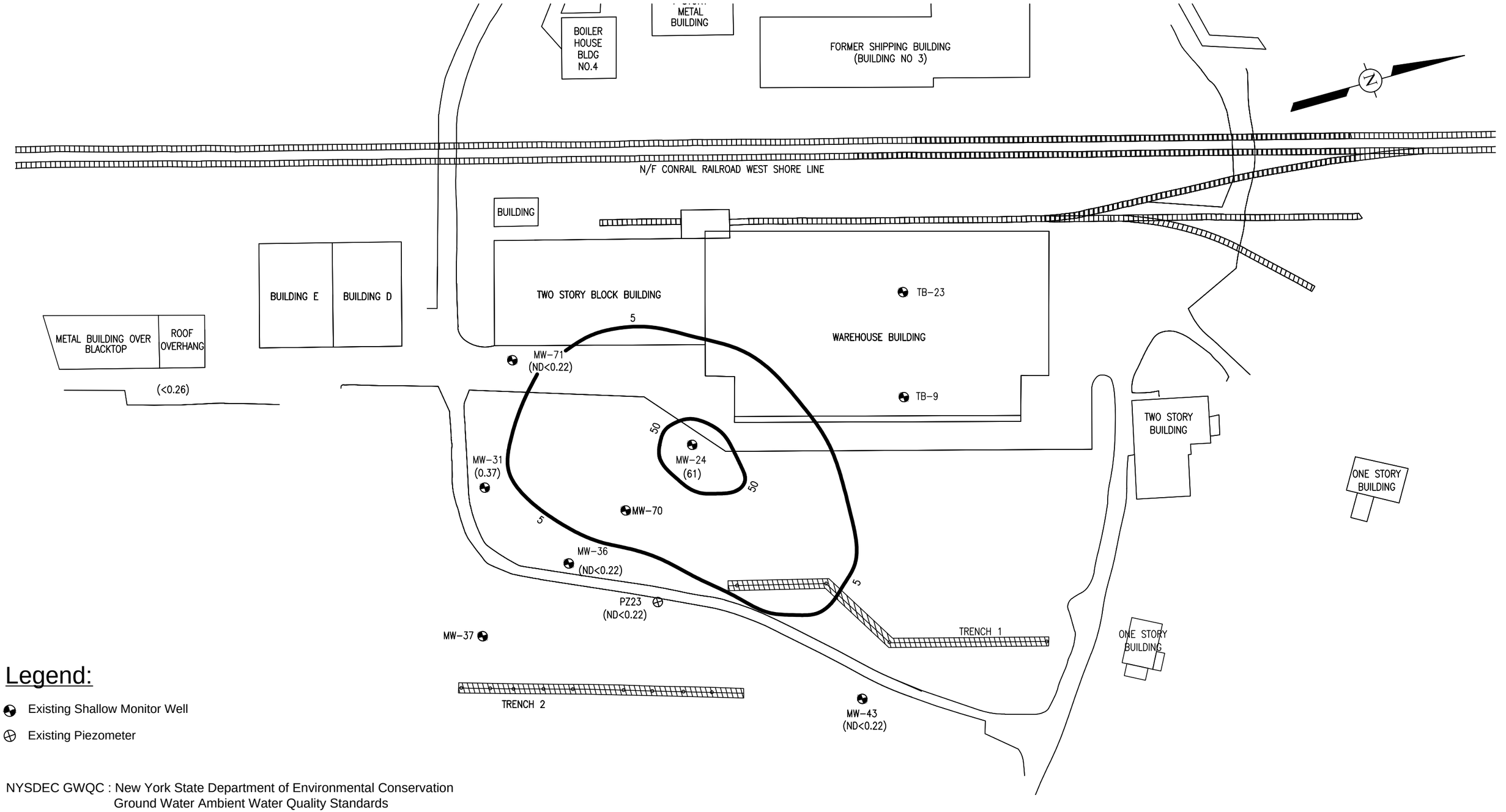
NYSDEC GWQC : New York State Department of Environmental Conservation
Ground Water Ambient Water Quality Standards

Concentrations (in parentheses) are reported in micrograms per liter (ug/L).

Chloroethane GWQC = 5 ug/L

SCALE:	CHECKED BY:		
1" = 64'	CB	Former Kay Fries Site 50 Holt Drive Stony Point, NY	ECM environmental compliance monitoring, inc. 349 Route 206, Hillsborough, New Jersey, 08844 908-874-0990
DATE:	PROJECT NO:		
12/2021	1192		

FIGURE 9
OPERABLE UNIT-1
Chloroethane Isoconcentration Map
September 2021



Legend:

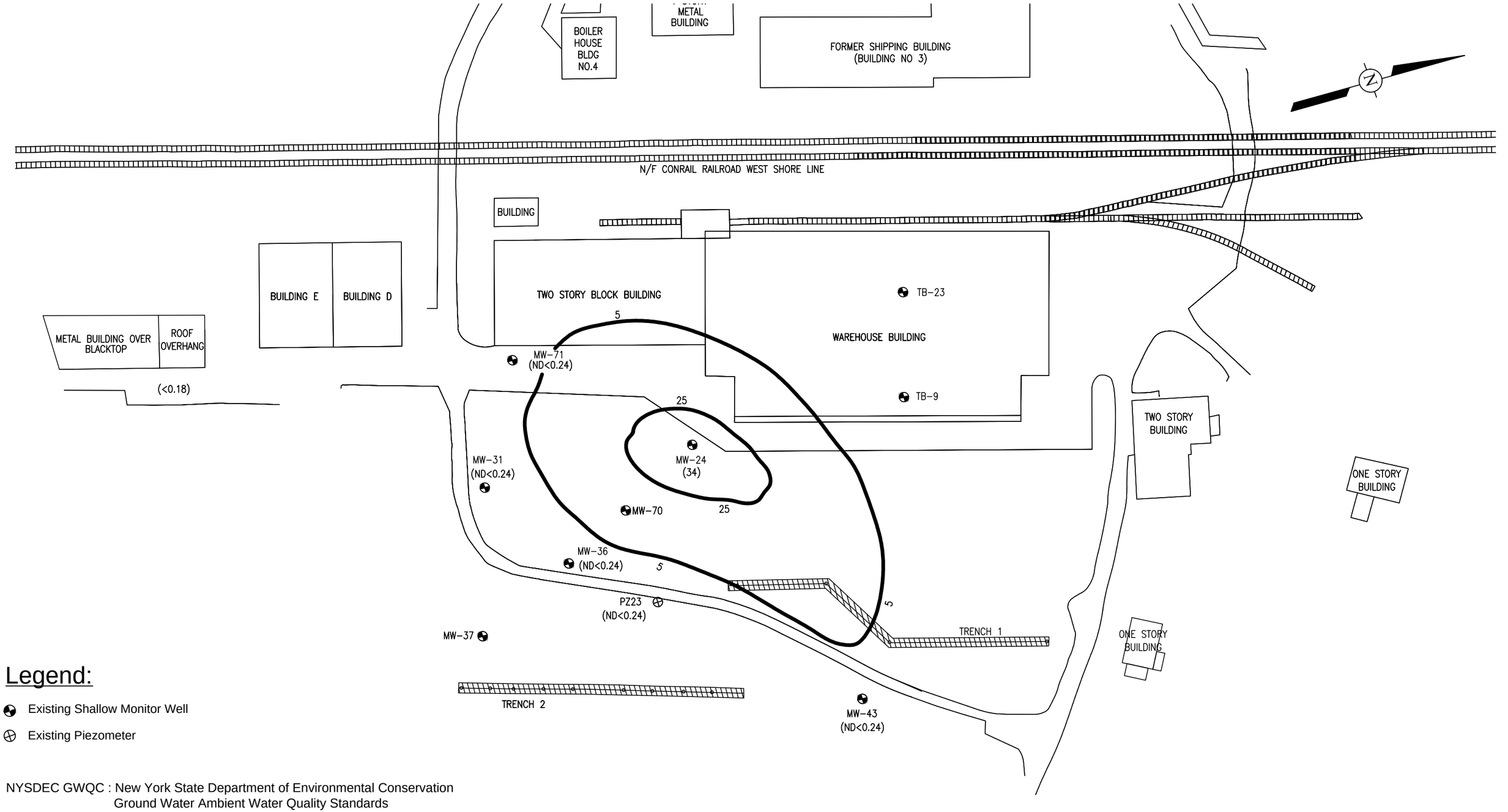
- Existing Shallow Monitor Well
- Existing Piezometer

NYSDEC GWQC : New York State Department of Environmental Conservation
Ground Water Ambient Water Quality Standards

Concentrations (in parentheses) are reported in micrograms per liter (ug/L).

cis-1,2-Dichloroethene GWQC = 5 ug/L

SCALE:	CHECKED BY:			
1" = 64'	CB	Former Kay Fries Site 50 Holt Drive Stony Point, NY	ECM environmental compliance monitoring, inc. 349 Route 206, Hillsborough, New Jersey, 08844 908-874-0990	**FIGURE 10** **OPERABLE UNIT-1** **cis-1,2-Dichloroethene Isoconcentration Map** **September 2021**
DATE:	PROJECT NO:			
12/2021	1192			



Legend:

- Existing Shallow Monitor Well
- Existing Piezometer

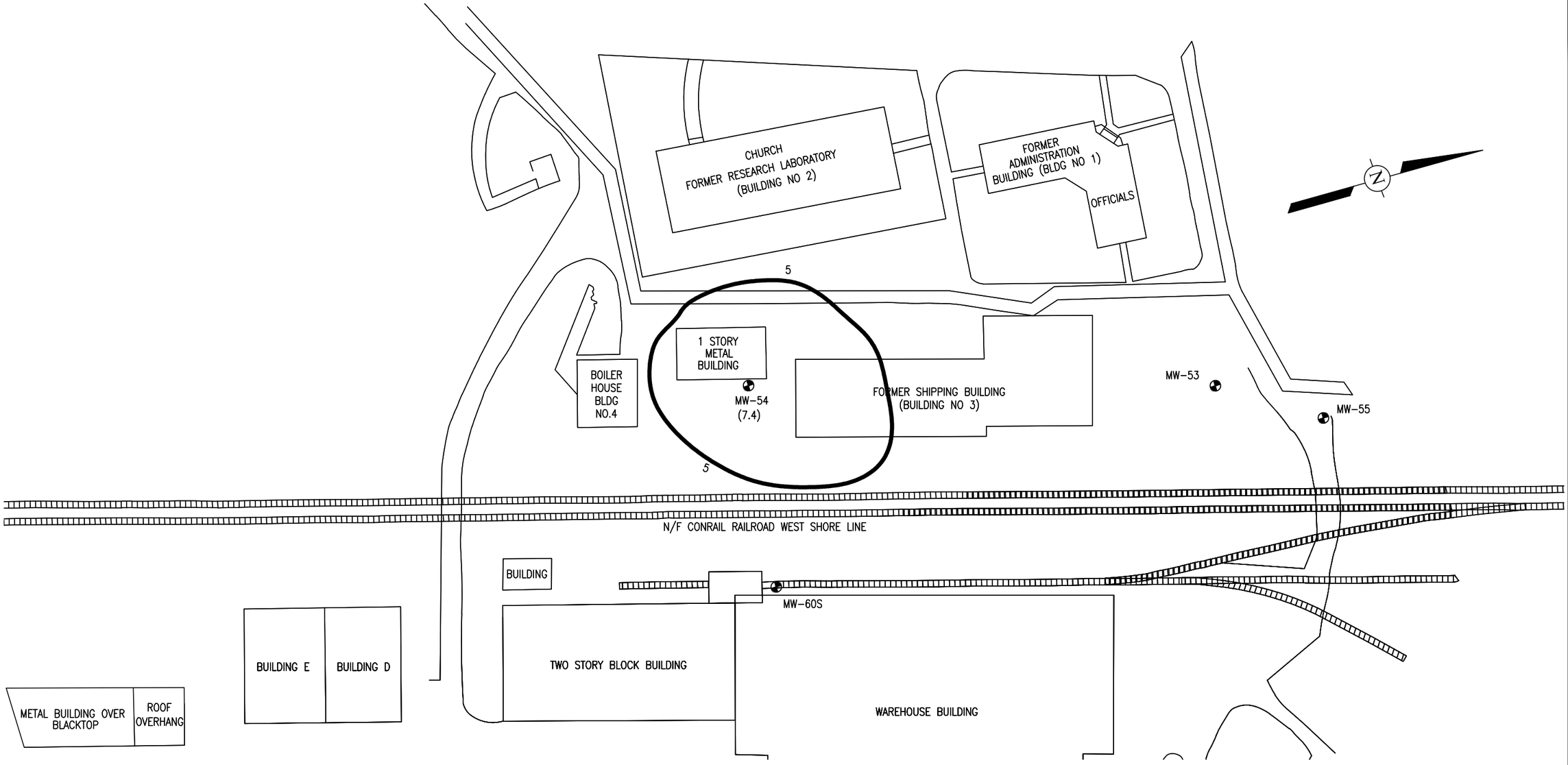
NYSDEC GWQC : New York State Department of Environmental Conservation
Ground Water Ambient Water Quality Standards

Concentrations (in parentheses) are reported in micrograms per liter (ug/L).

trans-1,2-Dichloroethene GWQC = 5 ug/L

SCALE:	CHECKED BY:		
1" = 64'	CB	Former Kay Fries Site 50 Holt Drive Stony Point, NY	ECM environmental compliance monitoring, inc. 349 Route 206, Hillsborough, New Jersey, 08844 908-874-0990
DATE: 12/2021	PROJECT NO: 1192		

FIGURE 11
OPERABLE UNIT-1
trans-1,2-Dichloroethene Isoconcentration Map
September 2021



Legend:

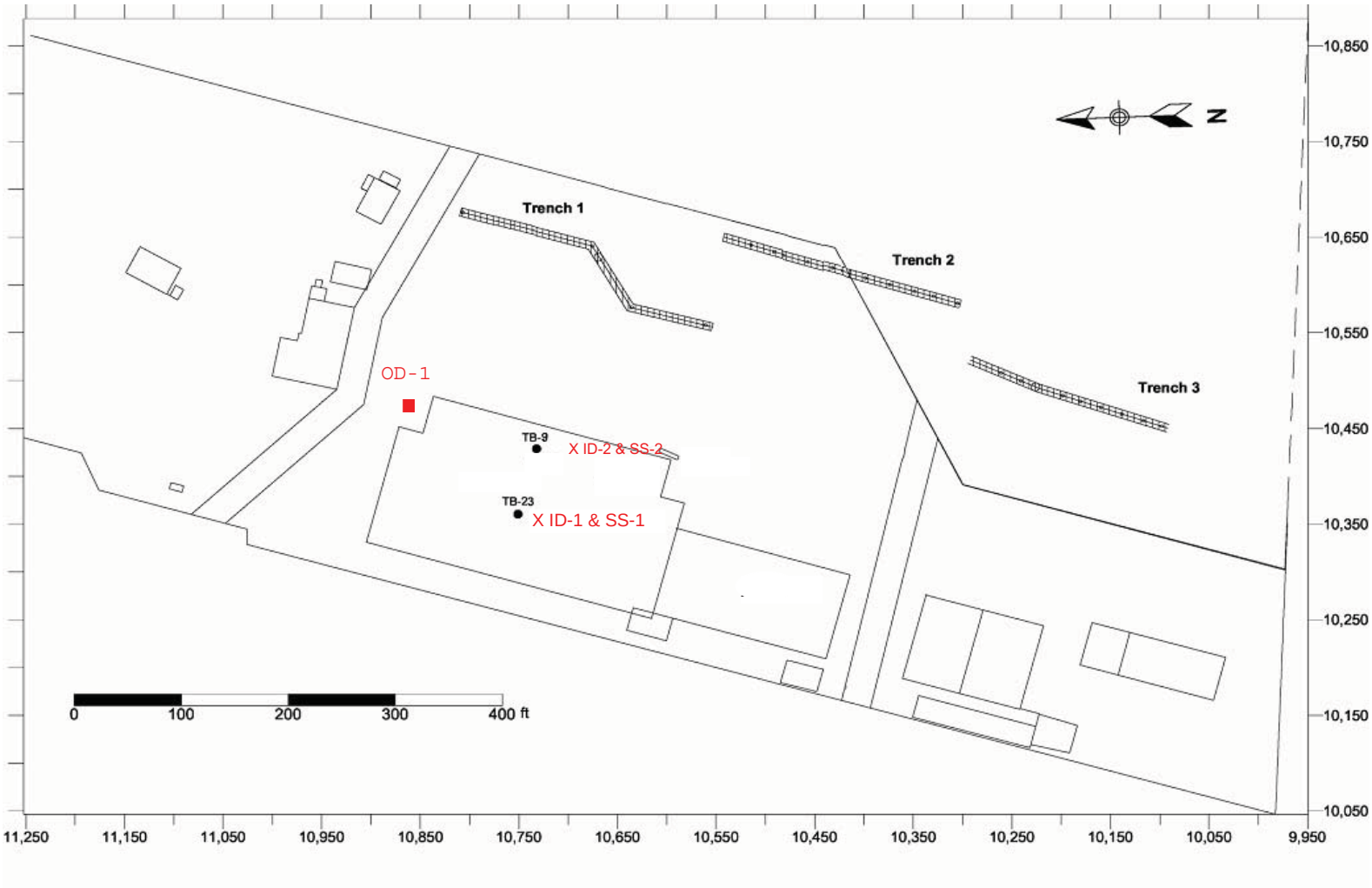
Existing Shallow Monitor Well

NYSDEC GWQC : New York State Department of Environmental Conservation
Ground Water Ambient Water Quality Standards

Concentrations (in parentheses) are reported in micrograms per liter (ug/L).

Tetrachloroethene GWQC = 5 ug/L

SCALE:	CHECKED BY:			
1" = 64'	CB	Former Kay Fries Site 50 Holt Drive Stony Point, NY	ECM environmental compliance monitoring, inc. 349 Route 206, Hillsborough, New Jersey, 08844 908-874-0990	**FIGURE 12** **OPERABLE UNIT-2** **Tetrachloroethene Isoconcentration Map** **September 2021**
DATE:	PROJECT NO:			
12/2021	1192			



● Monitoring Well Locations Within The Building

X Indoor and Sub-slab Sample Locations

■ Outdoor Sample Location

Base Map:
Hoch Surveyors and Engineers, P.C. , Existing Conditions Sheet
Rockland Organics Inc. (11/30/90), and
Topographic and Grading Sheet 1 INSL-X Products Corp. (10/1/89)
Piezometer and Well Survey Control; Drabick (7/93, 3/97, 12/97)

Figure 1
OU1 Soil Vapor Intrusion Sample Locations

Operable Unit 1 - Former Kay Fries Site
50 Holt Drive
Stony Point, New York

ECM
environmental compliance monitoring, inc.

349 Route 206, Hillsborough, New Jersey 08844
4787 Merlot Drive, Viera, Florida 32955

APPENDICES

APPENDIX 1

GROUND WATER MONITORING PROGRAM SCHEDULE

Appendix 1
Long-Term Ground Water Monitoring Schedule
Former Kay Fries Site
Evonik Corporation
Stony Point, New York
NYSDEC Site No. 344023

Monitor Well	***Frequency***	***Analytical Program***
Operable Unit 1		
MW-31	Annually, September	TCL-VOC+15 w/search MIBK, 1,4-dioxane
MW-36	Annually, September	TCL-VOC+15 w/search MIBK, 1,4-dioxane
PZ-23	Annually, September	TCL-VOC+15 w/search MIBK, 1,4-dioxane
MW-24	Annually, September	TCL-VOC+15 w/search MIBK, 1,4-dioxane
MW-71	Annually, September	TCL-VOC+15 w/search MIBK, 1,4-dioxane
MW-43	Annually, September	TCL-VOC+15 w/search MIBK, 1,4-dioxane
Operable Unit 2		
MW-54	Annually, September	TCL-VOC+15 w/search MIBK, 1,4-dioxane

APPENDIX 2

ENVIRONMENTAL EASEMENT

ENVIRONMENTAL EASEMENT GRANTED PURSUANT TO ARTICLE 71, TITLE 36 OF THE NEW YORK STATE ENVIRONMENTAL CONSERVATION LAW

THIS INDENTURE made this 21st day of May, 2020 between Owner, MBC Holding LLC, having an office at 27 Old Gate Hill Lane, Stony Point, County of Rockland, State of New York (the "Grantor"), and The People of the State of New York (the "Grantee"), acting through their Commissioner of the Department of Environmental Conservation (the "Commissioner", or "NYSDEC" or "Department" as the context requires) with its headquarters located at 625 Broadway, Albany, New York 12233,

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to encourage the remediation of abandoned and likely contaminated properties ("sites") that threaten the health and vitality of the communities they burden while at the same time ensuring the protection of public health and the environment; and

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to establish within the Department a statutory environmental remediation program that includes the use of Environmental Easements as an enforceable means of ensuring the performance of operation, maintenance, and/or monitoring requirements and the restriction of future uses of the land, when an environmental remediation project leaves residual contamination at levels that have been determined to be safe for a specific use, but not all uses, or which includes engineered structures that must be maintained or protected against damage to perform properly and be effective, or which requires groundwater use or soil management restrictions; and

WHEREAS, the Legislature of the State of New York has declared that Environmental Easement shall mean an interest in real property, created under and subject to the provisions of Article 71, Title 36 of the New York State Environmental Conservation Law ("ECL") which contains a use restriction and/or a prohibition on the use of land in a manner inconsistent with engineering controls which are intended to ensure the long term effectiveness of a site remedial program or eliminate potential exposure pathways to hazardous waste or petroleum; and

WHEREAS, Grantor, is the owner of real property located at the address of 50 Holt Drive in the Town of Stony Point, County of Rockland and State of New York, known and designated on the tax map of the County Clerk of Rockland as tax map parcel numbers: Section 20.02 Block 11 Lot 25, being the same as that property conveyed to Grantor by deed dated July 9, 2019 and recorded in the Rockland County Clerk's Office in Instrument No. 2019-00020409. The property subject to this Environmental Easement (the "Controlled Property") comprises approximately 15.177 +/- acres, and is hereinafter more fully described in the Land Title Survey dated January 30, 2019, last revised on October 3, 2019 prepared by John R. Atzl, P.L.S, which will be attached to the Site Management Plan. The Controlled Property description is set forth in and attached hereto as Schedule A; and

WHEREAS, the Department accepts this Environmental Easement in order to ensure the protection of public health and the environment and to achieve the requirements for remediation established for the Controlled Property until such time as this Environmental Easement is

extinguished pursuant to ECL Article 71, Title 36; and

NOW THEREFORE, in consideration of the mutual covenants contained herein and the terms and conditions of Order on Consent Index Number: 367A0217, Grantor conveys to Grantee a permanent Environmental Easement pursuant to ECL Article 71, Title 36 in, on, over, under, and upon the Controlled Property as more fully described herein ("Environmental Easement").

1. Purposes. Grantor and Grantee acknowledge that the Purposes of this Environmental Easement are: to convey to Grantee real property rights and interests that will run with the land in perpetuity in order to provide an effective and enforceable means of encouraging the reuse and redevelopment of this Controlled Property at a level that has been determined to be safe for a specific use while ensuring the performance of operation, maintenance, and/or monitoring requirements; and to ensure the restriction of future uses of the land that are inconsistent with the above-stated purpose.

2. Institutional and Engineering Controls. The controls and requirements listed in the Department approved Site Management Plan ("SMP") including any and all Department approved amendments to the SMP are incorporated into and made part of this Environmental Easement. These controls and requirements apply to the use of the Controlled Property, run with the land, are binding on the Grantor and the Grantor's successors and assigns, and are enforceable in law or equity against any owner of the Controlled Property, any lessees and any person using the Controlled Property.

A. (1) The Controlled Property may be used for:

Industrial as described in 6 NYCRR Part 375-1.8(g)(2)(iv)

(2) All Engineering Controls must be operated and maintained as specified in the Site Management Plan (SMP);

(3) All Engineering Controls must be inspected at a frequency and in a manner defined in the SMP;

(4) The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Rockland County Department of Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department;

(5) Groundwater and other environmental or public health monitoring must be performed as defined in the SMP;

(6) Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in the SMP;

(7) All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with the SMP;

(8) Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in the SMP;

(9) Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy shall be performed as defined in the SMP;

(10) Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by this Environmental Easement.

B. The Controlled Property shall not be used for Residential, Restricted Residential or Commercial purposes as defined in 6NYCRR 375-1.8(g)(i), (ii) and (iii), and the above-stated engineering controls may not be discontinued without an amendment or extinguishment of this Environmental Easement.

C. The SMP describes obligations that the Grantor assumes on behalf of Grantor, its successors and assigns. The Grantor's assumption of the obligations contained in the SMP which may include sampling, monitoring, and/or operating a treatment system, and providing certified reports to the NYSDEC, is and remains a fundamental element of the Department's determination that the Controlled Property is safe for a specific use, but not all uses. The SMP may be modified in accordance with the Department's statutory and regulatory authority. The Grantor and all successors and assigns, assume the burden of complying with the SMP and obtaining an up-to-date version of the SMP from:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, New York 12233
Phone: (518) 402-9553

D. Grantor must provide all persons who acquire any interest in the Controlled Property a true and complete copy of the SMP that the Department approves for the Controlled Property and all Department-approved amendments to that SMP.

E. Grantor covenants and agrees that until such time as the Environmental Easement is extinguished in accordance with the requirements of ECL Article 71, Title 36 of the ECL, the property deed and all subsequent instruments of conveyance relating to the Controlled Property shall state in at least fifteen-point bold-faced type:

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 Environmental Conservation

Law.

F. Grantor covenants and agrees that this Environmental Easement shall be incorporated in full or by reference in any leases, licenses, or other instruments granting a right to use the Controlled Property.

G. Grantor covenants and agrees that it shall, at such time as NYSDEC may require, submit to NYSDEC a written statement by an expert the NYSDEC may find acceptable certifying under penalty of perjury, in such form and manner as the Department may require, that:

(1) the inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under the direction of the individual set forth at 6 NYCRR Part 375-1.8(h)(3).

(2) the institutional controls and/or engineering controls employed at such site:

(i) are in-place;

(ii) are unchanged from the previous certification, or that any identified changes to the controls employed were approved by the NYSDEC and that all controls are in the Department-approved format; and

(iii) that nothing has occurred that would impair the ability of such control to protect the public health and environment;

(3) the owner will continue to allow access to such real property to evaluate the continued maintenance of such controls;

(4) nothing has occurred that would constitute a violation or failure to comply with any site management plan for such controls;

(5) the report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

(6) to the best of his/her knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and

(7) the information presented is accurate and complete.

3. Right to Enter and Inspect. Grantee, its agents, employees, or other representatives of the State may enter and inspect the Controlled Property in a reasonable manner and at reasonable times to assure compliance with the above-stated restrictions.

4. Reserved Grantor's Rights. Grantor reserves for itself, its assigns, representatives, and successors in interest with respect to the Property, all rights as fee owner of the Property, including:

A. Use of the Controlled Property for all purposes not inconsistent with, or limited by the terms of this Environmental Easement;

B. The right to give, sell, assign, or otherwise transfer part or all of the underlying fee interest to the Controlled Property, subject and subordinate to this Environmental Easement;

5. Enforcement

A. This Environmental Easement is enforceable in law or equity in perpetuity by Grantor, Grantee, or any affected local government, as defined in ECL Section 71-3603, against the owner of the Property, any lessees, and any person using the land. Enforcement shall not be defeated because of any subsequent adverse possession, laches, estoppel, or waiver. It is not a defense in any action to enforce this Environmental Easement that: it is not appurtenant to an interest in real property; it is not of a character that has been recognized traditionally at common law; it imposes a negative burden; it imposes affirmative obligations upon the owner of any interest in the burdened property; the benefit does not touch or concern real property; there is no privity of estate or of contract; or it imposes an unreasonable restraint on alienation.

B. If any person violates this Environmental Easement, the Grantee may revoke the Certificate of Completion with respect to the Controlled Property.

C. Grantee shall notify Grantor of a breach or suspected breach of any of the terms of this Environmental Easement. Such notice shall set forth how Grantor can cure such breach or suspected breach and give Grantor a reasonable amount of time from the date of receipt of notice in which to cure. At the expiration of such period of time to cure, or any extensions granted by Grantee, the Grantee shall notify Grantor of any failure to adequately cure the breach or suspected breach, and Grantee may take any other appropriate action reasonably necessary to remedy any breach of this Environmental Easement, including the commencement of any proceedings in accordance with applicable law.

D. The failure of Grantee to enforce any of the terms contained herein shall not be deemed a waiver of any such term nor bar any enforcement rights.

6. Notice. Whenever notice to the Grantee (other than the annual certification) or approval from the Grantee is required, the Party providing such notice or seeking such approval shall identify the Controlled Property by referencing the following information:

County, NYSDEC Site Number, NYSDEC Brownfield Cleanup Agreement, State Assistance Contract or Order Number, and the County tax map number or the Liber and Page or computerized system identification number.

Parties shall address correspondence to:

Site Number: 344023
Office of General Counsel
NYSDEC
625 Broadway
Albany New York 12233-5500

With a copy to:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, NY 12233

All notices and correspondence shall be delivered by hand, by registered mail or by Certified mail and return receipt requested. The Parties may provide for other means of receiving and

communicating notices and responses to requests for approval.

7. Recordation. Grantor shall record this instrument, within thirty (30) days of execution of this instrument by the Commissioner or her/his authorized representative in the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

8. Amendment. Any amendment to this Environmental Easement may only be executed by the Commissioner of the New York State Department of Environmental Conservation or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

9. Extinguishment. This Environmental Easement may be extinguished only by a release by the Commissioner of the New York State Department of Environmental Conservation, or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

10. Joint Obligation. If there are two or more parties identified as Grantor herein, the obligations imposed by this instrument upon them shall be joint and several.

11. Consistency with the SMP. To the extent there is any conflict or inconsistency between the terms of this Environmental Easement and the SMP, regarding matters specifically addressed by the SMP, the terms of the SMP will control.

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IN WITNESS WHEREOF, Grantor has caused this instrument to be signed in its name.

MBC Holding LLC:

By: Patrick J Magee

Print Name: PATRICK S MAGEE

Title: MM Date: 3-3-2020

Grantor's Acknowledgment

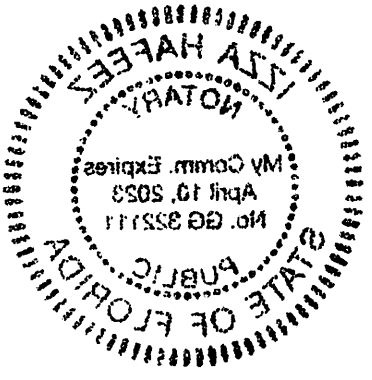
STATE OF ~~NEW YORK~~ Florida)
) ss:
COUNTY OF Lee)

On the 03rd day of March, in the year 20 20, before me, the undersigned, personally appeared Patrick Joseph Magee, 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.

Izza Hafeez

Notary Public - State of ~~New York~~ Florida.

IZZA HAFEEZ NOTARY PUBLIC STATE OF FLORIDA My Comm. Expires April 10, 2023 No. GG 322111


IZZA HAFEEZ
NOTARY
My Comm. Expires
April 10, 2029
No. GG 322111
PUBLIC
STATE OF FLORIDA

THIS ENVIRONMENTAL EASEMENT 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: _____
Michael J. Ryan, Director
Division of Environmental Remediation

Grantee's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF ALBANY)

On the 21st day of May, in the year 2020 before me, the undersigned, personally appeared Michael J. Ryan, 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/ executed the same in his/her/ capacity as Designee of the Commissioner of the State of New York Department of Environmental Conservation, and that by his/her/ signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

_____
Notary Public - State of New York

JENNIFER ANDALORO
Notary Public, State of New York
No. 02AN6098246
Qualified in Albany County
Commission Expires January 14, 2024

SCHEDULE "A" PROPERTY DESCRIPTION

MBC Holding LLC
Tax Lot 20.02-11-25

ALL that certain plot, piece or parcel of land, situate, lying and being in the Town of Stony Point, County of Rockland and State of New York, shown and designated as Proposed Lot number 1 on a certain map entitled, "Subdivision Flat Prepared For Insl-X Products Corporation Located at Stony Point, Rockland County, New York", made by Edwin F. Loch, P.C., Surveyors, Engineers and Planners, dated October 11, 1989 and filed in the Rockland County's Clerk's Office on December 22, 1989 in Book 111, of Maps at page 35 as Map Number 6403, as follows:

BEGINNING at a point located the following courses and distances from an existing town line monument located at the intersection of the westerly right of way of Conrail West Shore Line with the common boundary of the Town of Haverstraw and the Town of Stony Point:

A. Along the common boundary of the Town of Haverstraw and the Town of Stony Point S 87 32' 00" E 79.63 feet to a point along the easterly right of way of the Conrail West Shore Line; thence

B. Along the easterly right of way of the Conrail West Shore Line N 15 22' 00" E 30.78 feet to the point of beginning.

From said point of beginning running thence the following courses and distances along the common boundary of Conrail West Shore Line and the herein described parcel:

1. N 15 22' 00" E 1,081.00 feet; thence

2. S 89 38' 00" E 16.05 feet; thence

3. N 15 22' 00"E 155.46 feet; thence

4. N 65 37' 00" E 42.92 feet; thence

5. N 15 22' 00" E 190.70 feet to a point of curvature; thence

6. On a curve to the right, tangent to the previous course, an arc length of 588.00 feet, about a radius of 1,825.00 feet, subtended by a central angle of 18 27' 37", to a point located at the intersection of the easterly right of Way of Conrail West Shore Line and the center line of Cedar Pond Brook;

Thence along the center line of Cedar Pond Brook the fallowing courses and distances:

7. S 59 35' 30"E 74.23 feet to a point of curvature: thence

8. On a curve to the right, tangent to the previous course, an arc length of 97.80 feet, about a radius of 65.00 feet, subtended by a central angle at 86-12-24", to a point of reverse curvature; thence

9. On a curve to the left, tangent to the previous curve, an arc length of 575.73 feet, about a radius of 514.51 feet, subtended by a central angle of 64 06' 49", to a point,

Thence along the common boundary line of IISL-X Products Corporation Lot #1 and Lot 12 the following courses and distances:

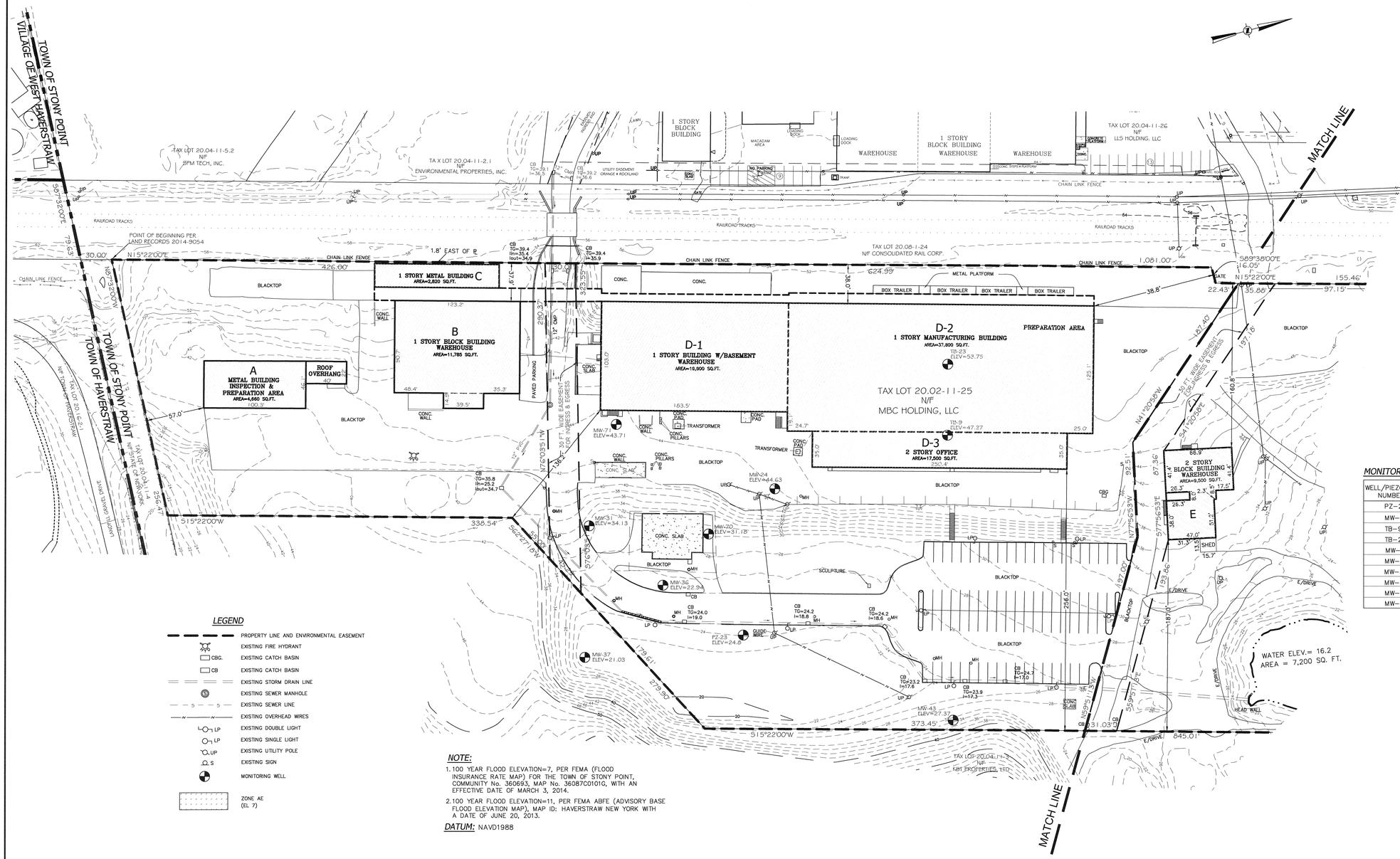
10. S 15 22' 00" W 845.01 feet to a point; thence

11. S 62 27' 18" W 279.90 feet to a point; thence

12. S 15 22' 00" W 338.54 feet to a point; thence

13. Along the common line of the State of New York and INSL-X Products Corporation N 87 32' 00" W 256.47 feel to the point of BEGINNING.

Containing 15.177 acres more or less.
S/B/L: 20.02-11-25


TOWN OF STONY POINT
VILLAGE OF WEST HAVERSTRAW
TOWN OF HAVERSTRAW
TOWN OF STONY POINT
TAX LOT 20.04-11-5.2 N/F SPM TECH, INC.
TA X LOT 20.04-11-2.1 N/F ENVIRONMENTAL PROPERTIES, INC.
TAX LOT 20.04-11-26 N/F LL5 HOLDING, LLC
TAX LOT 20.08-1-24 N/F CONSOLIDATED RAIL CORP.
TAX LOT 20.02-11-25 N/F MBC HOLDING, LLC
TAX LOT 20.04-11-3 N/F KBT PROPERTIES, LLC
1 STORY BLOCK BUILDING
WAREHOUSE
1 STORY BLOCK BUILDING WAREHOUSE
WAREHOUSE
MACADAM AREA
LOADING DOCK
NO PARKING SIGN
UTILITY EASEMENT ORANGE & ROCKLAND
RAILROAD TRACKS
CHAIN LINK FENCE
POINT OF BEGINNING PER LAND RECORDS 2014-9054
1.8' EAST OF R
S50°32'00"E
N15°22'00"E
N37°32'00"W
426.00'
30.00'
79.63'
1 STORY METAL BUILDING C
AREA=2,820 SQ.FT.
B
1 STORY BLOCK BUILDING WAREHOUSE
AREA=11,785 SQ.FT.
A
METAL BUILDING INSPECTION & PREPARATION AREA
AREA=4,660 SQ.FT.
ROOF OVERHANG
D-1
1 STORY BUILDING W/BASEMENT WAREHOUSE
AREA=16,900 SQ.FT.
D-2
1 STORY MANUFACTURING BUILDING
AREA=37,800 SQ.FT.
PREPARATION AREA
D-3
2 STORY OFFICE
AREA=17,500 SQ.FT.
2 STORY BLOCK BUILDING WAREHOUSE
AREA=9,500 SQ.FT.
E
SHED
BOX TRAILER
METAL PLATFORM
GATE
PAVED PARKING
CONC. SLAB
CONC. PAD
CONC. PILLARS
CONC. WALL
TRANSFORMER
SCULPTURE
BLACKTOP
E/DRIVE
HEAD WALL
30' FT. WIDE EASEMENT FOR INGRESS & EGRESS
30.1' WIDE EASEMENT FOR INGRESS & EGRESS
MW-71 ELEV=43.71
MW-24 ELEV=44.63
MW-31 ELEV=34.13
MW-70 ELEV=31.18
MW-36 ELEV=22.94
MW-37 ELEV=21.03
PZ-23 ELEV=24.8
MW-43 ELEV=27.37
TB-23 TG=53.75
TB-9 ELEV=47.27
WATER ELEV.= 16.2
AREA = 7,200 SQ. FT.
MATCH LINE
MATCH LINE
N15°22'00"W
S15°22'00"W
S69°38'00"E
N76°03'51"W
S76°35'53"E
N14°20'50"W
S14°20'50"E
338.54'
279.50'
373.45'
645.01'
1,081.00'
624.99'
155.46'
187.40'
160.18'
97.15'
97.16'
125.11'
103.0'
290.3'
256.0'
187.10'
179.61'
197.00'
197.08'
125.46'
92.51'
87.36'
55.93'
31.03'
CB TG=39.1 I=36.5
CB TG=39.2 I=37.6
CB TG=39.4 I=35.4 I(out)=34.9
CB TG=39.4 I=35.9
CB TG=35.8 I(in)=25.2 I(out)=34.7
CB TG=24.0 I=19.0
CB TG=24.2 I=18.6
CB TG=24.2 I=16.6
CB TG=24.7 I=17.0
CB TG=23.2 I=17.8
CB TG=23.9 I=17.3
CB TG=23.9 I=17.3
CB TG=24.2 I=17.0
CB TG=24.2 I=17.0
CB TG=24.2 I=17.0

Schedule A Description

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9. On a curve to the left, tangent to the previous curve, an arc length of 575.73 feet, about a radius of 514.51 feet, subtended by a central angle of 64 06' 49", to a point,

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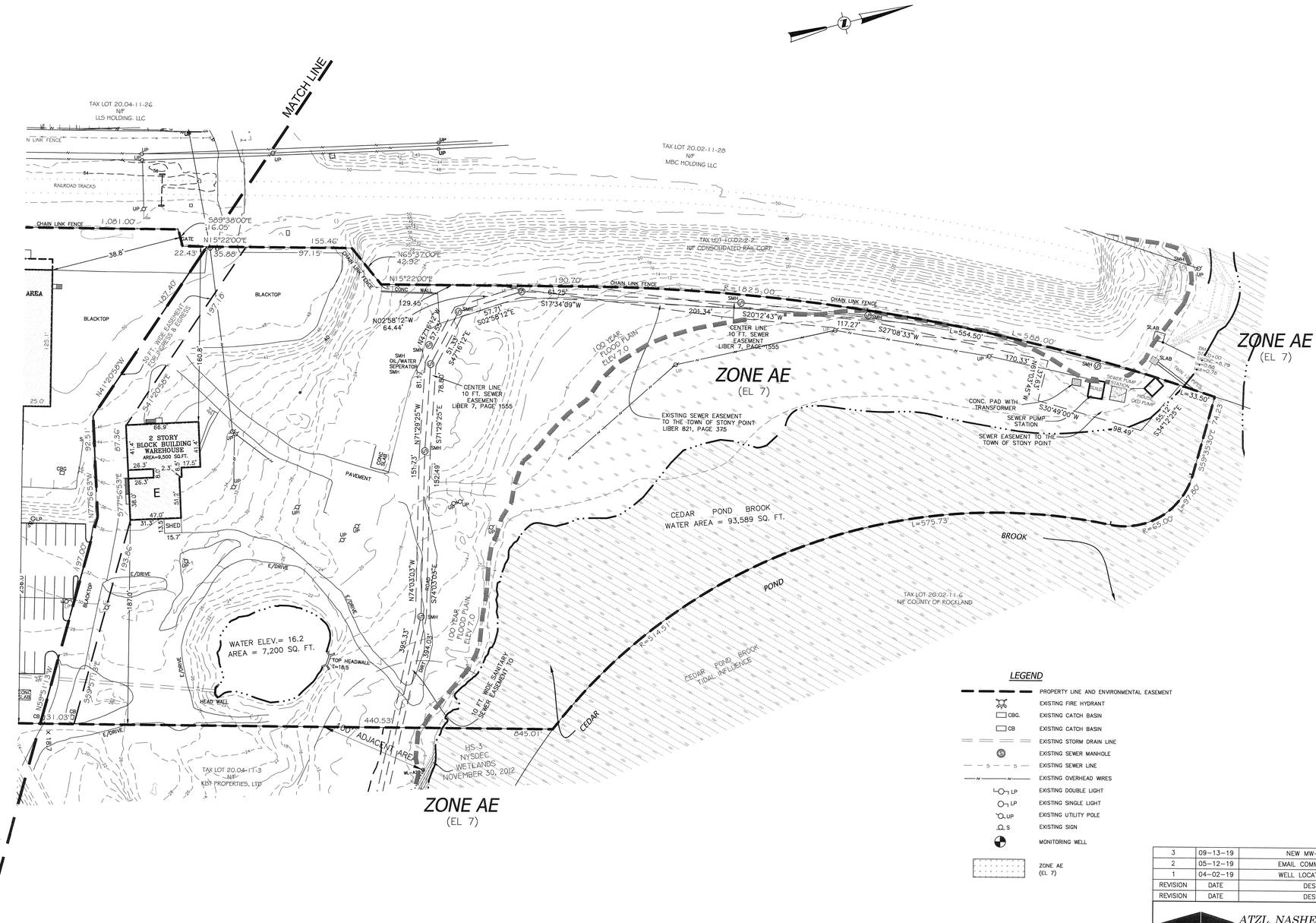
S/B/L: 20.02-11-25



LEGEND

- PROPERTY LINE AND ENVIRONMENTAL EASEMENT
- EXISTING FIRE HYDRANT
- CBG. EXISTING CATCH BASIN
- CB EXISTING CATCH BASIN
- EXISTING STORM DRAIN LINE
- S EXISTING SEWER MANHOLE
- EXISTING SEWER LINE
- EXISTING OVERHEAD WIRES
- LP EXISTING DOUBLE LIGHT
- LP EXISTING SINGLE LIGHT
- UP EXISTING UTILITY POLE
- S EXISTING SIGN
- MONITORING WELL
- ZONE AE (EL 7)

RIGHT-OF-WAY, EASEMENTS, & RESERVATIONS:

A.) RIGHT-OF-WAY – LIBER 329, PAGE 119

1.) 25 FEET WIDE RIGHT-OF-WAY TO ROUTE 9W SUPERCEDED BY FILE MAP.

2.) EASEMENT FOR 10 INCH PIPE TO THE MINISCEONGO CREEK DOES NOT AFFECT THIS PARCEL.

B.) AGREEMENT – LIBER 413, PAGE 80

1.) 25 FEET WIDE RIGHT-OF-WAY TO ROUTE 9W SUPERCEDED BY FILE MAP.

C.) SEWER EASEMENT – LIBER 7, PAGE 1555 NOTED AND SHOWN ON SURVEY.

D.) SEWER EASEMENT – LIBER 821, PAGE 375 NOTED AND SHOWN ON SURVEY.

E.) RESERVATION – LIBER 419, PAGE 1738 EASEMENT FOR INGRESS, EGRESS, AND UTILITIES OVER KAY FRIES DRIVE (HOLT DRIVE) 60 FEET WIDE.

UNDERGROUND UTILITIES ON OR CROSSING THIS PROPERTY NOT VISIBLE AND NOT REFERENCED ARE NOT SHOWN.

NOTE:

1. 100 YEAR FLOOD ELEVATION=7, PER FEMA (FLOOD INSURANCE RATE MAP) FOR THE TOWN OF STONY POINT, COMMUNITY No. 360693, MAP No. 36087C0101G, WITH AN EFFECTIVE DATE OF MARCH 3, 2014.
2. 100 YEAR FLOOD ELEVATION=11, PER FEMA ABFE (ADVISORY BASE FLOOD ELEVATION MAP), MAP ID: HAVERSTRAW NEW YORK WITH A DATE OF JUNE 20, 2013.

DATUM: NAVD1988

NOTE:

"THIS PROPERTY IS SUBJECT TO AN ENVIRONMENTAL EASEMENT HELD BY THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION PURSUANT TO TITLE 36 OF ARTICLE 71 OF THE NEW YORK ENVIRONMENTAL CONSERVATION LAW. THE ENGINEERING AND INSTITUTIONAL CONTROLS FOR THIS EASEMENT ARE SET FORTH IN THE SITE MANAGEMENT PLAN (SMP). A COPY OF THE SMP MUST BE OBTAINED BY ANY PARTY WITH AN INTEREST IN THE PROPERTY. 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@DEC.NY.GOV".

GRAPHIC SCALE
50 0 25 50 100
SCALE: 1 IN.= 50 FT.

"UNAUTHORIZED ALTERATIONS OR ADDITIONS TO A SURVEY MAP BEARING A LICENSED LAND SURVEYOR'S EMBOSSED SEAL IS A VIOLATION OF SECTION 7209, SUB-DIVISION 2, OF THE NEW YORK STATE EDUCATION LAW."
"ONLY COPIES FROM THE ORIGINAL TRACING OF THIS SURVEY MAP MARKED WITH THE LAND SURVEYOR'S EMBOSSED SEAL SHALL BE CONSIDERED TO BE VALID TRUE COPIES."
"CERTIFICATION INDICATED HERE ON SIGNIFY THAT THIS SURVEY WAS PREPARED IN ACCORDANCE WITH THE EXISTING CODE OF PRACTICE FOR LAND SURVEYOR'S ADOPTED BY THE DELAWARE – HUDSON LAND SURVEYORS ASSOCIATION. SAID CERTIFICATIONS SHALL RUN ONLY TO THOSE NAMED INDIVIDUALS AND/OR INSTITUTIONS FOR WHOM THE SURVEY WAS PREPARED. CERTIFICATIONS ARE NOT TRANSFERABLE TO ADDITIONAL INDIVIDUALS, INSTITUTIONS, THEIR SUCCESSORS AND/OR ASSIGNS OR SUBSEQUENT OWNERS."

STATE OF NEW YORK
JOHN R. ATZL
JOHN R. ATZL
N.Y.S. P.L.S. LIC. NO. 50228

REVISION	DATE	DESCRIPTION
3	09-13-19	NEW MW-43 LOCATION
2	05-12-19	EMAIL COMMENTS 4-10-19
1	04-02-19	WELL LOCATION
REVISION	DATE	DESCRIPTION
REVISION	DATE	DESCRIPTION

ATZL, NASHER & ZIGLER P.C.
ENGINEERS–SURVEYORS–PLANNERS
232 North Main Street
New City, New York 10956
Tel: (845) 634-4694
Fax: (845) 634-5543
E-mail: info@anzny.com
Web: www.ANZNY.com

PROJECT:
MBC HOLDING LLC

TOWN OF STONY POINT
ROCKLAND COUNTY, NEW YORK

TITLE:
ENVIRONMENTAL EASEMENT

DRAWN BY: VC	CHECKED BY: JRA
DATE: JANUARY 30, 2019	SCALE: 1 IN. = 50 FT.
PROJECT NO: 2738	DRAWING NO: 2 of 2

APPENDIX 3

LIST OF SITE CONTACTS

Appendix 3 Site Contact Information			
Name & Title	**Affiliation & Address**	**Phone**	**E-Mail**
Scott Deyette Chief, Inspection Unit	NYSDEC Case Manager NYSDEC Division of Environmental Remediation Remedial Bureau C, 11th Floor 625 Broadway, Albany, NY 12233-7014	(518) 402-9662	scott.deyette@dec.ny.gov
Patrick Magee President, Site Owner	Site Owner MBC Holdings, LLC. PO Box 54 Stony Point, NY 10980	(845) 429-8231	mbccontractors@aol.com
Daniel J. Saunders Manager ESHQ, ESHQ Services	Former Site Owner Evonik Corporation 2 Turner Place Piscataway, NJ 07054-0677	(207) 337-2260	daniel.saunders@Evonik.com
Bruce Manganiello Operations Manager	Environmental Consultant Environmental Compliance Monitoring, Inc. 349 Route 206 Hillsborough, NJ 08844	(908) 874-0990	btm-ecm@att.net

APPENDIX 4

MONITORING WELL BORING & CONSTRUCTION LOGS

WELL LOG

LEGGETTE, BRASHEARS & GRAHAM, INC.
CONSULTING GROUND-WATER GEOLOGISTS
72 DANBURY ROAD
WILTON, CT. 06897

OWNER Kay-Fries

WELL NO. TB-9

DATE 09/12/85 PAGE 1 OF 1 PAGES

LOCATION: Kay-Fries Tank Farm
Stony Point, New York

DATE COMPLETED: September 12, 1985

DRILLING COMPANY: Kendrick Drilling

DRILLING METHOD: Hand augers

SAMPLING METHOD: Split spoon

SAMPLES EXAMINED BY: Lonnie D. Norman

REFERENCE POINT: Grade

ELEVATION OF R.P.: 46.9 feet

WELL CONSTRUCTION
SCREEN TYPE: Threaded flush-coupled PVC
DIAM.: 2-inch SLOT NO.: 10
SETTING: 3.0 - 7.0 feet
GRAVEL PACK SIZE: 2.5 - 7.0 feet
CASING: 2-inch PVC
DEVELOPMENT: Pumped and bailed approximately 43 gallons

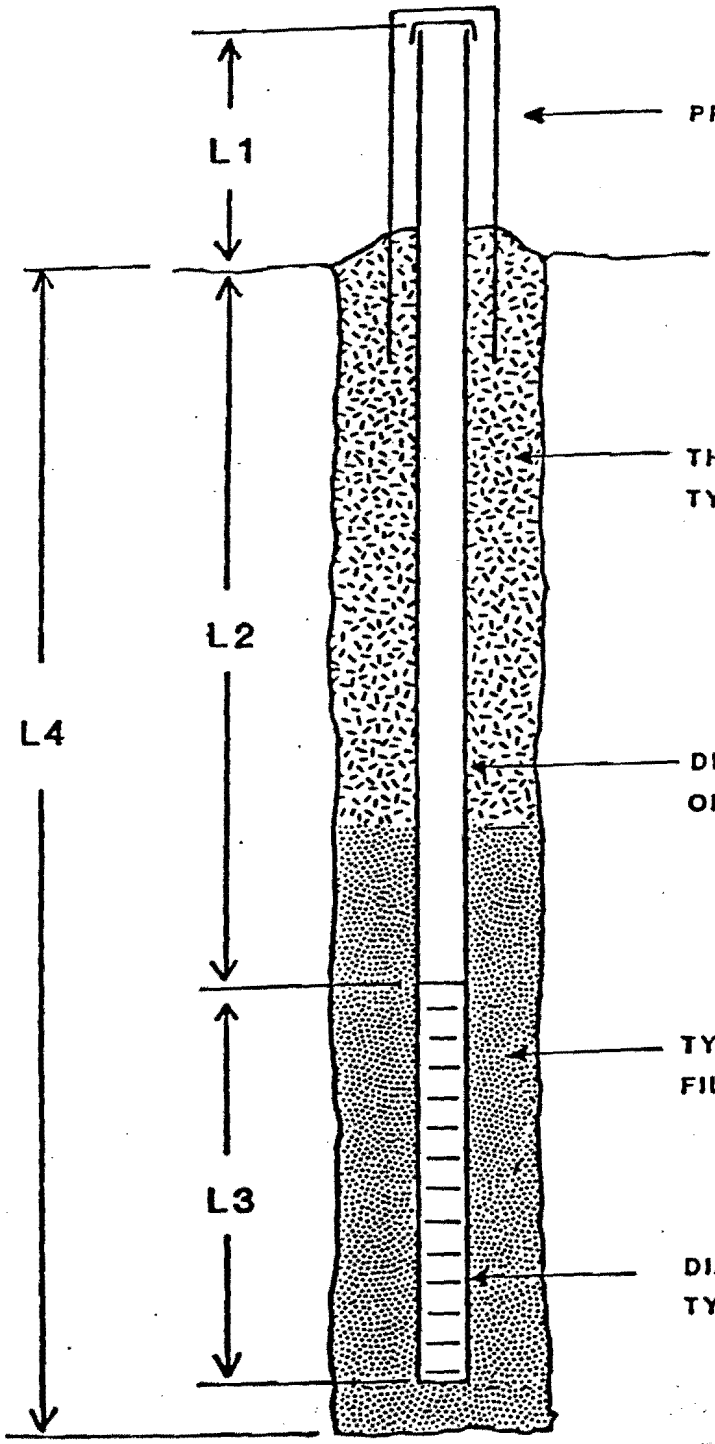
PUMPING TEST
DATE
DURATION
STATIC WATER LEVEL
PUMPING WATER LEVEL
YIELD

REMARKS

DEPTH IN FEET FROM	DEPTH IN FEET TO	DESCRIPTION
0	1.5	Mixture of sand, gravel and silt, approximately .1 foot clay layer at .5 foot.
1.5	3.3	SILT; little medium sand; trace fine gravel, dark brown, saturated.
3.3	4.0	SILT; some medium sand; little gravel, dark gray, organic odor.
4.0	6.5	SAND, medium; occasional silt layers, dark gray to black, organic odor.
6.5	8.0	Silt and clay, interbedded, gray to olive gray, becomes brown at 7.5 feet, slight odor.
	8.0	End of boring.

KAY-FRIES
STONY POINT, NEW YORK

MONITOR WELL CONSTRUCTION DIAGRAM FOR TB-9



PROTECTIVE CASING

DIAMETER 4-INCH
LENGTH 5-FEET

THICKNESS AND TYPE OF SEAL: CEMENT-BENTONITE, 0 TO 2.5 FEET

DIAMETER AND TYPE OF RISER PIPE: 2-INCH PVC

TYPE AND THICKNESS OF FILTER AROUND SCREEN: MORIE #1, 2.5 TO 7.0 FEET

DIAMETER AND TYPE OF SCREEN: 2-INCH, 10-SLOT PVC

L1 2.4 FT
L2 3.0 FT
L3 4.0 FT
L4 8.0 FT

REMARKS:

WELL LOG

LEGGETTE, BRASHEARS & GRAHAM, INC.

CONSULTING GROUND-WATER GEOLOGISTS
72 DANBURY ROAD
WILTON, CT. 06897

OWNER Kay-Fries, Inc.
Stony Point, New York
WELL NO. TB-23
DATE 07/10/87 PAGE 1 OF 2 PAGES

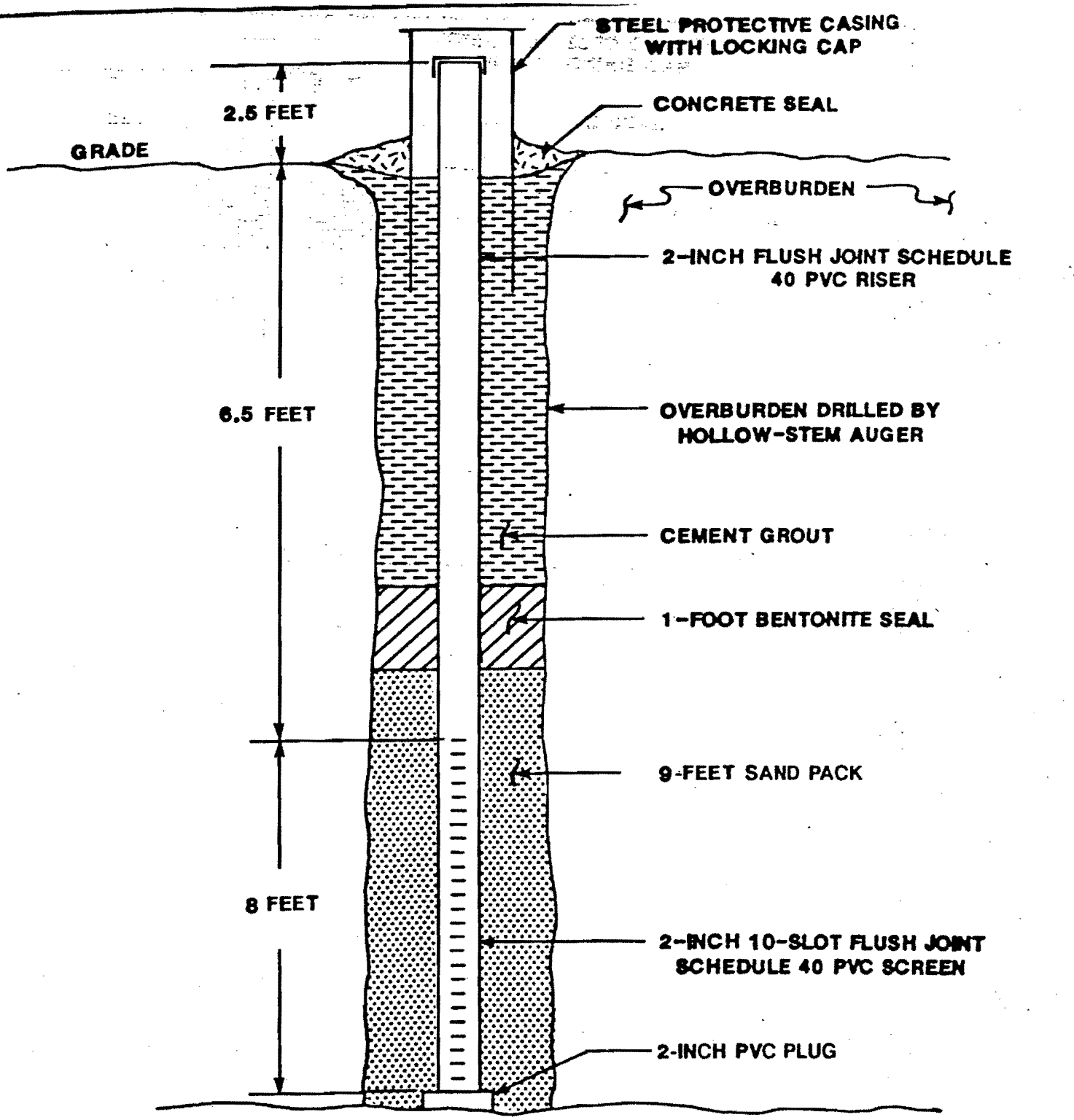
LOCATION: Stony Point, New York
DATE COMPLETED: July 10, 1987
DRILLING COMPANY: Kendrick
DRILLING METHOD: Hollow-stem augers
SAMPLING METHOD: Split spoon
SAMPLES EXAMINED BY: W. T. West
REFERENCE POINT: Grade
ELEVATION OF R.P.:
WELL CONSTRUCTION
SCREEN TYPE: Schedule 40 PVC
DIAM: 2-inch SLOT NO.: 10
SETTING: 4.0 to 12.0 feet
GRAVEL PACK SIZE: Morie No. 2
CASING: 6.5 feet of PVC
DEVELOPMENT: Bail development
PUMPING TEST
DATE:
DURATION:
STATIC WATER LEVEL:
PUMPING WATER LEVEL:
YIELD:
REMARKS:

DEPTH IN FEET FROM	TO	DESCRIPTION
		Split spoon 1; 0-2; blow count 41-17-13-9;
		return 0.5 foot.
0.0	2	Asphalt; concrete; black/white.
		Split spoon 2; 2-4; blow count 5-6-7-8;
		return 1.8 feet.
2.0	2.4	Clay and silt; green/gray.
2.4	2.5	Sand; medium to fine; gray.
2.5	3.5	Silt and clay; green/gray.
3.5	4.0	Sand; medium to fine; some silt and clay; inter-
		bedded; sand - gray; silt and clay - green.
		Split spoon 3; 4-6; blow count 13-15-2-5;
		return 1.8 feet.
4.0	4.5	Clay and silt; green.
4.5	4.7	Sand; medium to fine; gray.
4.7	5.6	Silt and clay; with interbedded thin sands;
		fine; gray.
5.6	6.0	Silt and sand; very fine to fine; green/gray.
6.0		Sediment wet.
		Split spoon 4; 6-8; blow count; 11-17-22-12;
		return 1.8 feet.
6.0	8.0	Sand; medium to fine; gray; slight odor.
		Split spoon 5; 8-10; blow count; 7-4-5-6;
		return 1.6 feet.
8.0	8.8	Sand; medium to fine; gray/black; slight odor.
8.8	9.8	Silt and clay; layered; green.

OWNER

WELL NO. TB-23

DEPTH IN FEET FROM	TO	DESCRIPTION
9.8	10.0	Silt and clay; tan.
		Split spoon 6; 10-12; blow count 5-6-6-7; return 1.8 feet.
10.0	12.0	Interbedded layers of silt, tan; sand, very fine to fine, brown and
		clay, gray.
	12.0	End of hole



NOT TO SCALE

HULS AMERICA
STONY POINT, NEW YORK

WELL CONSTRUCTION DIAGRAM
MONITOR WELL TB-23

DATE	REVISED

PREPARED BY:

LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Ground-Water Consultants
1123 Route 52, Suite 38
Fishkill, NY 12524
914-897-2970

DATE:

FIGURE

INTERNATIONAL TECHNOLOGY CORPORATION

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 529341-007	PROJECT NAME: Huls America Inc, Stony Point, NJ.		
BORING NUMBER: MW- 24	COORDINATES:		DATE: 02/19/92
ELEVATION: 43.11'	GWL: Depth	Date/Time	DATE STARTED: 01/28/92
ENGINEER/GEOLOGIST: M. Patel	Depth	Date/Time	DATE COMPLETED: 01/28/92
DRILLING METHODS: Hollow Stem Auger (ATV)			PAGE 1 OF 1

DEPTH (ft.)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER (6")	RECOVERY (")	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
1-9					F			Grout; Bentonite
5	S-1	4.1 2.3	10	Damp, blackish gray MF+ SAND, some(+) silt, trace mf gravel, etc.				
10	S-2	2.1 3.3	20	Moist, blackish gray CMF+ SAND, some(+) silt, little (+) clay	SM	10'		G.W.L. 12'; Sand pack
15	S-3	5.6 6.7	22	Wet, blackish gray MF+ SAND, some(-) silt, trace (+) clay				Screen
20	S-4	2.8 7.7	24	Wet, blackish gray MF+ SAND, some(-) silt, trace (-) clay				
22				End of boring at 22.0'		22'		

NOTES:

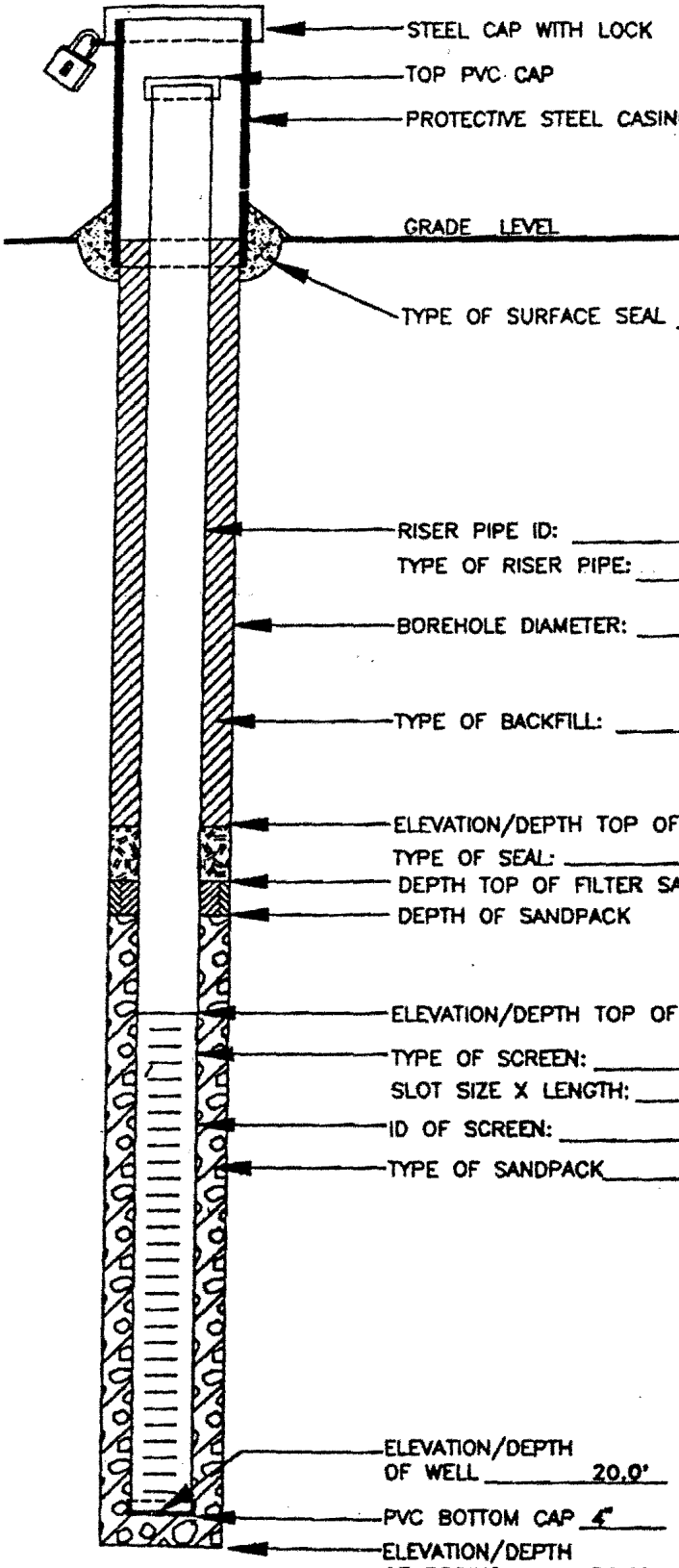
Drilling Contractor Empire Soils Investigation Inc.

Drilling Equipment ATV (rig)

Driller: Charlie Davidson, Troy Brown

Spoon - 2'-2" dia. 140 lb hammer - 30" fall
Well developed 1 hr

10'-12' - 10' - 4" dia. Sch. 40 PVC screen
0'-10' - Sch. 40 PVC riser
8'-20' - Sand pack No. 1 - 4 bags
7.5'-8.0', Filter sand - 1/2 bag
5.5'-7.5' - Bentonite pellet - 1-1/2 bucket
0'-5.5' - Grout



"NOT TO SCALE"

REV.	DATE	DESCRIPTION OF REVISION	REV. BY	ENG	CHKD BY	APPVD BY
0	4/1/92	DEVELOPED DRAWING	M.S.M.			

PROJECT MANAGER: S. DERBY DRAWN BY: M.S. MARBACH

INTERNATIONAL TECHNOLOGY CORPORATION

FIGURE 1
MONITOR WELL 24
TYPICAL DESIGN

Prepared For:
HÜLS AMERICA INC.
STONY POINT, NEW YORK
PROJECT No. 529341
APRIL 1992

LAYER(S)	DATE INITIATED	DRAWING NUMBER
FIG1	4/1/92	529341M1.DWG

INTERNATIONAL TECHNOLOGY CORPORATION

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 529341	PROJECT NAME: Hu's America Inc. Stony Point N Y	
BORING NUMBER: MW-31	COORDINATES:	DATE: 12/6/90
ELEVATION:	GWL: Depth 2.5' Date/Time 11/16/14.00	DATE STARTED: 11/16/90
ENGINEER/GEOLOGIST: M. PATEL	Depth 3.56' Date/Time 12/13/14.34	DATE COMPLETED: 11/16/90
DRILLING METHODS: HOLLOW STEM AUGER		PAGE 1 OF

DEPTH (FT)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER (6")	RECOVERY (IN)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
1					F			1.0'
2	SS-1	7, 7	10"	Moist-Wet, Black & Brown MFT SAND				1.5'
3		6, 3		and Silt, trace F Gravel w/ pieces of				G.W.L 2.5'
4				rock etc		4'		
5	SS-2	2, 2	12"	Wet, Brown SILT, Some(+) mf Sand	ML			
6		4, 2		trace clay				
7	SS-3	3, 4	12"	Wet, Gray & Green SILT & CLAY,	ML-CL	7'		7'
8		4, 3		trace mf Sand				7.5'
9				End of Boring at 9.0'				

NOTES:

Drilling Contractor: Empire Soils Investigation Inc.

Drilling Equipment: Rig, Supporting trucks

Driller: Charlie, Arthur

Size of Hole - 8"

Size of Auger Flight - 5 7/8"

Spoon - 2" ID. 140 lb hammer. 30" Fall.

2'-7' - 4" .010 - sch 40 PVC screen

0'-2' - 4" sch 40 Riser.

0'-2' - stick up

1.5'-7.5' - Sand pack NO. 1 2 1/2 bags

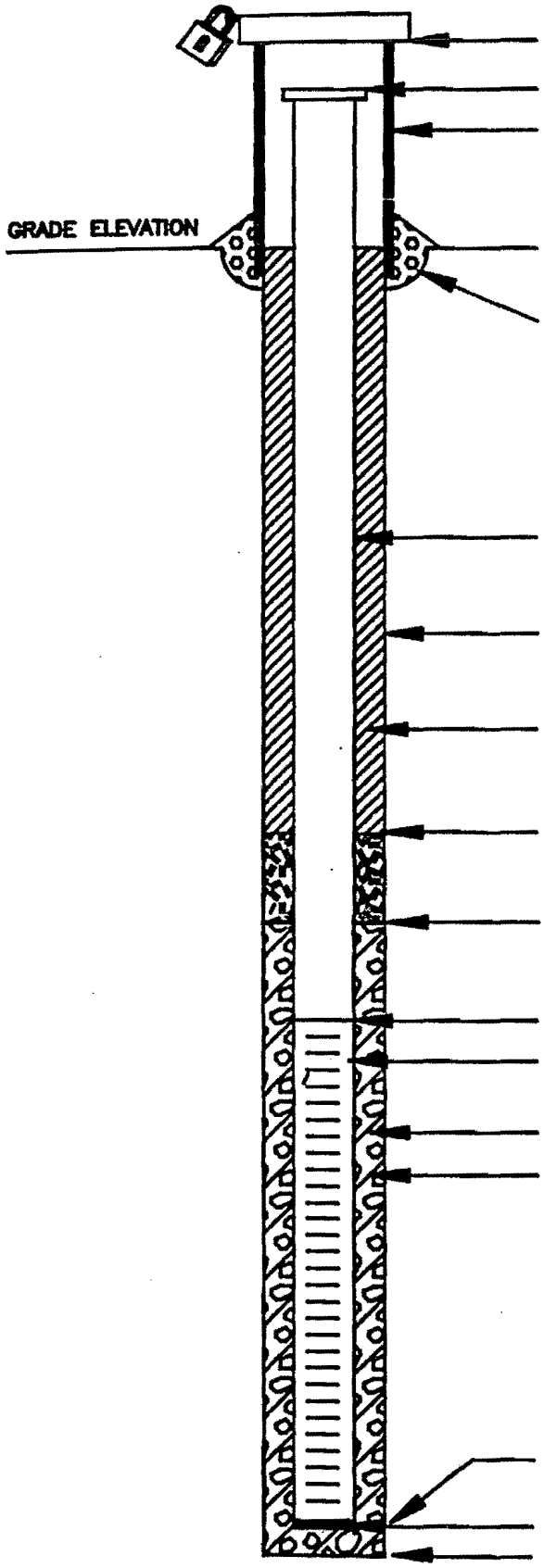
1.0-1.5' - Bentonite pellet 1/4 bucket.

0'-1.0' - Grout

5' - Protective casing.

Well developed - 1 hr. - 1 gpm. by hand Bailer

DRAWING NUMBER	529341A
CHECKED BY	
APPROVED BY	
JKM	12/27/90
DRAWN BY	



STEEL CAP WITH LOCK

TOP PVC CAP

PROTECTIVE STEEL CASING

GRADE ELEVATION

ELEVATION OF TOP OF SURFACE _____

TYPE OF SURFACE SEAL Concrete

RISER PIPE ID: 4"

TYPE OF RISER PIPE: Sch 40 pvc

BOREHOLE DIAMETER: 12"

TYPE OF BACKFILL: Grout

ELEVATION/DEPTH TOP OF SEAL 1.0'

TYPE OF SEAL: Bentonite

DEPTH OF SANDPACK 1.5'

ELEVATION/DEPTH TOP OF SCREEN: 2.0'

TYPE OF SCREEN: Sch 40 pvc

SLOT SIZE X LENGTH: 0.01" x 5.0'

ID OF SCREEN: 4"

TYPE OF SANDPACK NO. 1 Morie Sand

ELEVATION/DEPTH OF WELL 7.0'

PVC BOTTOM CAP (4")

ELEVATION/DEPTH OF WELL 7.5'

"NOT TO SCALE"

FIGURE
MONITOR WELL 31
TYPICAL DESIGN

Prepared For:
HÜLS AMERICA INC.
STONY POINT, NEW YORK
PROJECT No. 529341
JANUARY 1991

INTERNATIONAL TECHNOLOGY CORPORATION

INTERNATIONAL TECHNOLOGY CORPORATION

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER:	529341-007	PROJECT NAME:	Huls America Inc, Stony Point, NJ		
BORING NUMBER:	MW-36	COORDINATES:		DATE:	02/19/92
ELEVATION:	22.62'	GWL: Depth	Date/Time	DATE STARTED:	01/22/92
ENGINEER/GEOLOGIST:	M. Patel	Depth	Date/Time	DATE COMPLETED:	01/22/92
DRILLING METHODS:	Hollow Stem Auger (ATV)			PAGE	1 OF 1

DEPTH (ft.)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER (6)	RECOVERY (")	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
1				Fill material	F	2'		Grout
2				Moist. Gray clayey SILT some (+) F sand	ML			Bentonite Riser
3								
4								G.W.L. 4.0'
5				Wet, gray SILT, little (-) mf+ sand				Sand pack
6								
7								Screen
8								
				End of Boring at 8.5'		8.5'		

NOTES:

Drilling Contractor: Empire Soils Investigation Inc.

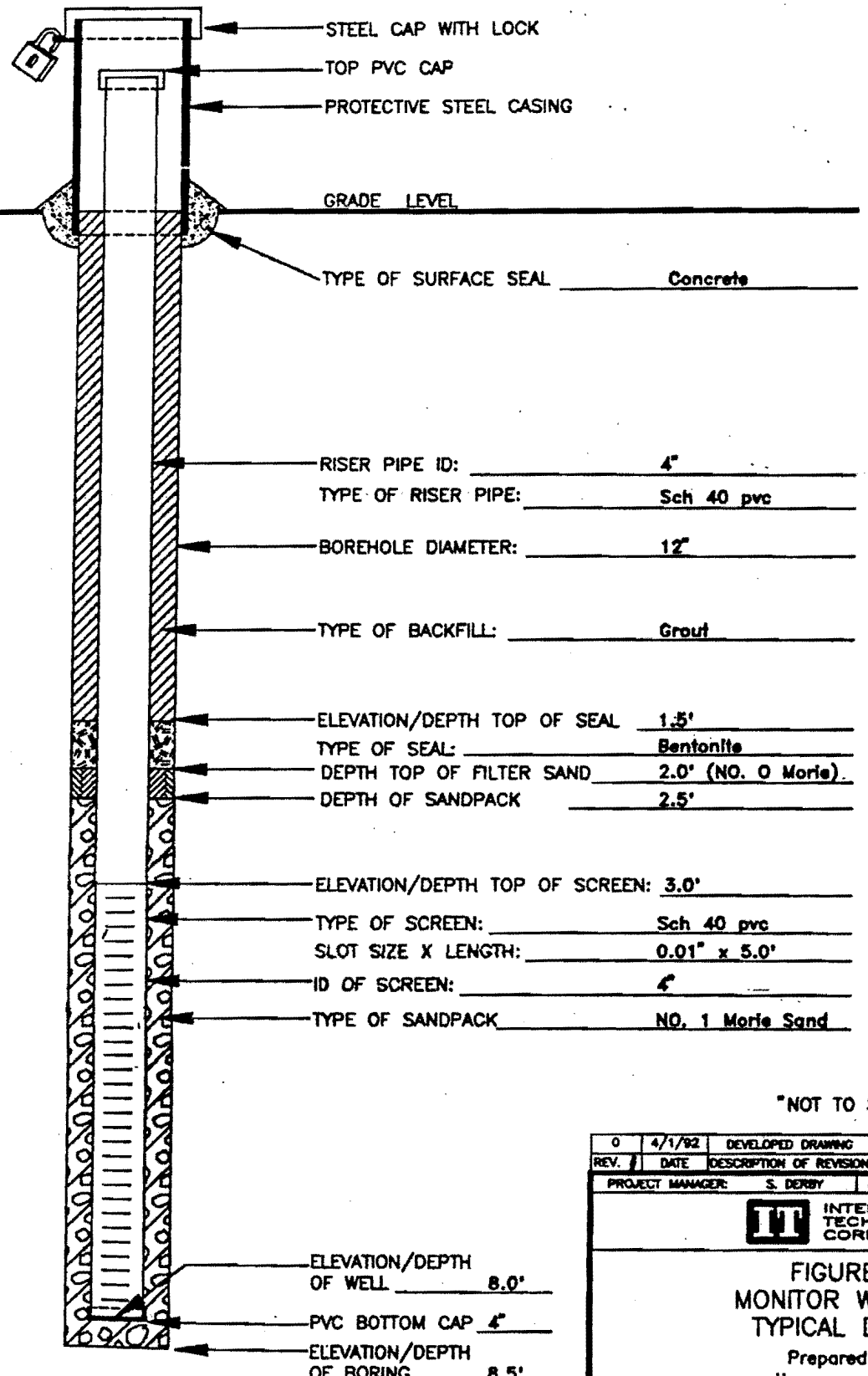
Drilling Equipment: Rig (ATV) supporting trucks

Driller: Charlie Davidson, Troy Brown

Spoon 2'-2" dia. 140 lb hammer-30" fall

3'-8' - 5' Sch. 40 PVC .010 screen
0'-3' - 3' - Sch. 40 PVC riser
2.5'-8' - Sand pack No. 1 2 bags
2'-2.5' - Filter sand - 9 lbs
1.5'-2.0' - Bentonite - 1/2 bucket
0'-1.5' - Grout
Well developed. 1 hr.

Classification of soils is described by soils cutting.



"NOT TO SCALE"

REV.	DATE	DESCRIPTION OF REVISION	REV. BY	ENG	CHKD BY	APPVD BY
0	4/1/92	DEVELOPED DRAWING	M.S.M.			

PROJECT MANAGER: S. DERBY | DRAWN BY: M.S. MAYBACH

INTERNATIONAL TECHNOLOGY CORPORATION

FIGURE 3
MONITOR WELL 36
TYPICAL DESIGN

Prepared For:
HÜLS AMERICA INC.
STONY POINT, NEW YORK
PROJECT No. 529341
APRIL 1992

LAYER(S)	DATE INITIATED	DRAWING NUMBER
FIG3	4/1/92	529341M1.DWG

INTERNATIONAL TECHNOLOGY CORPORATION

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 529341-6	PROJECT NAME: Hüls-Stony Point		
BORING NUMBER: MW-37	COORDINATES: See Map	DATE:	5/8/91
ELEVATION: ≈20 ft. MSL	GWL: Depth 2.3 ft. Date/Time 5/8/91 1330	DATE STARTED:	5/8/91
ENGINEER/GEOLOGIST: J. Dodge	Depth Date/Time	DATE COMPLETED:	5/8/91
DRILLING METHODS: 6.25 in. HSA, 140#/30 in., 2 in. C. steel split-spoon		PAGE 1 OF 1	

(ft)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6 in)	RECOVERY (ft)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
		3 3 3 3	8 in.	Moist brown medium silty at top, trace 1-2 in. gravel, some fine sand	SM			S.W. of cooling building FILL
2		3 3 7 7	15 in.	Damp brown medium-coarse silty sand, trace fine gravel, into damp grey coarse silty sand, some clay (20% fines)	SM			
4		2 4 3 4	15 in.	Moist-wet medium-coarse grey sandy clay, with silt, some fine-medium gravel, 6 in. of grey silty clay at base	CL			
6		3 4 2 4	15 in.	Wet medium-coarse sandy clay, into 6 in. of grey silty clay at base (7.9 ft.)	CL			
8		5 3 3 4	15 in.	Grey, dense silty clay	CL			See well construction form MW-37
10		5 2 3 2	8 in.	Grey dense silty clay	CL			
12				End of boring at 12.0 ft.				

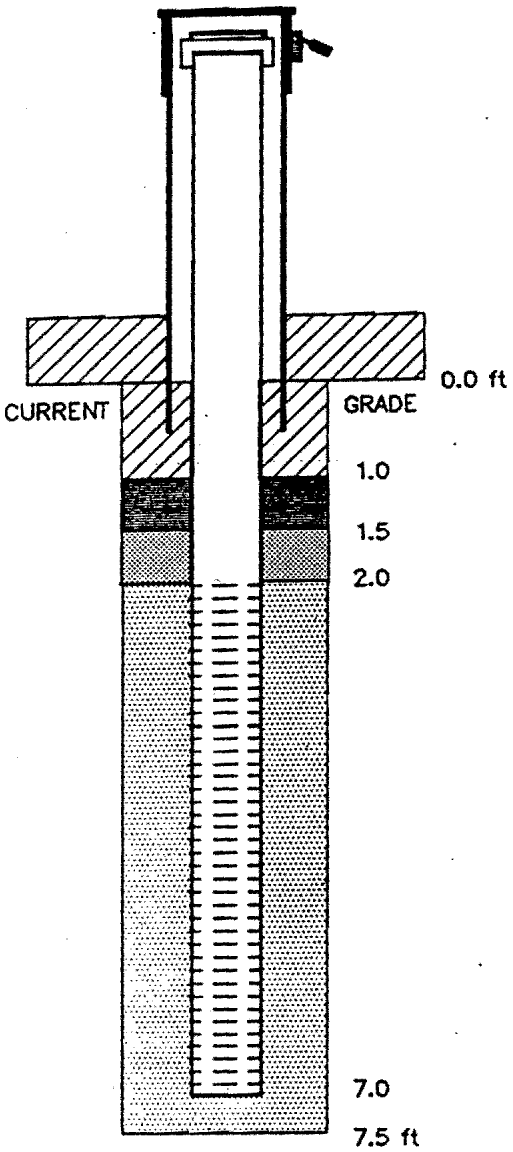
NOTES:

Drilling Contractor: Empire Soils Investigations, Inc.

Drilling Equipment : Acker ADII

Driller : R. Gurczynski
K. Higgins

243A-3-86



CEMENT COLLAR

CEMENT/BENTONITE GROUT

BENTONITE CHIP SEAL

No.1 MORIE SAND

No.2 MORIE SAND

APPROXIMATE HORIZONTAL SCALE: 1 inch = 1 foot
APPROXIMATE VERTICAL SCALE: 1 inch = 2 feet

CONSTRUCTION DETAILS:

SCHEDULE 40, 4.3 inch ID PVC RISER
0.010 inch SLOTTED SCREEN
NON-THREADED PVC FRICTION BOTTOM CAP
NON-VENTING PVC FRICTION TOP CAP
LOCKING PROTECTOR PIPE
MASTER KEY # 3753
INSTALLED 5/8/91
DRILLER: R. GURCZYNSKI
EMPIRE SOILS INVESTIGATIONS, INC., EDISON, NJ
GEOLOGIST: J. DODGE, IT CORPORATION
6 5/8 inch ID HOLLOW STEM AUGER

INTERNATIONAL TECHNOLOGY CORPORATION

MONITORING WELL CONSTRUCTION MW-37

HÜLS AMERICA, INC.
FORMER KAY FRIES PROPERTY
STONY POINT, NEW YORK
PROJECT No. 529341

5/17/91	C:\J\HULS\MW37.DRW

INTERNATIONAL TECHNOLOGY CORPORATION

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER:	529341-007	PROJECT NAME:	Huls America Inc, Stony Point, NJ		
BORING NUMBER:	MW- 40	COORDINATES:		DATE:	02/18/92
ELEVATION:	41.34'	GWL: Depth	Date/Time	DATE STARTED:	01/31/92
ENGINEER/GEOLOGIST:	M. Patel	Depth	Date/Time	DATE COMPLETED:	01/31/92
DRILLING METHODS:	Hollow Stem Auger (ATV)			PAGE	1 OF 1

DEPTH (ft)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6")	RECOVERY (")	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
1-4					F			
5-9	S-1	2.2 3.3	12	Damp, green & grey M+F SAND, Some(+) clay, trace F gravel & silt		9'		Grout
10-14	S-2	1.WH 1.2	20	Moist, gray & greenish gray M+F sand & silty clay, trace F gravel	SP			Bentonite Filter sand
15-19	S-3	2.2 4.3	15	Moist-wet, grayish green CMF sand, Some (+) clay, trace silt	SW	14'		G.W.L. 17.0'
20-24	S-4	5.5 7.8	6	Wet, grayish green, CMF SAND, Some(+) clay, trace silt				Screen (.010)
25-27	S-5	1.4 9.8	4	Wet, gray F sand, some(+) silt & clay	SM	24'		25' running sand
				End of boring at 27.0'		27'		

NOTES:

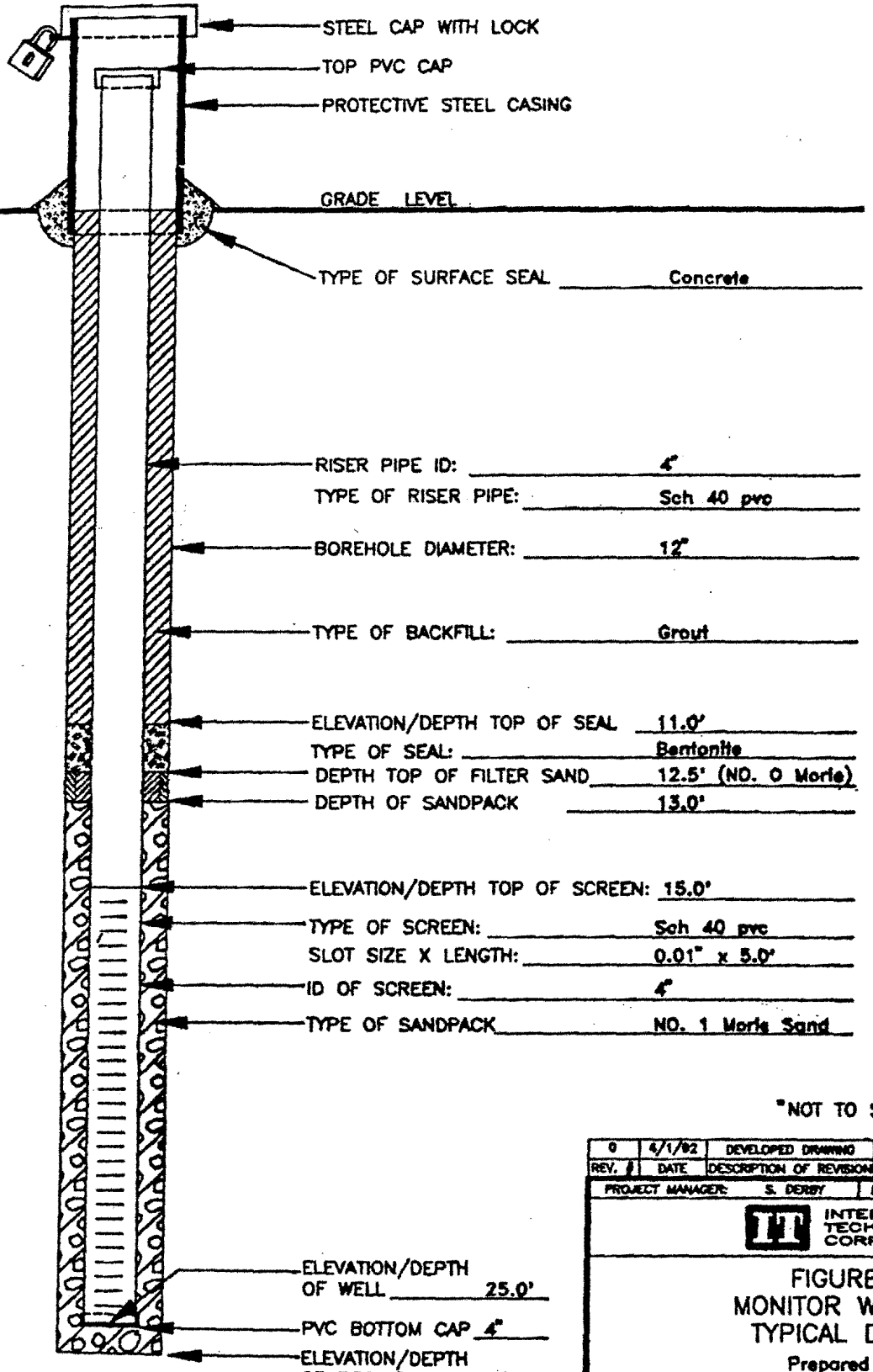
Drilling Contractor: Empire Soils Investigation Inc.

Drilling Equipment: ATV, supporting truck

Driller: Charlie Davidson, Troy Brown

Spoon sample - 2'-2" ID-140 lb hammer 30" fall Well developed 1 hr

15'-25' - 4" Sch 40 PVC .010 screen
0-15' - 4" Sch. 40 PVC Riser
13'-27' - Sand/gravel pack No. 1 4-1/2 bag
12.5'-13' - filter sand - 3 lb
11'-12.5' - Bentonite pellet
0-11' - Grout - 21 gals of water.
3 bags of cement, 15 lbs of bentonite



"NOT TO SCALE"

REV. #	DATE	DESCRIPTION OF REVISION	REV. BY	ENG	CHKD BY	APP'VD BY
0	4/1/92	DEVELOPED DRAWING	M.S.M.			

PROJECT MANAGER: S. DERBY | DRAWN BY: M.S. MARBACH

INTERNATIONAL TECHNOLOGY CORPORATION

FIGURE 6
MONITOR WELL 40
TYPICAL DESIGN

Prepared For:

HÜLS AMERICA INC.
STONY POINT, NEW YORK
PROJECT No. 529341
APRIL 1992

LAYER(S)	DATE INITIATED	DRAWING NUMBER
FIG6	4/1/92	529341M1.DWG

INTERNATIONAL TECHNOLOGY CORPORATION

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 529341-007	PROJECT NAME: Huls America Inc, Stony Point, NJ		
BORING NUMBER: MW- 43	COORDINATES:		DATE: 02/18/92
ELEVATION: 22.25'	GWL: Depth	Date/Time	DATE STARTED: 01/24/92
ENGINEER/GEOLOGIST: M. Patel	Depth	Date/Time	DATE COMPLETED: 01/24/92
DRILLING METHODS: Hollow Stem Auger (ATV)			PAGE 1 OF 1

DEPTH (ft)	SAMPLE TYPE & NO	BLOWS ON SAMPLER PER (6")	RECOVERY (")	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	WELL CONSTRUCTION	REMARKS
1					F			
2						2'		
3					CL-ML			Grout
4								
5	S-1	5.7 5.5	18	Moist, gray SILT, some (+) clay, trace F sand (alternate bands of silt & clay)				Bentonite
6								
7								
8						8.5'		Sand pack No.1
9					ML-CL			
10	S-2	6.6 8.7	20	Wet, Gray SILT & CLAY, trace F sand				G.W.L. 10.5'
11								
12								Screen
13								
14								
15	S-3	3.7 6.6	15	Wet, gray SILT & F sand, trace clay				
16								
17								
				End of boring at 17.0'		17'		

NOTES:

Drilling Contractor Empire Soils Investigation Inc.

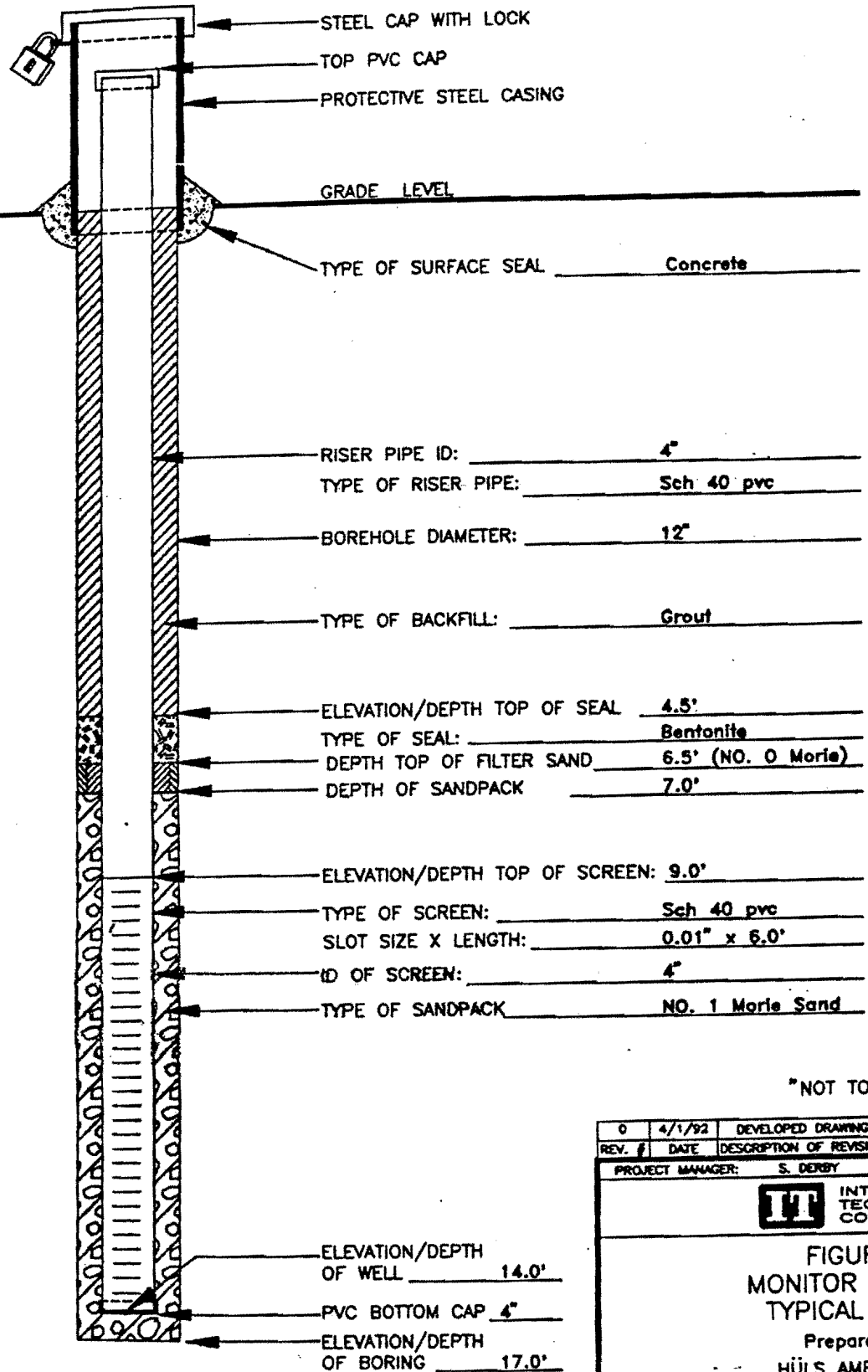
Drilling Equipment ATV Rig Supporting truck

Driller: Charlie Davidson, Troy Brown

Spoon 2'-2" ID-140 lb hammer-30" fall

Well developed 3 hr. 0.5 gpm

9'-14' - 4" Sch. 40 PVC screen .010
0'-9' - 4" Sch. 40 PVC riser
7'-17' - Sand pack No. 1 2-1/2 bags
6.5'-7' - Filler sand No. 00 9 lbs.
4.5'-6.5' - Bentonite pellet 1 bucket
0 - 4.5' - Grout



"NOT TO SCALE"

REV. #	DATE	DESCRIPTION OF REVISION	REV. BY	ENG	CHKD BY	APPVD BY
0	4/1/92	DEVELOPED DRAWING	M.S.M.			

PROJECT MANAGER: S. DERBY DRAWN BY: M.S. MANBACH

INTERNATIONAL TECHNOLOGY CORPORATION

FIGURE 9
MONITOR WELL 43
TYPICAL DESIGN

Prepared For:

HÜLS AMERICA INC.
STONY POINT, NEW YORK
PROJECT No. 529341
APRIL 1992

LAYER(S)	DATE INITIATED	DRAWING NUMBER
FIG9	4/1/92	529341M1.DWG

INTERNATIONAL TECHNOLOGY CORPORATION

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 529 341	PROJECT NAME: HÜLS AMERICA	
BORING NUMBER: MW 54	COORDINATES:	DATE: 6.23.93
ELEVATION:	GWL: Depth Date/Time	DATE STARTED: 6.23.93
ENGINEER/GEOLOGIST: SYED	Depth Date/Time	DATE COMPLETED: 6.23.93
DRILLING METHODS: HSA		PAGE 1 OF 1

( )	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER ( )	RECOVERY ( )	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY / (TSF) DENSITY	WELL CONSTRUCTION	REMARKS
								→ CEMENT-CONCRETE NEAT CEMENT GROUT
4	S-1	2,2 4,3	16	Light yellowish Brown Clayey-SILT and very fine sand occasional thin (2-4 m.m) lamination of Silty-CLAY	ML	V. Soft		→ BENTONITE SEAL
6	S-2	5,6 7,6	21	Med Dark Gray Clayey-SILT-thinly (2-4 mm) laminated with Silty-CLAY	ML CL ML CL	V. Soft		→ SANDPACK #0 SAND
8	S-3	6,6 6,7	22	Med Dark Gray clayey-SILT thinnly (2-4 mm) laminated with Silty-CLAY	ML CL ML CL	V. Soft		
10	S-4	2,3 3,7	22	Med Dark Gray clayey-SILT thinnly (2-4 mm) laminated with silty-CLAY interfaces	ML CL ML SM	V. Soft loose		
12	S-5	8,9 9,10	18	Med Dark Gray Silty-SAND Fine to very fine sand very rare thin (2 mm) lamination of silty-CLAY	SM	loose sand		WATER TABLE AT 12' wet
14	S-6	4,6 6,9	18	Med Dark Gray Silty-SAND Fine to very fine sand saturated with water	SM	loose sand		
16	S-7	8,8 8,9	20	Med Dark Gray Silty SAND Fine to very fine sand saturated with water	SM	loose sand		
18	S-8	1,6 8,10	19	Med Dark Gray Silty-SAND Fine to very fine sand	SM	loose sand		→ SCH 40, 10 SLOT, 4" ID 10 FT LONG PVC SCREEN → BOTTOM CAP OF SCREEN → #0 SAND
20				BOTTOM OF HOLE				

NOTES:

Drilling Contractor EMPIRE SOIL INVESTIGATION

Drilling Equipment CME 850, 11½ INCH OD AUGERS

Driller: JOE RADEMACHER
PEDRO VEGA

QUANTITIES USED: -

3½ BAGS OF #0 SAND

50 LBS BENTONITE

2 BAGS OF CEMENT CONCRETE

WELL DRILLING LOG

	PROJECT: Evonik- Stony Point		PROJECT NO: 1192		**WELL NO:** MW-70	
S	WELL LOCATION: See Figure 1		DATE(S) DRILLED: 7/16/2012			
C	DRILLING CONTRACTOR: ADT Drilling		DRILLING METHOD: Hollow Stem Auger			
A	LOGGED BY: Bruce Manganiello		DEPTH TO GROUND WATER: 7.0'	TOTAL DEPTH: 14'	REF: PVC	
L	CASING	Material: PVC	Diameter: 4"	Length: 4'		
E	SCREEN:	Material: PVC	Diameter: 4"	Length: 10'	Slot Size: 0.01"	
	SAND PACK ID: #1 Sand					
(FT)	REMARKS:					

0.0	DEPTH (FT)	RECOV. (FT)	BLOWS #/6"	DESCRIPTION (INTERVAL IN FEET)	WELL CONSTRUCTION	PID MEASUREMENTS
4.0	0.0-4.0'	N/A	Drilled	0.0-4.0': Dark Brown Silt Clay, Slightly Moist at 0.0-2.0'		NIR
14.0	4.0-14.0'	N/A	Drilled	4.0-7.0': Dark Brown Silty Clay 7.0-8.0': Gray Silty Clay, Wet 8.0-14': Grayish Tan Silt and Clay, Very Wet		NIR

Notes:

- Portland cement grout, 5% Bentonite added.
- #1 Sand pack.
- .010 Slotted well screen.

PID - Photo Ionization Dectector instrument.
NIR - No Instrument Response.
N/A - Not Applicable
ppm - Parts per million

WELL DRILLING LOG

	PROJECT: Evonik- Stony Point			PROJECT NO: 1192		**WELL NO:** MW-71
S	WELL LOCATION: See Figure 1			DATE(S) DRILLED: 7/16/2012		
C	DRILLING CONTRACTOR: ADT Drilling			DRILLING METHOD: Hollow Stem Auger		
A	LOGGED BY: Bruce Manganiello		DEPTH TO GROUND WATER: 14.0'		TOTAL DEPTH: 20'	REF: PVC
L	CASING	Material: PVC	Diameter: 4"	Length: 10'		
E	SCREEN:	Material: PVC	Diameter: 4"	Length: 10'	Slot Size: 0.01"	
	SAND PACK ID: #1 Sand					
(FT)	REMARKS:					

0.0	DEPTH (FT)	RECOV. (FT)	BLOWS #/6"	DESCRIPTION (INTERVAL IN FEET)	WELL CONSTRUCTION	PID MEASUREMENTS
10.0	0.0-10.0'	N/A	Drilled	0.0-1.0': Fill Material 1.0-5.0': Silty Sand, Some Clay, Dry 5.0-10.0': Silty Clay Gray, Green, Moist		NIR
20.0	10.0-20.0'	N/A	Drilled	10.0-12.0': Silty Sand, Gray/Green Silty Clay at Bottom, Wet 12.0-14.0': Silty Dark Gray, Green Some Clay, Saturated		NIR

Notes:

- Portland cement grout, 5% Bentonite added.
- #1 Sand pack.
- .010 Slotted well screen.
- PID - Photo Ionization Dectector instrument.
- NIR - No Instrument Response.
- N/A - Not Applicable
- ppm - Parts per million

WELL DRILLING LOG

	PROJECT: Evonik- Stony Point		PROJECT NO: 1192		**WELL NO:** MW-72
S	WELL LOCATION: See Figure 1		DATE(S) DRILLED: 7/16/2012		
C	DRILLING CONTRACTOR: ADT Drilling		DRILLING METHOD: Hollow Stem Auger		
A	LOGGED BY: Bruce Manganiello	DEPTH TO GROUND WATER: 15.25'		TOTAL DEPTH: 25'	REF: PVC
L	CASING Material: PVC	Diameter: 4"	Length: 15'		
E	SCREEN: Material: PVC	Diameter: 4"	Length: 10'	Slot Size: 0.01"	
	SAND PACK ID: #1 Sand				
(FT)	REMARKS:				

0.0	DEPTH (FT)	RECOV. (FT)	BLOWS #/6"	DESCRIPTION (INTERVAL IN FEET)	WELL CONSTRUCTION	PID MEASUREMENTS
15.0	0.0-15.0'	N/A	Drilled	0.0-6.0': Fill Material 6.0-6.5': Silty Brown Clay with Some Fill Material 6.5-7.0': Silty Brown Clay, Dry 7.0-9.0': Silty Brown Clay, Moist 9.0-13.0': Brown, Green Clay, Moist 13.0-15.0': Brown to Gray Silty Clay, Moist		NIR
25.0	15.0-25.0'	N/A	Drilled	15.0-17.0': Gray to Black, Silty Clay Moist 17.0-19.0': Black Gray Silty Clay, Moist to Wet 19.0-21.0': Gray, Black Clay Silt, Wet at 21.0'		NIR

Notes:

- Portland cement grout, 5% Bentonite added.
- #1 Sand pack.
- .010 Slotted well screen.
- PID - Photo Ionization Dectector instrument.
- NIR - No Instrument Response.
- N/A - Not Applicable
- ppm - Parts per million

APPENDIX 5

HISTORICAL SUMMARY OF VOCS IN GROUND WATER

Table 1
Historical Summary of Detected Volatile Organic Compounds Monitoring Well MW-31(ug/L)
Former Kay Fries Site
Evonik Corporation, Stony Point , New York
ECM Project No.1192

Volatile Organics	Dec-90	Feb-97	May-97	Aug-97	Nov-97	May-98	Aug-98	May-99	Nov-99	May-00	Nov-00	May-01	Nov-01	Apr-02	Oct-02	Apr-03	Oct-03	Apr-04	Oct-04	Oct-05	Jun-06	Oct-06	Apr-07	Oct-07	Apr-08	Apr-09	Dec-09	GWQC
1,1,1 Trichloroethane	**310**	**17**	**80**	ND	ND	4.5	ND	ND	ND	ND	1.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
1,1-Dichloroethane	**1,700**	**1300**	**1500**	**570**	**98**	**200**	**87**	**19**	1	**43**	1.8	**6.6**	ND	ND	ND	**12**	ND	**12**	ND	ND	ND	ND	**36**	ND	ND	ND	ND	5
Benzene	ND	**89**	**84**	**130**	**61**	**21**	**42**	**8.1**	**29**	**27**	**35**	**7.5**	**31**	**28**	**41**	**26**	**55**	**14**	**46**	**28**	**16**	**27**	**26**	**14**	**27**	**33**	**38**	1
Chlorobenzene	**55**	**160**	**180**	**210**	**81**	**41**	**110**	**18**	**49**	**66**	**84**	**27**	**72**	ND	**140**	**110**	**270**	**53**	**200**	**250**	**110**	**230**	**100**	**190**	**150**	**190**	**200**	5
Chloroethane	**780**	**370**	**290**	**390**	**240**	**120**	**460**	**59**	**190**	**99**	**500**	**50**	**350**	**1000**	**900**	**550**	**570**	**270**	**150**	**5.7**	**190**	**18**	**670**	3.6	**440**	**820**	**750**	5
Toluene	**7**	1.9	2.4	1.9	1.8	ND	ND	ND	0.5	ND	ND	ND	ND	**76**	ND	ND	1.4	ND	0.7	1	ND	0.9	ND	0.9	ND	3.2	ND	5
Vinyl Chloride	ND	**11**	ND	**8.8**	**2.9**	**2.5**	**2.3**	ND	ND	ND	**3.2**	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	ND	ND	ND	ND	ND	ND	2

Table 2 Continued
Historical Summary of Detected Volatile Organic Compounds Monitoring Well MW-31(ug/L)
Former Kay Fries Site
Evonik Corporation, Stony Point , New York
ECM Project No.1192

Volatile Organics	Jun-10	Nov-10	Apr-11	Aug-11	Jun-12	Aug-12	Dec-12	Mar-13	Jun-13	Sep-13	Jan-14	Mar-14	Jun-14	Sep-14	Dec-14	Mar-15	Sep-15	Mar-16	Sep-16	Apr-17	Sep-17	Mar-18	Sep-18	Sep-19	Sep-20	Sep-21	GWQC
1,1,1 Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
1,1-Dichloroethane	ND	ND	1.7J	0.31J	0.85J	ND	ND	3	**190**	0.59 J	ND	ND	0.49 J	0.20 J	ND	ND	ND	ND	ND	ND	0.26 J	ND	0.43 J	0.34 J	0.42 J	0.42 J	5
Benzene	**14**	**28**	**32**	**22**	**14**	**13**	0.2 J	0.15 J	**61**	**33**	**42**	**34**	**20**	**32**	**32**	**11**	**18**	**8.1**	**8.8**	**21**	**3.3**	**24**	**2.4**	**1.8**	1.3	0.86 J	1
Chlorobenzene	**160**	**220**	**210**	**240**	**210**	**230**	1.5	ND	**200**	**270**	**200**	**180**	**240**	**250**	**180**	**89**	**230**	**160**	**170**	**180**	**200**	**140**	**170**	**170**	**220**	**220**	5
Chloroethane	**110**	**250**	**540**	**260**	**350**	**320**	4	ND	**1,100**	**210**	**1,100**	**1,500**	**330**	**470**	**760**	**250**	**230**	**98**	**130**	**540**	**39**	**920**	**20**	**27**	**56**	**9.2**	5
Toluene	ND	0.73J	0.91J	0.79J	0.51J	0.66J	ND	ND	4.9 J	1.1	3.9	1.1 J	0.54 J	1.5 B	ND	2.1	0.81 J	0.40 J	0.67 J	**19**	0.49 J	**6.3**	0.53 J	0.82 J	0.64 J	0.61 J	5
Vinyl Chloride	ND	ND	ND	ND	ND	ND	ND	ND	**3.3 J**	ND	ND	ND	ND	0.19 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2

Notes:
GWQC: NYSDEC Ground Water Quality Criteria
ND: Compound Not Detected Above Laboratory Method Detection Limit (MDL).
Bold: Result Exceeds NYSDEC GWQC.
J: Estimated value greater than the MDL but lower than the Reporting Limit (RL).
B: Compound was found in the blank and sample

Table 2
Historical Summary of Detected Volatile Organic Compounds Monitoring Well MW-43 (ug/L)
Former Kay Fries Site
Evonik Corporation, Stony Point, New York
ECM Project No. 1192

Volatile Organics	Apr-07	Oct-07	Apr-08	Apr-09	Dec-09	Jun-10	Nov-10	Apr-11	Aug-11	Jun-12	Sep-12	Dec-12	Mar-13	Sep-13	Jan-14	Mar-14	Jun-14	Sep-14	Dec-14	Mar-15	Dec-15	Apr-17	Jun-18	Sep-19	Sep-20	Sep-21	GWQC
Benzene	ND	ND	0.7	**1.1**	0.92	ND	0.36 J	0.63 J	ND	0.23 J	ND	0.33J	ND	ND	0.64 J	ND	ND	ND	0.21 J	0.20 J	ND	**1.6**	ND	ND	ND	ND	1
Chlorobenzene	ND	ND	**39**	**74**	**67**	2.4	**5.3**	**19**	0.65 J	4.3	0.78 J	**13**	ND	0.34 J	**21**	ND	ND	ND	2.0	2.9	ND	**37**	4.2	4.7	ND	ND	5
1,2-Dichloroethane	ND	ND	**2.5**	**3.0**	**3.0**	0.6J	**0.82 J**	**2.3**	**0.89 J**	**0.99J**	ND	**1.5**	0.38 J	ND	**2.1**	0.23 J	ND	0.35 J	**0.85 J**	0.44 J	**0.61 J**	**2.0**	**0.69 J**	ND	ND	ND	0.6

Notes:
GWQC: NYSDEC Ground Water Quality Criteria
ND: Compound Not Detected Above Laboratory Method Detection Limit (MDL).
Bold: Result exceeds NYSDEC GWQC.
J: Estimated value greater than the Method Detection Limit but lower than the reporting limit.

Table 3
Historical Summary of Detected Volatile Organic Compounds Monitoring Well MW-71 (ug/L)
Former Kay Fries Site
Evonik Corporation, Stony Point, New York
ECM Project No. 1192

Volatile Organics	Aug-12	Dec-12	Mar-13	Jun-13	Sep-13	Jun-14	Sep-14	Mar-15	Sep-15	Mar-16	Sep-16	Apr-17	Sep-17	Mar-18	Sep-18	Sep-19	Sep-20	Sep-21	GWQC
Benzene	**13**	**19**	**15**	**11**	**12**	**11**	**7.6**	1	**13**	**4.3**	**4.3**	**5.3**	**5.3**	**4.2**	**3.2**	1.2	1.2	0.39 J	1
Chlorobenzene	**200**	**210**	**180**	**120**	**190**	**160**	**120**	17	**160**	**60**	**64**	**69**	**84**	**66**	**64**	**39**	**78**	**51**	5
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.65 J	ND	ND	ND	5
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.1	2.6	2.6	3.3	5

Notes:
GWQC: NYSDEC Ground Water Quality Criteria.
Bold: Compound Reported Above GWQC
J: Estimated value greater than the Method Detection Limit but lower than the reporting limit.
ND: Compound not detected

Table 4
Historical Summary of Detected Volatile Organic Compounds Monitoring Well MW-24 (ug/L)
Former Kay Fries Site
Evonik Corporation, Stony Point, New York
ECM Project #1192

Volatile Organics	August 2011	August 2012	December 2012	July 2013	September 2013	March 2014	September 2014	September 2015	September 2016	September 2017	September 2018	September 2019	September 2020	September 2021	GWQC
Benzene	**1.7**	0.93 J	**1.3**	**1.1**	0.37 J	ND<0.080	0.41 J	0.96 J	0.86 J	**3.4**	1.0	0.91 J	0.52 J	0.63 J	1
Chlorobenzene	**43**	**41**	**55**	**46**	**24**	**25**	**21**	**58**	**46**	**150**	**51**	**42**	**36**	**32**	5
Cis-1,2-dichloroethene	20	31	48	34	38	49	32	47	36	30	38	33	60	61	NA
Tetrachloroethene (PCE)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.26 J	0.52 J	ND	ND	5
Trans-1,2-dichloroethene	**10**	**18**	**29**	**19**	**20**	**30**	**19**	**30**	**25**	**21**	**25**	**19**	**33**	**34**	5
Trichloroethene (TCE)	**32**	**28**	**29**	**20**	**35**	**27**	**25**	**11**	**7.3**	0.81 J	4.7	4.2	2.6	2.0	5
Vinyl chloride	**6.7**	**9.3**	**18**	**6.4**	**2.3**	**4.3**	**2.4**	**8**	**5.2**	**26**	**5.5**	**4.6**	2.1	2.1	2

Notes:
GWQC: NYSDEC Ground Water Quality Criteria
ND: Compound Not Detected
Bold: Compound Reported Above GWQC
J: Estimated value greater than the Method Detection Limit but lower than the reporting limit.

Table 5
Historical Summary of Detected Volatile Organic Compounds Monitoring Well MW-54
Former Kay Fries Site
Evonik Corporation, Stony Point , New York
ECM Project No.1192

Volatile Organics	Apr-94	Nov-95	Nov-96	Aug-11	Jun-12	Sep-13	Sep-14	Dec-15	Apr-17	Jun-18	Sep-18	Sep-19	Sep-20	Sep-21	GWQC (ug/L)
1,1,1 Trichloroethane	***16***	***14***	***7 J***	ND	0.67 J	ND	ND	0.30 J	ND	ND	0.30 J	0.33 J	ND	ND	5
1,2-Dichloroethene	2 J	ND	0.7 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.6
Acetone	ND	ND	ND	ND	19	ND	ND	13	ND	ND	ND	ND	ND	ND	50
Carbon Disulfide	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.39 JB	ND	ND	ND	ND	50
Chloroform	7 J	***12***	3 J	ND	0.69 J	0.30 J	ND	0.61 J	0.65 J	ND	ND	ND	ND	ND	7
Tetrachloroethene	***15***	***21***	***17***	***11***	***12***	***15***	***13***	***9.5***	***6.0***	***7.7***	***7.6***	***8.9***	***9.3***	***7.4***	5
Trichloroethene	ND	ND	0.5 J	ND	0.18 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	5

Notes:
All results reported in micrograms per liter (ug/L).
GWQC :NYSDEC Ground Water Quality Criteria
ND :Compound Not Detected Above Laboratory Method Detection Limit (MDL).
Bold :Result Exceeds NYSDEC GWQC.
J :Estimated value greater than the MDL but lower than the Reporting Limit (RL).
B :Compound was found in the blank and sample

APPENDIX 6

QUALITY ASSURANCE PROJECT PLAN (QAPP)

Appendix 6

Quality Assurance Project Plan

Quality Assurance Project Plan

Former Kay Fries Site (Evonik Corporation)
50 Holt Drive
Stony Point, New York

March 2016



Prepared by:

Environmental Compliance Monitoring, Inc. (ECM)
349 US Highway 206
Hillsborough, NJ 08844

Preface to QAPP

It is ECM's intent to make the Quality Assurance Project Plan (QAPP) a concise, legible tool to communicate the essential elements for project design, execution, assessment, and usability. This QAPP is a living document open to modification and addendum. Changing field conditions from those originally anticipated, such as new waste streams, regulatory or permit requirements, and engineering improvements will be cause for QAPP modification.

The elements of the following QAPP were developed in part from a compilation of reports, work plans, and protocol, developed by and for the site. The plan is derived from ECM/Evonik Corporation experience compiled over years of this and similar project work and ECM standard operating procedures.

The QAPP generally incorporates the technical detail, direction, and decision criteria outlined in the *Uniform Federal Policy-Quality Assurance Project Plan; EPA 505/B-04-900A, EPA 505/B-04-900B, EPA 505/B-04-900C (UFP-QAPP)* and general guidance for NYSDEC Site Remediation. Because the practical design of the Field Sampling Plan (FSP) must meet the data quality objectives outlined in the QAPP, the components of the FSP are included in the body of the QAPP.

The worksheet format contained in the QAPP has been modified to contain the critical information required of a QAPP and a text element to better describe the project's quality objectives and rationale.

Complete QAPP Worksheets are presented as attached, in addition to other relevant attachments.

Introduction:

The former Kay Fries Inc., facility is located in Stony Point in Rockland County, New York. The site occupies approximately 85 acres to the east of Route 9W at the town's southern boundary (Figure 1). The property is bounded on the north by Cedar Pond Brook and on the east by Minisceongo Creek; both are tidally-influenced tributaries of the Hudson River Estuary. The surrounding area west of the site is generally commercial and residential; large industrial complexes are located to the north and south of the site. Directly south of the property is the Haverstraw municipal landfill.

Operations as a specialty chemical plant reportedly began at the site by predecessor companies to Dynamit-Nobel of America (DNA) during the 1930s. During 1987, DNA sold the site to Universal Process Equipment (UPE). UPE sold the central portion of the facility to Insl-X Products Corporation (Insl-X), which manufactured industrial paints and coatings. Products were manufactured in one main building at the site. Two underground storage tanks (USTs) were located in the northern section of the building, which were used to store solvents for paint additives. Drummed waste solvents and paints were stored in a partially enclosed corrugated

steel building in the southern portion of the facility. The property was sold by DNA during 1988 after relocation of production activities. Site environmental investigation and remedial investigations of these activities were initiated during 1981. Based upon the site investigation findings, remedial alternatives were evaluated during the late 1980s, which selected ground water recovery and treatment as the remedial alternative for the site.

The site is located at the terminus of Kay-Fries Drive, in Stony Point, New York (Figure 1). The portions of the site property subject to this SMP are referred to as Operable Unit 1 (OU1), located to the east of the railroad tracks (Figure 2). During 1981, initial site environmental investigations identified Areas of Environmental Concern (AEC) at the facility. The New York State Department of Environmental Conservation (NYSDEC) required additional investigation and/or remedial activities as a result of environmental impacts as summarized below:

- Reported releases from the two USTs;
- Wastewater treatment and lagoon areas and;
- Alleged drum disposal and waste burning practices.

Based upon the site investigations, the constituents of concern affecting the site shallow ground water quality were volatile organic compounds (VOCs) specifically, benzene and chlorinated organics above the NYSDEC – Ground Water Quality Criteria (GWQC). Based upon the site investigation findings, remedial alternative were initiated during the late 1980's, which selected ground water recovery and treatment as the remedial alternative for the site.

During 1994, a Record of Decision (ROD) was executed by the NYSDEC for the OU1 section of the site. The ROD required the installation of three ground water recovery trenches and a ground water treatment system (GWTS) to address the identified area of ground water contamination.

During 1991, the initial Interim Remedial Measure (IRM) Construction Design document for the site ground water treatment system (GWTS) was submitted to the NYSDEC. During 1992 through 1994, revisions to the design were made and the details were submitted to the NYSDEC in several documents.

During 1994, the Interim Remedial Measure (IRM) Construction Design was implemented with the installation of one recovery trench (Trench 1) and the treatment system. During 1995, two additional trenches were installed. The linear footage of the three recovery trenches totaled 900-feet and extended across the eastern border of the site. The purpose of the IRM ground water recovery and treatment system was to prevent migration of VOCs in the shallow water bearing zone downgradient of the former benzene and 4-methyl-2-pentanone (MIBK) USTs.

Operation of the GWTS began continuous operation during 1995. During 1999, the GWTS was upgraded for increased flow to the system to improve the hydraulic control and capture of the recovery area. The GWTS discharged under a NPDES Discharge to Surface Water Permit to

Cedar Pond Brook. Monthly and quarterly discharge monitoring and reporting to the NYSDEC was submitted during GWTS operation.

The distribution of ground water constituents below the site have been detected in the shallow monitoring zone above the NYSDEC – GWQC. Compound specific VOCs (benzene, chlorobenzene, toluene and MIBK) have been detected in the shallow zone upgradient of the three recovery trenches. Overall compound levels have decreased significantly from the inception of the GWTS operations. The range of primary VOCs from the site investigation compared to the present concentrations remaining in groundwater are presented in Appendix 5 Historical Summary of VOCs in Ground Water.

The GWTS operation from inception during 1995 has demonstrated that the recovery and treatment system has significantly decreased constituent levels and maintained effective hydraulic control of the site groundwater. The monitoring data upgradient of Trench 2 indicates levels above the NYSDEC – GWQC; however, also substantially below the levels reported during the site investigative phases. Monitoring data contour maps demonstrated that the GWTS was effectively maintaining hydraulic control and preventing off-site migration of contaminants.

During October 2002, a compound distribution assessment was conducted in the area proximal and upgradient of Trench 2. The monitoring results were evaluated relative to compound distribution, apparent migration, and attenuation potential. The results of the assessment indicated that the compound distribution and natural attenuation is occurring in the localized area upgradient of Trench 2.

Based upon the successful remediation conducted from 1995 through 2013 and the relatively low compound concentrations remaining at the site, a ground water monitoring program combined with the MW-31 in-situ remediation was proposed to evaluate ground water quality conditions.

The NYSDEC approved suspension of the GWTS as a result of significantly decreased contaminant levels impacting groundwater below the OU1 section of the site. The OU2 interceptor sump will be decommissioned with the OU1 GWTS as approved by the NYSDEC in their letter dated August 15, 2013. The current long term ground water monitoring program within OU1 was proposed in lieu of continued GWTS operation to evaluate ground water quality conditions. The NYSDEC approved permanent cessation of the GWTS in their 2012 PRR – Requested Modifications letter dated August 12, 2013 (Final NYSDEC PRR approval letter dated October 15, 2013). Subsequently, in their letter dated August 15, 2013, the NYSDEC approved the GWTS Decommissioning Plan dated August 2, 2013.

During 1999, the NYSDEC conducted additional investigations in a portion of the site west of the current GWTS operations. The investigations identified VOC's above the NYSDEC – GWQC in samples collected from seepage at the base of a railroad escarpment. Based on the

levels detected remedial activity was required by the NYSDEC to mitigate the VOC constituents. Remedial options included:

- Recovery of the ground water seepage via an in-ground concrete sump and pumping the recovered water to a tank truck for transfer and treatment in the existing on-site GWTS.

- Installation of an interceptor sump which would allow ground water to infiltrate into the sump from the upgradient side and discharge through the downgradient side of the sump in a natural, flow through mode. Ground water accumulating in the sump would be aerated to strip the VOCs from the water.

After consideration of the remedial alternatives, the latter remedial option was selected due to the low maintenance required to operate the interceptor trench.

The interceptor sump was installed during 2000. Based on the discharge monitoring results, the interceptor sump had been effectively controlling compound levels detected in the ground water seepage. Due to effective operation of interceptor sump, the NYSDEC approved closure of the sump on a permanent basis in a NYSDEC letter dated July 8, 2004.

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List of ACRONYMS

BFB	4-Bromofluorobenzene
ºC	Degrees Centigrade
CFR	Code of Federal Regulations
CLP	Contract Laboratory Program
COC	Chain-of-Custody
CVAA	Cold Vapor Atomic Absorption spectrometer
%D	Percent Difference
DFTPP	Decafluorotriphenylphosphine
DQIs	Data Quality Indicators
DQOs	Data Quality Objectives
ECM	Environmental Compliance Monitoring, Inc.
EPA	United States Environmental Protection Agency
ES	Environmental Sampler
FSP	Field Sampling Plan
G	Glass
GC/MS	Gas Chromatograph/Mass Spectrometer
GPM	Gallons Per Minute
GWTF	Groundwater Treatment Facility
HCl	Hydrochloric Acid
H_2SO_4	Sulfuric Acid
HDPE	High Density Polyethylene
HNO3	Nitric Acid
ICP	Inductively Coupled Plasma spectrometer
ICPMS	Inductively Coupled Plasma Mass Spectrometer
IDL	Instrument Detection Limits
J	Estimated Value (based on laboratory testing criteria)
LCL	Lower Control Limit
LCSs	Laboratory Control Samples
LFB	Laboratory Fortified Blank
MCL	Maximum Contaminant Level
MDLs	Method Detection Limits
mg/l	Milligram per Liter
Mgr.	Manager
ml	Milliliter
MPC	Measurement Performance Criteria
MS/MSD	Matrix Spike/Matrix Spike Duplicate
N/A or NA	Non Applicable or Not Available
NaOH	Sodium Hydroxide
NELAC	National Environmental Laboratory Accreditation Conference
NYSDEC	New York Department of Environmental Conservation
OQA	Office of Quality Assurance
ORP	Oxidation Reduction Potential
OSHA	Occupational Safety and Health Administration
OZ	Ounce
P	Plastic
PAL	Project Action Limits
PARCC	Precision, Accuracy, Representativeness, Completeness, Comparability
PC	Project Chemist
PE	Performance Evaluation
PID	Photo Ionization Detector
PM	Project Manager
PPE	Personal Protective Equipment
PPM	Parts Per Million
PRLs	Practical Quantitation Limits

PQO	Project Quality Objectives
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
QCSM	Quality Control System Manager
%R	Percent Recovery
RL	Reporting Limits
RPD	Relative Percent Difference
RSD	Relative Standard Deviation
S	Standard Deviation
SM	Standard Methods (for the Examination of Water & Wastewater)
SOPs	Standard Operating Procedures
SRM	Standard Reference Material
SVOCs	Semi-Volatile Organic Compounds
TA	TestAmerica, Inc.
TAL	Target Analyte List
TBD	To Be Determined
TCL	Target Compound List
UCL	Upper Control Limit
UFP-QAPP	Uniform Federal Policy – Quality Assurance Project Plan
ug/l	Microgram per Liter
VOCs	Volatile Organic Compounds
WS	Work Sheet

List of ATTACHMENTS

E-SOP-1: Site Access
E-SOP-2: Groundwater Level
E-SOP-3: Horiba U-22 Calibration/Use
E-SOP-3a: Horiba U-22 Calibration Forms
E-SOP-4: Groundwater Well Sampling
E-SOP-5: Chain of Custody/Labels
E-SOP-6: Equipment Calibration
E-SOP-7: Sampling VOC in Water
Field Activity Daily Log Form
Monitoring Well Field Inspection Log Form
Groundwater Sampling Field Data Sheet
Site Plan
Laboratory Completeness and Verification Form

QAPP Worksheet #1 - Title and Approval Page

Quality Assurance Plan – Site Management Plan
Document Title

NYSDEC/ECM. Inc., QEP
Lead Organization

Thomas Grenci, ECM, Inc.
Preparer's Name and Organizational Affiliation

349 US Hywy 206, Hillsborough, NJ 08844, (908) 874-0990, tg-ecm@att.net
Preparer's Address, Telephone Number, and E-mail Address

Investigative Organization's Project Manager:_____
Signature

Bruce Manganiello, ECM, Inc.
Printed Name/Organization

Lead Organization's Project Manager:_____
Signature

Thomas Grenci, ECM, Inc.
Printed Name/Organization

QAPP Worksheet #2 - QAPP Identifying Information

1. Identify guidance used to prepare QAPP:
IDQTF-UFP-QAPP, March, 2005; NYSDEC – DER - 10 – Technical Guidance for Site Investigation and Remediation

2. Identify regulatory program: NYSDEC – DER - 10

3. Identify approval entity: NYSDEC

4. Indicate whether the QAPP is a generic or a **project-specific QAPP**. (circle one)

5. List dates of scoping sessions that were held:
January 30, 2016, March 6, 2016, & August 24, 2016
General scoping sessions:

6. List dates and titles of QAPP documents written for previous site work, if applicable:

Title	Received Date

7. List organizational partners (stakeholders) and connection with lead organization:
Evonik Corporation; ECM, Inc.; TestAmerica-Edison

8. List data users:
NYSDEC; Evonik Corporation; ECM, Inc.

9. If any required QAPP elements and required information are not applicable to the project, exclude them with an explanation of applicability:

QAPP Worksheet #3 - Distribution List

List those entities to who copies of the approved QAPP, subsequent QAPP revisions, addenda, and amendments.

QAPP Recipients	Title	Organization	Telephone Number	E-mail Address
Bruce Manganiello	Project Manager	ECM, Inc.	(908) 874-0990	btm-ecm@att.net
Nick Murray	Environmental Sampler	ECM, Inc.	(908) 874-0990	nickmurray1225@gmail.com
Chris Basile	Environmental Sampler	ECM, Inc.	(908) 874-0990	cb-ecm@comcast.net
Tom Grenci	Chemical Quality Control Officer	ECM, Inc.	(908) 874-0990	tg-ecm@att.net

QAPP Worksheet #4 - Project Personnel Sign-Off Sheet

Have copies of this form signed by key project personnel from each organization to indicate that they have read the applicable QAPP sections and will perform the tasks as described. Ask each organization to forward signed sheets to the central project file.

Organization: ECM, Inc.

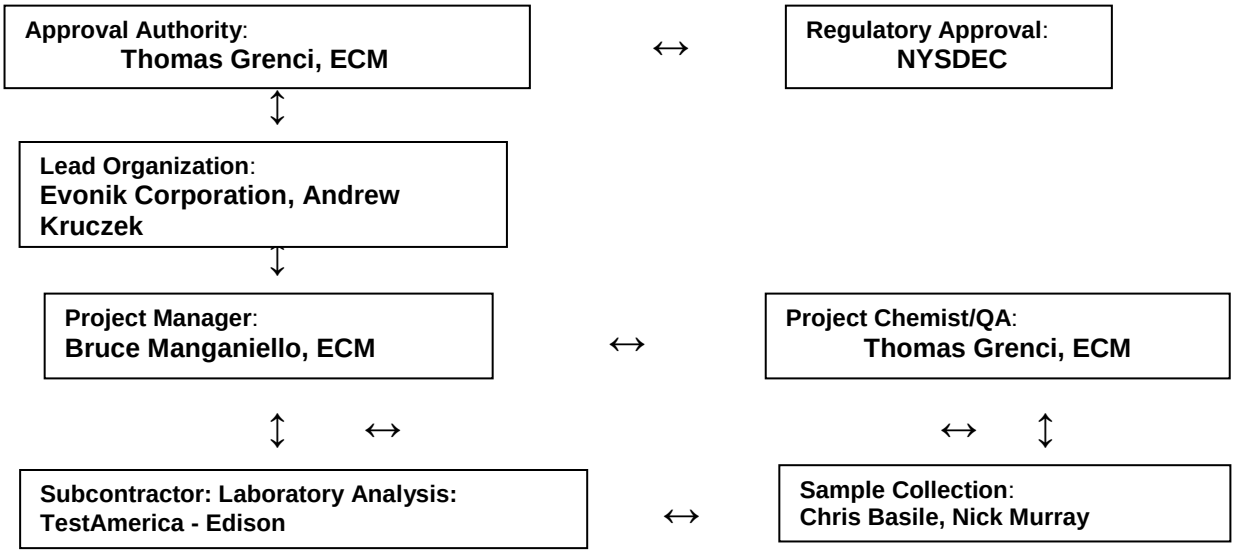
Project Personnel	Title	Telephone Number	Signature	Date QAPP Read
Bruce Manganiello	Project Manager	(908) 874-0990		

Organization: _____.

Project Personnel	Title	Telephone Number	Signature	Date QAPP Read

QAPP Worksheet #5- Project Organizational Chart

Identify reporting relationships between all organizations involved in the project, including the lead organization and all contractors and subcontractor organizations. Identify the organizations providing field sampling, on-site and off-site analysis, and data review services, including the names and telephone numbers of all project managers, project team members, and/or project contacts for each organization.



QAPP Worksheet #6 - Communication Pathways

Describe the communication pathways and modes of communication that will be used during the project, after the QAPP has been approved. Describe the procedures for soliciting and/or obtaining approval between project personnel, between different contractors, and between samplers and laboratory staff. Describe the procedure that will be followed when any project activity originally documented in an approved QAPP requires real-time modification to achieve project goals or a QAPP amendment is required. Describe the procedures for stopping work and identify who is responsible.

Communication Drivers	Responsible Entity	Name	Phone Number	Procedure (timing, pathways, etc.)
Submit Site Management Plan	Evonik Corporation	Andrew Kruczek	(732) 735-0204	NYSDEC – SMP and site Environmental Easement.
Prepare a draft report for Client review	Project Manager	Bruce Manganiello	(908) 874-0990	Draft to be prepared by August 31, 2016
Sample collection and analysis	Environmental Sampler	Chris Basile	(908) 874-0990	Coordination with the laboratory and sample collection.
Sample collection and analysis	Environmental Sampler	Nick Murray	(908) 874-0990	Coordination with the laboratory and sample collection.
Primary point of contact for TestAmerica	Sub-contract Laboratory	Grace Chang	(732) 549-3900	Coordinate sample receipt with Project Manager and Environmental Sampler. Provide analytical reports. Discuss data with the Project Manager and Project Chemist with in the allowable holding times.
Analytical review & corrective actions	Data Verification	Thomas Grenci	(908) 874-0990	Communicate with the Sub-contract laboratory and Project Manager relative to data acceptance and usability.

QAPP Worksheet #7 - Personnel Responsibilities and Qualifications Table

Identify project personnel associated with each organization, contractor, and subcontractor participating in responsible roles. Include data users, decision-makers, project managers, QA officers, project contacts for organizations involved in the project, project health and safety officers, geotechnical engineers and hydro geologists, field operation personnel, analytical services, and data reviewers. Identify project team members with an asterisk (*). Attach resumes to this worksheet or note the location of the resumes.

Name	Title	Organizational Affiliation	Responsibilities	Education and Experience Qualifications
Andrew Kruczek	Program Manager	Evonik Corporation	Overall contract conformance.	
Bruce Manganiello	Project Manager	ECM	Daily Project management, including schedule, communications, reporting and work plans.	*
Nick Murray	Environmental Sampler	ECM	Sample collection and coordination with the offsite laboratory.	*
Chris Basile	Environmental Sampler	ECM	Sample collection and coordination with the offsite laboratory.	*
Tom Grenci	Project Chemist	ECM	Sampling & analysis, data review, and QA/QC compliance	*

*Resumes and training records of key personnel will be maintained on-site for review. Resumes of off-site laboratories and facilities will be maintained at the facility. All information is available for review.

QAPP Worksheet #8 - Special Personnel Training Requirements Table

Provide the following information for those projects requiring personnel with specialized training. Attach training records and/or certificates to the QAPP or note their location.

Project Function	Specialized Training By Title or Description of Course	Training Provider	Training Date	Personnel Titles / Organizational Affiliation	Location of Training Records / Certificates[1]

[1] If training records and/or certificates are on file elsewhere, document their location in this column. If training records and/or certificates do not exist or are not available, then this should be noted.

QAPP Worksheet #9- Project Scoping Session Participants Sheet

Complete this worksheet for each project scoping session held. Identify project team members who are responsible for planning the project. The following is the generic form used for scoping meetings.

Project Name: Evonik Corporation RI Delineation Projected Date(s) of Sampling: Sept.-Dec., 2016 Project Manager: Bruce Manganiello, ECM	Site Name: : Evonik Corporation, Stony Point Site Location: 50 Holt Drive Stony Point, NY

Date of Session: July 31, 2013
Scoping Session Purpose: Groundwater Monitoring Program Requirements

Name	Title	Affiliation	Phone #	E-mail Address	Project Role
Andrew Kruczek	Program Manager	Evonik	(732) 735-0204	Andrew.kruczek@evonik.com	Environmental Manager
Bruce Manganiello	Project Manager	ECM	(908) 874-0990	btm-ecm@att.net	Project Manager
Thomas Grenci	Project Chemist	ECM	(908) 874-0990	tg-ecm@att.net	Project Chemist

Comments/Decisions: Discussed QAPP preparation as a two phase product in order to meet the start-up schedule. Discussed previous excavation depths, QCS site ID, time table for ongoing demolition.

Action Items & Consensus Decisions: Summarize the RI requirements, file an extension to the NJDEP for compliance reporting and schedule sampling in the fall 2013, date to be confirmed.

QAPP Worksheet #10 - Problem Definition

The problem to be addressed by the project: The overall project goal is to Delineate the extent of groundwater contamination on site via a Remedial Investigation. A final Remedial Investigation Report is due to be submitted to the NJDEP by May 7, 2016.
The environmental questions being asked: How extensive is the distribution of the target compounds encountered on site?
Observations from any site reconnaissance reports: Knowledge from previous groundwater sampling and analysis and experience from the ground water treatment facility have been used to design the current RI requirements.
A synopsis of secondary data or information from site reports: Prior analysis of on-site soil and groundwater indicates the potential for select VOC, SVOC, and metals to be present requiring delineation.
The possible classes of contaminants and the affected matrices: The groundwater may contain VOCs.
The rationale for inclusion of chemical and nonchemical analyses: Select TCL VOCs are contaminants that can potentially be present onsite. These contaminants are specified contaminants of concern referenced from historical analysis.
Information concerning various environmental indicators: Non-Applicable to this amendment
Project decision conditions (If…., then…., statements):

For groundwater sampling and analysis:

- If analytical data quality is questionable, then further analysis will be required;
- If groundwater data is not sufficient to delineate contamination, additional sample points will be determined.

QAPP Worksheet #11 - Project Quality Objectives/Systematic Planning Process Statements

Use this worksheet to develop project quality objectives (PQOs) in terms of type, quantity, and quality of data determined using a systematic planning process. Provide a detailed discussion of PQOs in the QAPP. List the PQOs in the form of qualitative and quantitative statements. These statements should answer questions such as those listed below. These questions are examples only, however; they are neither inclusive nor appropriate for all projects.

Who will use the data? The data will be used by the Project Manager.

What will the data be used for? Groundwater data will be used to evaluate water quality at the site for compliance reporting to the NYSDEC

What type of data are needed (matrix, target analytes, analytical groups, field screening, on-site analytical or off-site laboratory techniques, sampling techniques)? The groundwater will be sampled for offsite chemical analysis of TCL VOCs. Worksheet 17a & 17b contains the sampling rationale and sample analysis summary tables for site use. Onsite analysis will be used for monitoring and sample collection using indicator test parameters such as pH, conductivity, temperature and dissolved oxygen.

Matrix: Aqueous

How "good" do the data need to be in order to support the environmental decision? Chemical data must meet the criteria stated in worksheet #28 for QA. Onsite analysis must be capable of allowing the environmental sampler the confidence to sample.

How much data are needed (number of samples for each analytical group, matrix, and concentration)? Sample quantities, frequencies, and testing parameters are described in the technical specification.

Where, when, and how should the data be collected/generated? Samples will be collected in accordance with the procedures defined in E- SOP-4 and E-SOP-6.

Who will collect and generate the data? The data will be reported by the laboratory to the Project Manager. The data will be reviewed and summarized by the Project Chemist. The summary will include an initial data quality report.

How will the data be reported? The data will be reported in a NJDEP reduced deliverable format

How will the data be archived? The data will be archived in central files at ECM with ultimate disposition at ECM off site archived storage.

QAPP Worksheet #12 - Measurement Performance Criteria Table

Complete this worksheet for each matrix, analytical group, and concentration level. Identify the data quality indicators (DQIs), measurement performance criteria (MPC), and QC sample and/or activity used to assess the measurement performance for both the sampling and analytical measurement systems. Use additional worksheets if necessary. If MPC for a specific DQI vary within an analytical parameter, i.e., MPC are analyte-specific, then provide analyte-specific MPC on an additional worksheet.

Matrix	Aqueous
Analytical Group[1]	ICP-TAL Metals/CV Mercury
Concentration Level	Low

Sampling Procedure[2]	Analytical Method/ SOP[3]	Data Quality Indicators (DQIs)	Measurement Performance Criteria	QC Sample and / or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
QAPP Worksheets: #17; #18; #19; #20; #21; #22	EPA 200.8/ EPA 245.1	Data Completeness	[4]	Completeness Check	S & A
		Precision	[4]	Matrix Spike Duplicates	A
		Accuracy	[4]	Matrix Spike	A
		Accuracy	[4]	PE/LCS	A
		Accuracy/Bias	[4]	Field & Laboratory Blanks	S & A
		Sensitivity	[4]	Laboratory Blanks/Calibration	A

[1] If information varies within an analytical group. Separate individual analytes are listed on Worksheet #12A.
[2] Reference number from QAPP Worksheet #21.
[3] Reference number from QAPP Worksheet #23.
[4] Measurement Performance Criteria are detailed on Worksheet #12A.

QAPP Worksheet #12A – Individual Measurement Performance Criteria Table

Analyte:	Data Complete-ness	Matrix Spike Duplicate Precision	Matrix Spike Accuracy	PE/LCS Accuracy	Laboratory Blank Accuracy/Bias	Laboratory Blank Sensitivity
Aluminum	100%	±20%	70-130%	85-115%	<RL or <5% of result	<RL
Antimony	100%	±20%	70-130%	85-115%	<RL or <5% of result	<RL
Arsenic	100%	±20%	70-130%	85-115%	<RL or <5% of result	<RL
Barium	100%	±20%	70-130%	85-115%	<RL or <5% of result	<RL
Beryllium	100%	±20%	70-130%	85-115%	<RL or <5% of result	<RL
Cadmium	100%	±20%	70-130%	85-115%	<RL or <5% of result	<RL
Calcium	100%	±20%	70-130%	85-115%	<RL or <5% of result	<RL
Chromium	100%	±20%	70-130%	85-115%	<RL or <5% of result	<RL
Copper	100%	±20%	70-130%	85-115%	<RL or <5% of result	<RL
Lead	100%	±20%	70-130%	85-115%	<RL or <5% of result	<RL
Manganese	100%	±20%	70-130%	85-115%	<RL or <5% of result	<RL
Nickel	100%	±20%	70-130%	85-115%	<RL or <5% of result	<RL
Selenium	100%	±20%	70-130%	85-115%	<RL or <5% of result	<RL
Silver	100%	±20%	70-130%	85-115%	<RL or <5% of result	<RL
Thallium	100%	±20%	70-130%	85-115%	<RL or <5% of result	<RL
Zinc	100%	±20%	70-130%	85-115%	<RL or <5% of result	<RL
Mercury	100%	±20%	70-130%	85-115%	<RL or <5% of result	<RL

QAPP Worksheet #12 - Measurement Performance Criteria Table

Complete this worksheet for each matrix, analytical group, and concentration level. Identify the data quality indicators (DQIs), measurement performance criteria (MPC), and QC sample and/or activity used to assess the measurement performance for both the sampling and analytical measurement systems. Use additional worksheets if necessary. If MPC for a specific DQI vary within an analytical parameter, i.e., MPC are analyte-specific, then provide analyte-specific MPC on an additional worksheet.

Matrix	Aqueous
Analytical Group[1]	TCL Volatile Organic Compounds
Concentra-tion Level	Low

Sampling Procedure[2]	Analytical Method/SOP[3]	Data Quality Indicators (DQIs)	Measurement Performance Criteria	QC Sample and / or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
QAPP Worksheets: #17; #18; #19; #20; #21; #22	EPA 624	Data Completeness	[4]	Completeness Check	S & A
			[4]	Matrix Spike Duplicates	A
		Precision	[4]	Matrix Spike	A
		Accuracy	[4]	PE/LCS	A
		Accuracy	[4]	Field & Laboratory Blanks	S & A
		Accuracy/Bias	[4]	Laboratory Blanks/Calibration	A
		Sensitivity			

[1] If information varies within an analytical group. Separate individual analytes are listed on Worksheet #12B.
[2] Reference number from QAPP Worksheet #21.
[3] Reference number from QAPP Worksheet #23.
[4] Measurement Performance Criteria are detailed on Worksheet #12B.

QAPP Worksheet #12B – Individual Measurement Performance Criteria Table

Analyte:	Data Complete-ness	Matrix Spike Duplicate Precision	Matrix Spike Accuracy	PE/LCS Accuracy	Laboratory Blank Accuracy/Bias	Laboratory Blank Sensitivity
Acetone	100%	±30%	45-156%	45-156%	<RL or <5% of result	<RL
Benzene	100%	±30%	37-151%	37-151%	<RL or <5% of result	<RL
Bromodichloromethane	100%	±30%	35-155%	35-155%	<RL or <5% of result	<RL
Bromoform	100%	±30%	45-169%	45-169%	<RL or <5% of result	<RL
Bromomethane	100%	±30%	0-242%	0-242%	<RL or <5% of result	<RL
2-Butanone	100%	±30%	65-114%	65-114%	<RL or <5% of result	<RL
Carbon disulfide	100%	±30%	58-139%	58-139%	<RL or <5% of result	<RL
Carbon tetrachloride	100%	±30%	70-140%	70-140%	<RL or <5% of result	<RL
Chlorobenzene	100%	±30%	37-160%	37-160%	<RL or <5% of result	<RL
Chloroethane	100%	±30%	14-230%	14-230%	<RL or <5% of result	<RL
Chloroform	100%	±30%	51-138%	51-138%	<RL or <5% of result	<RL
Chloromethane	100%	±30%	0-273%	0-273%	<RL or <5% of result	<RL
Dibromochloromethane	100%	±30%	53-149%	53-149%	<RL or <5% of result	<RL
1,1-Dichloroethane	100%	±30%	59-155%	59-155%	<RL or <5% of result	<RL
1,2-Dichloroethane	100%	±30%	49-155%	49-155%	<RL or <5% of result	<RL
1,1-Dichloroethene	100%	±30%	0-234%	0-234%	<RL or <5% of result	<RL
cis-1,2-Dichloroethene	100%	±30%	80-120%	80-120%	<RL or <5% of result	<RL
trans-1,2-Dichloroethene	100%	±30%	54-156%	54-156%	<RL or <5% of result	<RL
1,2-Dichloropropane	100%	±30%	0-210%	0-210%	<RL or <5% of result	<RL
cis-1,3-Dichloropropene	100%	±30%	0-227%	0-227%	<RL or <5% of result	<RL
trans-1,3-Dichloropropene	100%	±30%	17-183%	17-183%	<RL or <5% of result	<RL
Ethylbenzene	100%	±30%	37-162%	37-162%	<RL or <5% of result	<RL
2-Hexanone	100%	±30%	53-121%	53-121%	<RL or <5% of result	<RL
4-Methyl-2-pentanone	100%	±30%	53-120%	53-120%	<RL or <5% of result	<RL
Methylene chloride	100%	±30%	0-221%	0-221%	<RL or <5% of result	<RL
Styrene	100%	±30%	69-112%	69-112%	<RL or <5% of result	<RL
1,1,2,2-Tetrachloroethane	100%	±30%	46-157%	46-157%	<RL or <5% of result	<RL
Tetrachloroethene	100%	±30%	64-148%	64-148%	<RL or <5% of result	<RL
Toluene	100%	±30%	47-150%	47-150%	<RL or <5% of result	<RL
1,1,1-Trichloroethane	100%	±30%	52-162%	52-162%	<RL or <5% of result	<RL
1,1,2-Trichloroethane	100%	±30%	52-150%	52-150%	<RL or <5% of result	<RL
Trichloroethene	100%	±30%	71-157%	71-157%	<RL or <5% of result	<RL
Vinyl chloride	100%	±30%	0-251%	0-251%	<RL or <5% of result	<RL
2-Chloroethyl vinyl ether	100%	±30%	0-305%	0-305%	<RL or <5% of result	<RL
TBA	100%	±30%	49-112%	49-112%	<RL or <5% of result	<RL
MTBE	100%	±30%	71-115%	71-115%	<RL or <5% of result	<RL
Xylene	100%	±30%	76-121%	76-121%	<RL or <5% of result	<RL

QAPP Worksheet #12 - Measurement Performance Criteria Table

Complete this worksheet for each matrix, analytical group, and concentration level. Identify the data quality indicators (DQIs), measurement performance criteria (MPC), and QC sample and/or activity used to assess the measurement performance for both the sampling and analytical measurement systems. Use additional worksheets if necessary. If MPC for a specific DQI vary within an analytical parameter, i.e., MPC are analyte-specific, then provide analyte-specific MPC on an additional worksheet.

Matrix	Aqueous
Analytical Group[1]	TCL Semi-Volatile Organic Compounds
Concentration Level	Low

Sampling Procedure[2]	**Analytical Method/SOP[3]**	**Data Quality Indicators (DQIs)**	**Measurement Performance Criteria**	**QC Sample and / or Activity Used to Assess Measurement Performance**	**QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)**
QAPP Worksheets : #17; #18; #19; #20; #21; #22	EPA – 625	Data Completeness	[4]	Completeness Check	S & A
		Precision	[4]	Matrix Spike Duplicates	A
		Accuracy	[4]	Matrix Spike	A
		Accuracy	[4]	PE/LCS	A
		Accuracy/Bias	[4]	Field & Laboratory Blanks	S & A
		Sensitivity		Laboratory Blanks/Calibration	A

[1] If information varies within an analytical group. Separate individual analytes are listed on Worksheet #12D.
[2] Reference number from QAPP Worksheet #21.
[3] Reference number from QAPP Worksheet #23 .
[4] Measurement Performance Criteria are detailed on Worksheet #12C.

QAPP Worksheet #12C – Individual Measurement Performance Criteria Table

Analyte:	Data Complete-ness	Matrix Spike Duplicate Precision	Matrix Spike Accuracy	PE/LCS Accuracy	Laboratory Blank Accuracy/Bias	Laboratory Blank Sensitivity
Acenaphthene	100%	±40%	47-145%	47-145%	<RL or <5% of result	<RL
Acenaphthylene	100%	±40%	33-145%	33-145%	<RL or <5% of result	<RL
Anthracene	100%	±40%	27-133%	27-133%	<RL or <5% of result	<RL
Benzo(a)anthracene	100%	±40%	33-143%	33-143%	<RL or <5% of result	<RL
Benzo(a)pyrene	100%	±40%	17-163%	17-163%	<RL or <5% of result	<RL
Benzo(b)fluoranthene	100%	±40%	24-159%	24-159%	<RL or <5% of result	<RL
Benzo(g,h,i)perylene	100%	±40%	0.1-219%	0.1-219%	<RL or <5% of result	<RL
Benzo(k)fluoranthene	100%	±40%	11-162%	11-162%	<RL or <5% of result	<RL
4-Bromophenyl phenyl ether	100%	±40%	53-127%	53-127%	<RL or <5% of result	<RL
Butyl benzyl phthalate	100%	±40%	0.1-152%	0.1-152%	<RL or <5% of result	<RL
2-Chloronaphthalene	100%	±40%	60-118%	60-118%	<RL or <5% of result	<RL
4-Chloroaniline	100%	±40%	44-108%	44-108%	<RL or <5% of result	<RL
Carbazole	100%	±40%	57-119%	57-119%	<RL or <5% of result	<RL
Chrysene	100%	±40%	17-168%	17-168%	<RL or <5% of result	<RL
bis(2-Chloroethoxy) methane	100%	±40%	33-184%	33-184%	<RL or <5% of result	<RL
bis(2-Chloroethyl) ether	100%	±40%	12-158%	12-158%	<RL or <5% of result	<RL
bis(2-Chloroisopropyl) ether	100%	±40%	36-166%	36-166%	<RL or <5% of result	<RL
4-Chlorophenyl phenyl ether	100%	±40%	25-158%	25-158%	<RL or <5% of result	<RL
2,4-Dinitrotoluene	100%	±40%	39-139%	39-139%	<RL or <5% of result	<RL
2,6-Dinitrotoluene	100%	±40%	50-158%	50-158%	<RL or <5% of result	<RL
3,3'-Dichlorobenzidine	100%	±40%	0.1-262%	0.1-262%	<RL or <5% of result	<RL
Dibenzo(a,h) anthracene	100%	±40%	0.1-227%	0.1-227%	<RL or <5% of result	<RL
Dibenzofuran	100%	±40%	60-120%	60-120%	<RL or <5% of result	<RL
Di-n-butyl phthalate	100%	±40%	1-118%	1-118%	<RL or <5% of result	<RL
Di-n-octyl phthalate	100%	±40%	4-146%	1-118%	<RL or <5% of result	<RL
Diethyl phthalate	100%	±40%	0.1-114%	0.1-114%	<RL or <5% of result	<RL
Dimethyl phthalate	100%	±40%	0.1-112%	0.1-112%	<RL or <5% of result	<RL
bis(2-Ethylhexyl) phthalate	100%	±40%	8-158%	8-158%	<RL or <5% of result	<RL
Fluoranthene	100%	±40%	26-137%	26-137%	<RL or <5% of result	<RL
Fluorene	100%	±40%	59-121%	59-121%	<RL or <5% of result	<RL
Hexachlorobenzene	100%	±40%	0.1-152%	0.1-152%	<RL or <5% of result	<RL
Hexachlorobutadiene	100%	±40%	24-116%	24-116%	<RL or <5% of result	<RL
Hexachlorocyclopentadiene	100%	±40%	31-102%	31-102%	<RL or <5% of result	<RL
Hexachloroethane	100%	±40%	40-113%	40-113%	<RL or <5% of result	<RL
Ideno(1,2,3-cd) pyrene	100%	±40%	0.1-171%	0.1-171%	<RL or <5% of result	<RL
Isophorone	100%	±40%	21-196%	21-196%	<RL or <5% of result	<RL
2-Methylnaphthalene	100%	±40%	53-120%	53-120%	<RL or <5% of result	<RL
3-Nitroaniline	100%	±40%	50-119%	50-119%	<RL or <5% of result	<RL
Naphthalene	100%	±40%	42-129%	42-129%	<RL or <5% of result	<RL
Nitrobenzene	100%	±40%	35-180%	35-180%	<RL or <5% of result	<RL
N-Nitroso-di-n-propylamine	100%	±40%	0.1-230%	0.1-230%	<RL or <5% of result	<RL
N-Nitrosodiphenylamine	100%	±40%	64-126%	64-126%	<RL or <5% of result	<RL
Phenanthrene	100%	±40%	54-120%	54-120%	<RL or <5% of result	<RL
Pyrene	100%	±40%	52-115%	52-115%	<RL or <5% of result	<RL
1,3-Dichlorobenzene	100%	±40%	0.1-172%	0.1-172%	<RL or <5% of result	<RL
1,4-Dichlorobenzene	100%	±40%	20-124%	20-124%	<RL or <5% of result	<RL
1,2-Dichlorobenzene	100%	±40%	32-129%	32-129%	<RL or <5% of result	<RL
1,2,4 Trichlorobenzene	100%	±40%	44-142%	44-142%	<RL or <5% of result	<RL

QAPP Worksheet #12 - Measurement Performance Criteria Table

Complete this worksheet for each matrix, analytical group, and concentration level. Identify the data quality indicators (DQIs), measurement performance criteria (MPC), and QC sample and/or activity used to assess the measurement performance for both the sampling and analytical measurement systems. Use additional worksheets if necessary. If MPC for a specific DQI vary within an analytical parameter, i.e., MPC are analyte-specific, then provide analyte-specific MPC on an additional worksheet.

Matrix	Aqueous
Analytical Group[1]	pH, Conductivity, Temperature,[4] Dissolved Oxygen[4]
Concentration Level	NA

Sampling Procedure[2]	**Analytical Method/SOP[3]**	**Data Quality Indicators (DQIs)**	**Measurement Performance Criteria**	**QC Sample and / or Activity Used to Assess Measurement Performance**	**QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)**
QAPP Worksheets: #17; #18; #19; #20; #21; #22	ECM SOP: Horiba U22-MultiParameter Meter Calibration & Use	Data Completeness	100%	Completeness Check	S & A
		Precision	As per E-SOP-3	Calibration Check Std.	S & A
		Accuracy	As per E-SOP-3	Calibration Check Std.	S & A
		Sensitivity	Calibrate	Laboratory Calibration	A

[1]If information varies within an analytical group, separate by individual analyte. [2]Reference number from QAPP Worksheet #21

[3]Reference number from QAPP Worksheet #23 [4]Not all DQIs are used for this parameter

QAPP Worksheet #13 (UFP-QAPP Manual Section 2.7) -- Secondary Data Criteria and Limitations Table

Identify all secondary data and information that will be used for the project and their originating sources. Specify how the secondary data will be used and the limitations on their use. Each project specific area must include any limitations on use of the data in the final report. Data from each project specific area is accumulated in the final site report and the limits on data use must be presented.

Secondary Data	**Data Source** (originating organization, report title and date)	**Data Generator(s)** (originating organization, data types, data generation / collection dates)	**How Data Will Be Used**	**Limitations on Data Use**
The previous specification for the GW is based on the previous groundwater analysis and the previous operation of the GW Treatment System.	Various	Various including Site Remediation	To evaluate ground water quality	None expected

QAPP Worksheet #14 (UFP-QAPP Manual Section 2.8.1) -- Summary of Project Tasks

Provide a brief overview of the listed project activities. The following table must be completed for each project area.

Sampling Tasks: Sample Monitoring Wells: TB-9, PZ-23, MW-24, MW-31, MW-36, MW-40, MW-43, and MW-71, and MW-54.

Analysis Tasks: EPA TCL VOC (624). The wells will also be screened for dissolved oxygen, temperature, conductivity, and pH.

Quality Control Tasks: In field: field and trip blanks, and temperature blank. In laboratory: MS/MSD, laboratory blanks, PE samples, tune, calibration, surrogates, internal standards, and other compliance with state and NELAC certification

Secondary Data: Prior data from previous monitoring wells and the previous GWTS have been generated for many years. This data has been used to develop the current SOW.

Other Data: N/A

Data Management Tasks: The data will be used to delineate GW contamination. Documentation of activities and management of the data generated will include field procedures, laboratory analysis and data review. The data will receive internal verification. Field data documentation includes maintaining field records, forms and chain of custody. Analytical reports will be received in hard copy and electronic copy. The data reports will be archived.

Documentation and Records: Sample documentation, including field analytical logs, field readings, locations, chain of custody, shipping papers, and other records will be included as part of the final report.

Assessment / Audit Tasks: Sample collection will be by the environmental sampler. Oversight assessment will be by the PM. Assessment will include a check of sample locations, sampling protocol and record keeping. In the event additional support is required, the PM will consult the project chemist. Should an error be encountered, information identifying the problem and proposed solutions will be discussed with the PM. Any problem resolution will be documented in the final report.

For offsite analytical work, assessment will be provided internally by the laboratory QA manager. In the event the PM or project chemist finds data anomalies or data verification is in question, the project chemist will provide a system audit of the laboratory.

Data Review Tasks: Laboratory data will be verified and validated for quality and usability. Data will be compared to the NYSDEC site remediation standards as applicable.

QAPP Worksheet #15 - Reference Limits and Evaluation Table

Complete this worksheet for each matrix, analytical group, and concentration level. Identify the target analytes/contaminants of concern and project-required action limits. Next, determine the quantitation limits (RLs) that must be met to achieve the project quality objectives. Finally, list the published and achievable detection and quantitation limits for each analyte.

Matrix: Aqueous
Analytical Group: Analytes listed below
Concentration Level: Low

Analyte:	CAS No.	Project Action Limit[2] (ug/L)	Achievable Laboratory Limits[1]	
			MDLs (ug/L)	RLs (ug/L)
Aluminum	7429-90-5	200	32.7	50
Antimony	7440-36-0	6	1.8	2.5
Arsenic	7440-38-2	3	1.8	2.5
Barium	7440-39-3	6000	3.8	5.0
Beryllium	7440-41-7	1	0.9	1.0
Cadmium	7440-43-9	4	1.9	2.5
Calcium	7440-70-2	N/A	194	250
Chromium	7440-47-3	70	4.0	5.0
Copper	7440-50-8	1300	3.8	5.0
Lead	7439-92-1	5	1.2	1.5
Manganese	7439-96-5	50	7.7	10
Mercury	7439-97-6	2	0.16	0.2
Nickel	7440-02-0	100	4.1	5.0
Selenium	7782-49-2	40	1.9	2.5
Silver	7440-22-4	40	3.8	5.0
Thallium	7440-28-0	2	0.75	1.0
Zinc	744066-6	2000	15.3	20

[1]Achievable MDLs and RLs are limits that the individual laboratory can achieve when performing a specific analytical method.

[2]Project Action Limits are determined by the NYSDEC via the groundwater quality criteria.

QAPP Worksheet #15 - Reference Limits and Evaluation Table

Complete this worksheet for each matrix, analytical group, and concentration level. Identify the target analytes/contaminants of concern and project-required action limits. Next, determine the quantitation limits (RLs) that must be met to achieve the project quality objectives. Finally, list the published and achievable detection and quantitation limits for each analyte.

Matrix: Aqueous
Analytical Group: Analytes listed below
Concentration Level: Low

Analyte:	Project Action Limit[3] (ug/L)	Achievable Laboratory Limits[2]	
		MDLs (ug/L)	RLs (ug/L)
Acetone	6,000	2.7	5.0
Benzene	1	0.08	1.0
Bromodichloromethane	1	0.12	1.0
Bromoform	4	0.19	1.0
Bromomethane	10	0.18	1.0
2-Butanone	300	2.3	5.0
Carbon disulfide	700	0.13	1.0
Carbon tetrachloride	1	0.06	1.0
Chlorobenzene	50	0.11	1.0
Chloroethane	5	0.17	1.0
Chloroform	70	0.08	1.0
Chloromethane	NA	0.1	1.0
Dibromochloromethane	1	0.2	1.0
1,1-Dichloroethane	50	0.13	1.0
1,2-Dichloroethane	2	0.19	1.0
1,1-Dichloroethene	1	0.09	1.0
cis-1,2-Dichloroethene	70	0.18	1.0
trans-1,2-Dichloroethene	100	0.13	1.0
1,2-Dichloropropane	1	0.09	1.0
cis-1,3-Dichloropropene	NA	0.18	1.0
trans-1,3-Dichloropropene	1	0.24	1.0
Ethylbenzene	700	0.1	1.0
2-Hexanone	300	0.5	5.0
4-Methyl-2-pentanone	NA	0.99	1.0
Methylene chloride	3	0.18	5.0
Styrene	100	0.12	1.0
1,1,2,2-Tetrachloroethane	1	0.16	1.0
Tetrachloroethene	1	0.1	1.0
Toluene	600	0.15	1.0
1,2,4-Trichlorobenzene	9	0.15	1.0
1,1,1-Trichloroethane	30	0.06	1.0
1,1,2-Trichloroethane	3	0.19	1.0
Trichloroethene	1	0.09	1.0
Vinyl chloride	1	0.14	1.0
Xylene	1,000	0.36	2.0
TBA	NA	5.7	10.0
MTBE	70	0.14	1.0

[1]Achievable MDLs and RLs are limits that an individual laboratory can achieve when performing a specific analytical method.

[2]Project Action Limits are determined by the NYSDEC via the Site Remediation requirements.

QAPP Worksheet #15 - Reference Limits and Evaluation Table

Complete this worksheet for each matrix, analytical group, and concentration level. Identify the target analytes/contaminants of concern and project-required action limits. Next, determine the quantitation limits (RLs) that must be met to achieve the project quality objectives. Finally, list the published and achievable detection and quantitation limits for each analyte.

Matrix: Aqueous
Analytical Group: Analytes listed below
Concentration Level: Low

Analyte:	Project Action Limit[3] (ug/L)	Achievable Laboratory Limits[2]	
		MDLs (ug/L)	RLs (ug/L)
Acenaphthene	400	2.8	10
Acenaphthylene	100	2.8	10
Anthracene	2,000	2.8	10
Benzo(a)anthracene	0.1	0.28	10
Benzo(a)pyrene	0.1	0.14	1.0
Benzo(b)fluoranthene	0.2	0.27	1.0
Benzo(g,h,i)perylene	100	2.0	10
Benzo(k)fluoranthene	0.5	0.27	1.0
4-Bromophenyl phenyl ether	NA	2.6	10
Butyl benzyl phthalate	100	2.6	10
2-Chloronaphthalene	600	2.8	10
4-Chloroaniline	30	2.0	10
Carbazole	NA	3.3	10
Chrysene	5	3.2	10
bis(2-Chloroethoxy) methane	NA	0.29	1.0
bis(2-Chloroethyl) ether	7	2.0	10
4-Chlorophenyl phenyl ether	NA	2.6	10
2,4-Dinitrotoluene	NA	0.48	2.0
2,6-Dinitrotoluene	NA	0.62	2.0
3,3'-Dichlorobenzidine	30	5.0	20
Dibenzo(a,h) anthracene	0.3	0.092	1.0
Dibenzofuran	NA	2.9	10
Di-n-butyl phthalate	700	3.0	10
Di-n-octyl phthalate	100	1.5	10
Diethyl phthalate	6,000	3.0	10
Dimethyl phthalate	100	2.9	10
1,3-Dichlorobenzene	600	2.4	10
1,4-Dichlorobenzene	75	2.6	10
1,2-Dichlorobenzene	600	2.6	10
1,2,4-Trichlorobenzene	9	0.27	1.0
bis(2-Ethylhexyl) phthalate	3	2.0	10
Fluoranthene	300	3.3	10
Fluorene	300	2.9	10
Hexachlorobenzene	0.02	0.3	1.0
Hexachlorobutadiene	1	0.58	2.0
Hexachlorocyclopentadiene	40	1.7	10
Hexachloroethane	7	0.26	1.0
Ideno(1,2,3-cd) pyrene	0.2	0.15	1.0
Isophorone	40	2.8	10
Naphthalene	300	2.8	10
Nitrobenzene	6	0.31	1.0
N-Nitroso-di-n-propylamine	10	0.26	1.0
N-Nitrosodiphenylamine	10	3.0	10
Phenanthrene	100	3.2	10
Pyrene	200	3.0	10

[1]Achievable MDLs and RLs are limits that an individual laboratory can achieve when performing a specific analytical method.
[3]Project Action Limits are determined by the NYSDEC via the Site Remediation requirements.

QAPP Worksheet #16 - Project Schedule / Timeline Table

List all project activities as well as the QA assessments that will be performed during the course of the project. Include the anticipated start and completion dates.

Activities	Organization	Deliverable	Deliverable Due Date
Prepare & submit QAPP	ECM	QAPP	
Sample collection	ECM	Samples submitted to Laboratories	
Sample analysis	TestAmerica Edison	Data Reports	
Data review	ECM	Preliminary Data Approval	
Comparison of data results to MCLs and operations	ECM	Optimize GWTS	
Data verification	ECM	Data Verification	
Final report	ECM	Final Report	

QAPP Worksheet #17 - Sampling Locations and Methods/SOP Requirements Table

List all site locations that will be sampled and include sample/ID number, if available. (Provide a range of sampling locations of ID numbers if a site has a large number.) Specify matrix and, if applicable, depth at which samples will be taken. Only a short reference for the sampling location rationale is necessary for the table. The text of the QAPP should clearly identify the detailed rationale associated with each reference. Complete all required information, using additional worksheets if necessary.

Sampling Location / ID Number[2]	Matrix	Depth (units)	Analytical Group	Concentration Level	Number of Samples (identify field duplicates)	Sampling SOP Reference[1]
TB-9	Aqueous	N/A	TCL VOC	Low	1	E-SOP-4 & 7
PZ-23	Aqueous	N/A	TCL VOC	Low	1	E-SOP-4 & 7
MW-24	Aqueous	N/A	TCL VOC	Low	1	E-SOP-4 & 7
MW-31	Aqueous	N/A	TCL VOC	Low	1	E-SOP-4 & 7
MW-36	Aqueous	N/A	TCL VOC	Low	1	E-SOP-4 & 7
MW-40	Aqueous	N/A	TCL VOC	Low	1	E-SOP-4 & 7
MW-43	Aqueous	N/A	TCL VOC	Low	1	E-SOP-4 & 7
MW-71	Aqueous	N/A	TCL VOC	Low	1	E-SOP-4 & 7
MW-54	Aqueous	N/A	TCL VOC	Low	1	E-SOP-4 & 7
FB	Aqueous	N/A	TCL VOC,	Low	1	E-SOP-4 & 7
TB	Aqueous	N/A	TCL VOC	Low	1	E-SOP-4 & 7

[1]Specify the appropriate letter or number from the Project Sampling SOP References table (Worksheet #21).

[2]Sample Locations are included with the labeled site plan (Attached).

QAPP Worksheet #18 - Analytical SOP Requirements Table

For each matrix, analytical group, and concentration level, list the analytical and preparation method/SOP and associated sample volume, container specifications, preservation requirements, and maximum holding time.

Matrix	Analytical Group	Concentration Level	Analytical and Preparation Method / SOP Reference[1]	Sample Size/ Volume*	Containers (number, size, and type)	Preservation Requirements (chemical, temperature, light protected)	Maximum Holding Time (preparation / analysis)
Aqueous	TCL VOC	Low	624	40mL	(3) purge vials**	4 °C - HCl	14 days

[1]Specify the appropriate reference letter or number from the Analytical SOP References table (Worksheet #23).

* Note, sample volumes may be combined in like containers where appropriate. .
** The containers should be filled to contain no headspace.

QAPP Worksheet #19 - Field Quality Control Sample Summary Table

Summarize by matrix, analytical group, and concentration level the number of field QC samples that will be collected and sent to the laboratory.

Matrix	Analytical Group	Conc. Level	Analytical & Preparation SOP Reference[1]	No. of Sampling Locations[2]	No. of Field Duplicate Pairs	No. of MS/MSD	No. of Trip Blanks	No. of Field Blanks	No. of PT Samples	Total No. of Samples to Lab
Aqueous	VOC	Low	624	11	-	*	1	1	-	26

[1]Specify the appropriate reference letter or number from the Analytical SOP References table (Worksheet #23).

[2]See Table 11 for frequency of testing for total number of analyses.
* MS/MSD will come from the laboratory QA criteria protocol. Project samples may not be spiked.

QAPP Worksheet #20 - Project Sampling SOP References Table

List all SOPs associated with project sampling including, but not limited to, sample collection, sample preservation, equipment cleaning and decontamination, equipment testing, inspection and maintenance, supply inspection and acceptance, and sample handling and custody. Include copies of the SOPs as attachments or reference all in the QAPP. Sequentially number sampling SOP references in the Reference Number column. The reference number can be used throughout the QAPP to refer to a specific SOP.

Reference Number	Title, Revision Date and / or Number	Originating Organization	Equipment Type	Modified for Project Work? (Y/N)	Comments
E-SOP 1	Site Access	ECM	N/A	N	
E-SOP 2	Groundwater Level – 3/2015	ECM	Electronic Water Level Meter	N	
E-SOP 3	Horiba U-22 Calibrate/Use 10/2009	ECM	Horiba U-22 Multimeter	N	
E-SOP 3a	Horiba U-22 Cal. forms 10/2009	ECM	Horiba U-22 Multimeter	N	
E-SOP 4	Low Flow Sampling Wells 1/2007	ECM	Submersible Pump	N	

Reference Number	Title, Revision Date and / or Number	Originating Organization	Equipment Type	Modified for Project Work? (Y/N)	Comments
E-SOP 5	Chain of Custody – 08/2003	ECM	NA	N	
E-SOP 6	Field Equipment Calibtration 1/2007	ECM	PID	N	
E-SOP 7	Sampling VOC in Water 8/2003	ECM	Lab Glassware	N	

QAPP Worksheet #21 - Field Equipment Calibration, Maintenance, Testing, and Inspection Table

Identify all field equipment and instruments (other than analytical instrumentation) that require calibration, maintenance, testing, or inspection and provide the SO reference number for each type of equipment. In addition, document the frequency of activity, acceptance criteria, and corrective action requirements on the worksheet.

Field Equipment	Calibration Activity	Maint. Activity	Testing Activity	Inspection Activity	Frequency	Acceptance Criteria	Corrective Action	Resp. Person	SOP Reference[1]
PID	Daily 100 ppm isobutylene	Charge batteries daily before use, Keep from extreme heat or cold. Keep intake ports clean. If not able to calibrate, see service manual.	Airborne volatile organics	For bias of sample collection of VOCs.	At all sample points.	N/A	N/A	Environmental Sampler	E-SOP 6
Horiba U22	Daily – Multi Standard	Charge batteries daily before use, Keep from extreme heat or cold. Keep intake ports clean. If not able to calibrate, see service manual.	pH, Temp. Sp.Cond ORP, DO Turbidity,	Groundwater field monitoring	Monit. wells	N/A	N/A	Environmental Sampler	E-SOP 3 & 3a

[1]Specify the appropriate reference letter or number from the Project Sampling SOP References table (Worksheet #21).

QAPP Worksheet #22 - Analytical SOP References Table

List all SOPs that will be used to perform on-site or off-site analysis. Indicate whether the procedure produces screening or definitive data. Sequentially number analytical SOP references in the Reference Number column. Include copies of the SOPs as attachments or reference in the QAPP. The reference number can be used throughout the QAPP to refer to a specific SOP.

Reference Number	Title, Revision Date, and / or Number	Definitive or Screening Data	Analytical Group	Instrument	Lab Performing Analysis	Modified for Project Work?
624	VOAMS	Definitive	TCL VOC	GC/MS	TestAmerica	N

QAPP Worksheet #23 – Analytical Instrument Calibration Table

Identify all analytical instrumentation that requires calibration and provide the SOP reference number for each. In addition, document the frequency, acceptance criteria, and corrective action requirements on the worksheet.

Instrument	Calibration Procedure[2]	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Responsible for CA	SOP Reference[1]
GC/MS	BFB tune; Standard curve	Initial 31 days ECMnuing 12 hrs.	[2]	New initial when ECMnuing calibration outside criteria	GC/MS Chemist	624

[1]Specify the appropriate reference letter or number from the Analytical SOP References table (Worksheet #23).

[2]Calibration procedures, acceptance criteria, and corrective actions for out of control data are included in full criteria detail in the laboratory specific parameter SOPs (attached).

QAPP Worksheet #24 (UFP-QAPP Manual Section 3.2.3) -- Analytical Instrument and Equipment Maintenance, Testing, and Inspection Table

Identify all analytical instrumentation that requires maintenance, testing, or inspection and provide the SOP reference number for each. In addition, document the frequency, acceptance criteria, and corrective action requirements on the worksheet.

Instrument / Equipment	Maintenance Activity	Testing Activity	Inspection Activity	Frequency	Acceptance Criteria	Corrective Action	Responsible Person	SOP Ref.[1]
GC/MS	[2]	[2]	[2]	[2]	[2]	[2]	Organics Manager	624/625
ICP	[2]	[2]	[2]	[2]	[2]	[2]	Inorganics Manager	200.8
Cold vapor fixed wavelength	[2]	[2]	[2]	[2]	[2]	[2]	Inorganics Manager	245.1

[1]Specify the appropriate reference letter or number from the Analytical SOP References table (Worksheet #23).

[2]Instrument servicing includes routine cleaning, leak detection, part replacement and general service. Routine service such as leak detection and hose/tubing checks are daily. Other service may be as required (e.g., unable to meet calibration requirements or equipment failure. Instruments have continuing service contracts for non-routine repairs. Redundancy in equipment is available in the event a piece of equipment requires maintenance. Instruments are re-calibrated after maintenance. A calibration/maintenance log is maintained for each instrument. Maintenance details can be found in the laboratories' SOP and laboratory quality assurance manuals.

QAPP Worksheet #25 - Sample Handling System

Use this worksheet to identify components of the project-specific sample handling system. Record personnel, and their organizational affiliations, which are primarily responsible for ensuring proper handling, custody, and storage of field samples from the time of collection, to laboratory delivery, to final sample disposal. Indicate the number of days field samples and their extracts/digestates will be archived prior to disposal.

SAMPLE COLLECTION, PACKAGING, AND SHIPMENT
Sample Collection (Personnel/Organization): Chris Basile, Nick Murray/ECM
Sample Packaging (Personnel/Organization): Chris Basile, Nick Murray/ECM
Coordination of Shipment (Personnel/Organization): Chris Basile, Nick Murray/ECM
Type of Shipment/Carrier: Delivery from the site to the laboratory or lab couriers
SAMPLE RECEIPT AND ANALYSIS
Sample Receipt (Personnel/Organization): Sample Log-in/TestAmerica-Edison
Sample Custody and Storage (Personnel/Organization): Sample Custodian-in/ TestAmerica-Edison
Sample Preparation (Personnel/Organization): Metals digestion, organic extraction / TestAmerica-Edison
Sample Determinative Analysis (Personnel/Organization): ICP chemist, GC/MS chemist/ TestAmerica-Edison
SAMPLE ARCHIVING
Field Sample Storage (No. of days from sample collection): less than one day
Sample Extract/Digestate Storage (No. of days from extraction/digestion): ~60days
Biological Sample Storage (No. of days from sample collection): ~60days
SAMPLE DISPOSAL
Personnel/Organization: Sample maintenance/ TestAmerica-Edison
Number of Days from Analysis: ~60days

QAPP Worksheet #26 – Sample Custody Requirements Table

Describe the procedures that will be used to maintain sample custody and integrity. Include examples of chain-of-custody forms, traffic reports, sample identification, custody seals, laboratory sample receipt forms, and laboratory sample transfer forms. Attach or reference applicable SOPs.

Field Sample Custody Procedures (sample collection, packaging, shipment, and delivery to laboratory):
A chain of custody form will be completed for each sample set. Transfer to the TestAmerica laboratory will be made by the environmental sampler or picked up by the laboratory courier. Shipping coolers will be sealed with custody tape. Each cooler will contain a temperature blank.

Laboratory Sample Custody Procedures (receipt of samples, archiving, disposal):
Upon receipt, coolers are examined for damage and general integrity. Once accepted, cooler contents will be examined; then, lined-up for comparison to the chain of custody. The temperature blank will be tested and volume will be compared to the analytical requirements. Samples will be logged in. All documentation will be recorded. Once accepted, samples are stored in a walk-in refrigerator. Separate refrigerators are used for VOCs. Samples are signed-out by analysts.

Sample Identification Procedures:
A unique identification number (see worksheet #18) is developed and logged in the field. All records and field description will refer to that number. Upon receipt in the laboratory, a unique laboratory number will be used to track internal laboratory analysis. The final report will refer to both identification numbers.

Chain-of-custody Procedures:
The chain of custody (as described in SOP E-SOP-5) is initiated by the on-site Environmental Sampler. Information includes a unique sample identification number, description, type of sample, time/date, location and test parameters. The Environmental Sampler signs-off on the form when custody is transferred. The laboratory accepts custody for analysis. A copy of the custody form is retained by the Environmental Sampler. The original form is retained in the report of analysis.

QAPP Worksheet #27 - QC Samples Table

Complete a separate worksheet for each sampling technique, analytical method/SOP, matrix, analytical group, and concentration level. If method/SOP QC acceptance limits exceed the measurement performance criteria, the data obtained may be unusable for making project decisions.

Matrix	Aqueous
Analytical Group	TAL Metals
Concentration Level	Low
Sampling SOP	E-SOP-4
Analytical Method / SOP Reference	200.8
Sampler's Name	Chris Basile
Field Sampling Organization	ECM
Analytical Organization	TestAmerica
Number of Sample Locations	6

QC Sample	Frequency / Number*	Method / SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
MS/MSD	*	Worksheet #12	Re-analyze	Laboratory QA/QC manager	Accuracy/ Precision	Worksheet #12
Field Blank	1	</=RL	Re-clean/test	Project Chemist	Accuracy/Bias	</=RL
Field Duplicate	-	-	-	-	Precision	-

[1]For samples with "J" values or results at or near reporting limits, evaluation of acceptance limits may be appropriate.

***** Though MS and MSD are not requested to be run specific to these samples, an MS and MSD will be analyzed in the batch of samples run at the laboratory. MS/MSD may be project samples as determined by the laboratory.

QAPP Worksheet #27 - QC Samples Table

Complete a separate worksheet for each sampling technique, analytical method/SOP, matrix, analytical group, and concentration level. If method/SOP QC acceptance limits exceed the measurement performance criteria, the data obtained may be unusable for making project decisions.

Matrix	Aqueous
Analytical Group	Mercury
Concentration Level	Low
Sampling SOP	E-SOP-4
Analytical Method / SOP Reference	245.1
Sampler's Name	Chris Basile
Field Sampling Organization	ECM
Analytical Organization	TestAmerica
Number of Sample Locations	1

QC Sample	Frequency / Number*	Method / SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
MS/MSD	*	70-130 % ±20%	Re-analyze	Laboratory QA/QC manager	Accuracy/ Precision	70-130 % ±20%
Field Blank	1	</=RL	Re-clean/test	Project Chemist	Accuracy/Bias	</=RL
Field Duplicate	-	-	-	-	Precision	-

[1]For samples with "J" values or results at or near reporting limits, evaluation of acceptance limits may be appropriate.

***** Though MS and MSD are not requested to be run specific to these samples, an MS and MSD will be analyzed in the batch of samples run at the laboratory. MS/MSD may be project samples as determined by the laboratory.

QAPP Worksheet #27 - QC Samples Table

Complete a separate worksheet for each sampling technique, analytical method/SOP, matrix, analytical group, and concentration level. If method/SOP QC acceptance limits exceed the measurement performance criteria, the data obtained may be unusable for making project decisions.

Matrix	Aqueous
Analytical Group	TCL Volatiles
Concentration Level	Low
Sampling SOP	E-SOP-4
Analytical Method / SOP Reference	624
Sampler's Name	Chris Basile
Field Sampling Organization	ECM
Analytical Organization	TestAmerica
Number of Sample Locations	19

QC Sample	Frequency / Number*	Method / SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
MS/MSD	*	Worksheet #12	Re-analyze	Laboratory QA/QC manager	Accuracy/ Precision	Worksheet #12
Field Blank	1	</=RL	Re-clean/test	Project Chemist	Accuracy/Bias	</=RL
Field Duplicate	-	-	-	-	Precision	-

[1]For samples with "J" values or results at or near reporting limits, evaluation of acceptance limits may be appropriate.

***** Though MS and MSD are not requested to be run specific to these samples, an MS and MSD will be analyzed in the batch of samples run at the laboratory. MS/MSD may be project samples as determined by the laboratory.

QAPP Worksheet #27 - QC Samples Table

Complete a separate worksheet for each sampling technique, analytical method/SOP, matrix, analytical group, and concentration level. If method/SOP QC acceptance limits exceed the measurement performance criteria, the data obtained may be unusable for making project decisions.

Matrix	Aqueous
Analytical Group	TCL BN
Concentration Level	Low
Sampling SOP	E-SOP-4
Analytical Method / SOP Reference	625
Sampler's Name	Chris Basile
Field Sampling Organization	ECM
Analytical Organization	TestAmerica
Number of Sample Locations	6

QC Sample	Frequency / Number*	Method / SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
MS/MSD	*	Worksheet #12	Re-analyze	Laboratory QA/QC manager	Accuracy/ Precision	Worksheet #12
Field Blank	1	</=RL	Re-clean/test	Project Chemist	Accuracy/Bias	</=RL
Field Duplicate	-	-	-	-	Precision	-

[1]For samples with "J" values or results at or near reporting limits, evaluation of acceptance limits may be appropriate.

***** Though MS and MSD are not requested to be run specific to these samples, an MS and MSD will be analyzed in the batch of samples run at the laboratory. MS/MSD may be project samples as determined by the laboratory.

QAPP Worksheet #28 - Project Documents and Records Table

Identify the documents and records that will be generated for all aspects of the project including, but not limited to, sample collection and field measurement, on-site and off-site analysis, and data assessment.

Sample Collection Documents and Records	On-Site Analysis Documents and Records	Off-Site Analysis Documents and Records	Data Assessment Documents and Records	Other
Field Daily Activity Log	QAPP - SOPs	Chain of Custody Forms	QAPP - SOPs	References included in QAPP
Chain of Custody Forms	Field Daily Activity Log	Sample Receipt Forms	Performance Reports	
Field Calibration Records	Field Calibration Records	Laboratory QA Manual	Data Reports Laboratory Certification & Inspection Reports	
Sample Labels		Analytical/Raw Data Logs	Communications Correspondence	
		Calibration Records	Data Verification Reports	
		Data Reports Laboratory Certification & Inspection Reports	Final Report	
		Performance Reports		
		Final Report		

QAPP Worksheet #29 - Analytical Services Table

Identify all laboratories or organizations that will provide analytical services for the project, including on-site screening, on-site definitive, and off-site laboratory analytical work. Group by matrix, analytical group, concentration, and sample location or ID number. If applicable, identify the subcontractor laboratories and backup laboratory or organization that will be used if the primary laboratory or organization cannot be used.

Matrix	Analytical Group	Concentration Level	Sample Locations/ ID Number	Analytical SOP	Data Package Turnaround Time	Laboratory / Organization (name and address, contact person and telephone number)	Backup Laboratory / Organization (name and address, contact person and telephone number)
Aqueous	TCL VOCs	Low	WS-18	624	21 Days	TestAmerica – Grace Chang 2	N/A
Aqueous	Dissolved Oxygen	NA	WS-18	E-SOP-3 Horiba	N/A	ECM, Inc. –Chris Basile 1	N/A
Aqueous	pH	N/A	WS-18	E-SOP-3 Horiba	N/A	ECM, Inc. –Chris Basile 1	N/A
Aqueous	Conductivity	NA	WS-18	E-SOP-3 Horiba	N/A	ECM, Inc. –Chris Basile 1	N/A
Aqueous	Temperature	N/A	WS-18	E-SOP-3 Horiba	N/A	ECM, Inc. –Chris Basile 1	N/A
Aqueous	ORP	N/A	WS-18	E-SOP-3 Horiba	N/A	ECM, Inc. –Chris Basile 1	

1 Chris Basile ECM, Inc. Hillsborough, NJ 08844
349 US Hwy 206. (908) 874-0990

2 Grace Chang Edison, NJ 08817
777 New Durham Road (732) 549-3900

QAPP Worksheet #30 - Planned Project Assessments Table

Identify the type, frequency, and responsible parties of planned assessment activities that will be performed for the project.

Assessment Type	**Frequency**	**Internal or External**	**Organization Performing Assessment**	**Person(s) Responsible for Performing Assessment** (title and organizational affiliation)	**Person(s) Responsible for Responding to Assessment Findings** (title and organizational affiliation)	**Person(s) Responsible for Identifying and Implementing Corrective Actions** (title and organizational affiliation)	**Person(s) Responsible for Monitoring Effectiveness of CA** (title and organizational affiliation)
QAPP Review & Discussion	1	I	ECM, Inc	Project Chemist	Project Chemist	Project Chemist Project Manager	Project Manager
Field Procedure Assessment	1	I	ECM, Inc	Project Manager	Environmental Sampler	Project Manager	Project Manager
Duplicates	-	-	-	-	-	-	-
MS/MSD	5%	E	TestAmerica	Chemist	Lab QA Mgr.	Dept. Supervisor	Lab QA Mgr.
Field Blanks	1	I	ECM, Inc	Environmental Sampler	Project Chemist	Environmental Sampler	Project Chemist
Laboratory Blanks	5%	E	TestAmerica	Chemist	Lab QA Mgr.	Dept. Supervisor	Lab QA Mgr.
LCS	5%	E	TestAmerica	Chemist	Lab QA Mgr.	Dept. Supervisor	Lab QA Mgr.
Data Review	All	I	ECM, Inc	Project Chemist	Project Manager	Project Chemist	Project Manager
Data Review	All	E	TestAmerica	Laboratory QA/QC Mgr.	Lab QA Mgr.	Lab QA Mgr.	Lab QA Mgr.
Data Verification	All	E	ECM, Inc	Project Chemist	Project Chemist	Project Chemist & Laboratory	Project Chemist
Method Review	As needed	I	TestAmerica	Laboratory QA/QC Mgr.	Lab QA Mgr.	Lab QA Mgr.	Lab QA Mgr.
Laboratory Audit	1/year	E	TestAmerica	State Office of Quality Assurance	Lab QA Mgr.	Lab QA Mgr.	Lab QA Mgr.

QAPP Worksheet #31 - Assessment Findings and Corrective Action Responses

For each type of assessment describe procedures for handling QAPP and project deviations encountered during the planned project assessments.

Assessment Type	Nature of Deficiencies Documentation	Individual(s) Notified of Findings (name, title, organization)	Timeframe of Notification	Nature of Corrective Action Response Documentation	Individual(s) Receiving Corrective Action Response (name, title, organization)	Timeframe for Response
QAPP Procedure Assessment	Incorrect Field Procedures	Environmental Sampler	Immediate	Follow Proper Procedures or Re-sample	Project Manager	Same Day
Field Reporting & Documentation	Improper Records/Reports	Environmental Sampler	1 Day	Revise Reporting Procedures	Project Manager	1 Day
Duplicates	-	-	-	-	-	-
Field Blanks	Outside Acceptable Range	Project Chemist	1 Day	Verbal Followed by Written	Project Chemist	3 Days
MS/MSD	Outside Acceptable Range	QA Mgr-Project Chemist	1 Day	Verbal Followed by Written	Project Chemist	3 Days
Laboratory Blanks	Outside Acceptable Range	QA Mgr-Project Chemist	1 Day	Verbal Followed by Written	Project Chemist	3 Days
LCS	Outside Acceptable Range	QA Mgr-Project Chemist	1 Day	Verbal Followed by Written	Project Chemist	3 Days
Data Verification	Flagged Data	QA Mgr-Project Chemist	5 Days	Verbal Followed by Written	Project Chemist	3 Days
Data Review	Outside Acceptable Range	QA Mgr-Project Chemist	1 Day	Verbal Followed by Written	Project Chemist	3 Days
Method Review	Update	QA Mgr-Project Chemist	7 Days	QAPP Amendment	Project Chemist	3 Days
Laboratory Audit	Compliance Issue	QA Mgr-NJDEP OQA	Various	Verbal Followed by Written	Project Chemist	3 Days

QAPP Worksheet #32 - QA Management Reports Table

Identify the frequency and type of planned QA Management Reports, the project delivery dates, the personnel responsible for report preparation, and the report recipients.

Type of Report	Frequency (daily, weekly monthly, quarterly, annually, etc.)	Projected Delivery Date(s)	Person(s) Responsible for Report Preparation (title and organizational affiliation)	Report Recipient(s) (title and organizational affiliation)
Field Activity Dail Logs	With Each Sample Event	December Annually	Environmental Sampler	Project Manager
Case Narrative from Analytical Report	With Each Data Package	December Annually	Laboratory Project Manager	Project Chemist
Data Verification Report	With Each Data Package	December Annually	Project Chemist	Project Manager
Data Usability Assessment Report	With Each Data Package	December Annually	Project Chemist	Project Manager
Laboratory Audit Report	Annual	When Scheduled	NYSDEC OQA	Laboratory Manager

QAPP Worksheet #33 - Verification Process Table

Describe the processes that will be followed to verify project data. Describe how each item will be verified, when the activity will occur, and what documentation is necessary, and identify the person responsible. *Internal* or *external* is in relation to the data generator.

Verification Input	Description	Internal / External	Responsible for Verification (name, organization)
Field log & chain of custody	All logs, chain of custody forms, and associated paperwork will be reviewed for completeness and verified to criteria in the QAPP	I	Project Chemist
Data Reports	Data review to include: comparison to DQO criteria, holding times, blanks, MS/MSD, duplicates, case narrative review, chain of custody, field criteria, and other criteria as appropriate to verify data appears to meet project quality objectives.	I	Project Manager
Data Verification Report	Data review to include: comparison to DQO criteria, holding times, blanks, MS/MSD, duplicates, case narrative review, chain of custody, field criteria, tuning, calibration, surrogates, and other criteria as appropriate to verify that data meets project quality objectives.	I	Project Chemist

QAPP Worksheet #34 - Data Verification

Describe the processes that will be followed to verify project data. Describe how each item will be verified, when the activity will occur, and what documentation is necessary and identify the person responsible.

Validation Input	Description	Responsible for Validation (name, organization)
Monitoring Wells	Data report review compared to the procedures performed by the laboratory including holding times, blank results, MS/MSD, field duplicates, calibration and surrogate review, and other criteria. Field performance review including field procedures and record keeping. Comparison of the resulting data to the performance criteria in the QAPP and the NJDEP air and water discharge equivalency permits for both field and analytical data. (Laboratory Completeness and Verification Form attached).	Project Chemist

QAPP Worksheet #35 - Verification Summary Table

Identify the matrices, analytical groups, and concentration levels that each entity performing verification will be responsible for, as well as criteria that will be used to validate those data.

Matrix	Analytical Group	Concentration Level	Verification Criteria	Data Validator (title and organizational affiliation)
Groundwater Wells	TCL VOCs	Low	Data review and verification from the laboratory field logs as described in WS# 12,15,18,20, & 35.	Project Chemist ECM, Inc.

QAPP Worksheet #36 - Measurement Performance Criteria

Data for the project are potentially subject to sampling and data reduction errors. QA objectives are established to control the sources of errors and quantify the errors whenever possible. QC procedures are designed to both increase sample data quality and help interpret discrepancies in the results. Quality assurance objectives are quantifiable and qualifiable parameters that are expressed in terms of precision, accuracy, representativeness, comparability, and completeness (collectively referred to as PARCC). The QA objectives established in this QAPP will be used for both work plan development and data quality review. The definitions and basis for assessing the PARCC parameters are discussed in this section. The criteria are inherent in the analytical laboratory's quality procedures. Formulas for the calculation of the statistical measurements associated with a PARCC evaluation are provided below:

Statistic	Symbol	Formula	Uses
Mean	$\overline{X}$	$\frac{\left(\sum_{i=1}^{n} x_i\right)}{n}$	Used to determine average value of measurements
Standard Deviation	S	$\left(\frac{\sum(x_i-\bar{x})^2}{n-1}\right)^{1/2}$	Used in calculating variation of measurements
Relative Standard Deviation	RSD	$(S/\overline{X})\times 100$	Used to assess precision for replicate results
Percent Difference	%D	$\frac{x_1-x_2}{x_1}\times 100$	Used to assess accuracy
Relative Percent Difference	RPD	$\left(\frac{(x_1-x_2)}{(x_1+x_2)/2}\right)\times 100$	Used to assess total and analytical precision of duplicate measurements
Percent Recovery	%R	$\left(\frac{^{x}meas}{^{x}true}\right)\times 100$	Used to assess accuracy and bias
Percent Recovery	%R	$\frac{\left(\text{value of spiked sample}\right)-\left(\text{value of unspiked sample}\right)}{\text{Value of added spike}}\times 100$	Used to assess matrix effects, accuracy, precision, and bias

X=observation (concentration)
n=number of observations

Precision
Precision is a measure of the agreement or repeatability of a set of replicate results obtained from duplicate analyses made under identical conditions. Two types of precision, analytical and total precision, may be assessed. Analytical precision is a measure of variability between two duplicate analyses. Evaluation of laboratory control samples (LCS) recoveries is a measure of analytical precision.

Total precision is a measurement of the overall variability of the sampling and analytical process. Analysis of field duplicate samples is a means to determine total precision. Matrix spike duplicates and field duplicates are analyzed to determine field and analytical precision. Precision for the duplicate samples may be calculated using the relative percent difference (RSD) between duplicate results. For replicate analysis, the relative standard deviation (RSD) may be used as a measurement of precision.

Fixed laboratory precision will be assessed by MS/MSD.

Accuracy
Accuracy is a measure of the agreement between an experimental determination and the true value of the parameters being measured. Analytical accuracy may be measured by comparing LCS recoveries to the established control limits. Surrogate spike recoveries may also be used to assess analytical accuracy. For inorganic analyses, each sample is spiked with a known reference material before analysis. Each approach provides a measure of the matrix effects on the analytical accuracy. Spike recovery is also given as percent recovery (%R).

Representativeness
Representativeness is a subjective parameter used to evaluate the efficacy of the sampling plan design. Representativeness is demonstrated by providing full descriptions of the sampling techniques and the rationale used for selecting sampling locations in the project scoping documents. Sampling design rationale is included in worksheet #17 of the QAPP. A quantitative measure of representativeness will be made through comparison of duplicate analyses.

Comparability
Comparability is a qualitative measure designed to express the comparable confidence of two data sets. Comparability is affected by variance in sample collection, handling techniques, sample matrix type, and analytical method.

Comparability in the field is dependent upon the proper design of the sampling program and by ensuring procedures in the QAPP is followed. Comparability in the laboratory is dependent upon the use of the analytical criteria outlined in the SOP's and by PE samples.

Comparability may be limited by the other factors of quality assurance including precision and accuracy. Data from one phase of an investigation can be compared to those of another when the same standard methods are used and data package deliverables are similar.

Completeness
Completeness is the percentage of measurements that are judged to be valid compared with the total number of measurements made on that analyte. Typically, this calculation is performed for each matrix, method, and analyte combination. The number of valid results divided by the total number of results for that matrix, method and analyte expresses completeness as a percentage. The completeness goal for the data is 100 percent; however, the minimum completeness level is set at 90 percent. All data must have a value; even if data are rejected. Rejected data may be used if sufficient documentation is available to justify its use. The primary objective is that completeness be suitable to address characterization for the DQO.

$$\% \text{ Completeness} = \frac{\text{number of valid results(non R-flagged)}}{\text{total number of reported results}} \times 100$$

Bias

Bias refers to the systematic or persistent distortion of a measurement process that causes errors in one direction (above or below the true value or mean). Bias may be affected by errors made in field or laboratory handling procedures. For example, procedural deviations in sample acquisition, incomplete homogenization prior to sub sampling, or incomplete extraction of contaminants from the matrix intensifies bias. Bias is a term that is related to but is not interchangeable with accuracy. Bias assessments are typically based upon the analysis of spiked reference materials or spiked samples (i.e., laboratory control sample [LCS], matrix spike [MS], matrix spike duplicate [MSD], surrogates). The sources of error contributing to the bias of a measurement can be difficult to determine for an entire sample collection/analysis activity. Sources of error may include the loss (or addition) of contaminants from the sampling and analysis process (i.e., sample handling, field cross contamination, improper sample preservation, sample manipulation during preparation and analysis), interferences present within the sample matrix, and measurement error (i.e., calibration error or drift). Bias values for the LCS represent quantitative limits beyond which data are unacceptable. Bias values are commonly expressed as percent recovery. Procedures have been written in the QAPP to minimize potential sources of bias. Adherence to the QAPP will ensure minimal bias effect.

Quantitation Limits

Worksheet #15 outlines the required MDL's and RL's for each analyte. Actual quantitation limits will be matrix specific; however, the quantitation limits for sample analyses are expected to be below the project action limits (PALs) in all but a few instances. For those instances an evaluation will be made relative to the use of the data for the DQO. In some instances, the laboratories may report results for the samples that have been quantitated down to the minimum detectable activity (MDA), method detection limits (MDLs) or instrument detection limits (IDLs). Quantitations reported using the MDL or IDL will be carefully evaluated during data validation to verify the reliability of these values.

Attachments

PROCEDURE TITLE: Site Access Procedure		PAGE: 1 OF 3
PROCEDURE #: SP 1	REVISION # 3	EFFECTIVE DATE: 1-04-07
APPROVED BY:	PUBLISHED BY: ECM, Inc.	

1.0 PURPOSE

This procedure establishes the minimum requirements for access to facility located at 50 Holt Drive, Stony Point, New York. This procedure was developed to ensure proper access to the site.

2.0 SCOPE

These requirements apply to EVONIK personnel and its subcontractors involved in on-site monitoring program activities at the site.

3.0 REFERENCES

RC-001 Evonik ESH Services N.A. Manual Section 4.4.6
SU-ESH-RC-010 Operational Control at Remedial Sites

4.0 DEFINITIONS

5.0 RESPONSIBILITIES

All personnel and subcontractors involved in on-site activities are responsible for the proper site access procedures. Additionally, ECM (the primary contractor) will ensure all its representatives who visit the site will be properly trained and have attended an RC 14401 orientation to ensure they possess the required knowledge regarding the Evonik ESH Services North America (ESH) RC 14001 System.

6.0 PROCEDURE

The procedure for proper site access is outlined below:

1. Obey all local and site traffic laws.

2. Subsequent to entering the site, proceed to east side of the existing building. Inspect the area of the monitoring well locations and observe any unusual conditions and record the following information on the Log.

    - Date and Time
    - Name of inspector
    - Weather Conditions
    - Site Conditions
    - Monitoring Well Conditions

4. If any of the above inspection observations relative to security indicate (i.e., security breach or well damage) notify the operation manager immediately. Upon instruction from the operation manager, investigate unsecured condition provide detail of appropriate corrective action.

7.0 GENERAL REQUIREMENTS

None

8.0 ATTACHMENTS

Field Activity Daily Log

9.0 RECORDS

Field Activity Daily Log

10.0 REVISION HISTORY

SECTION	DATE	REVISION
All	8/26/05	Rev# 1 – Initial Issue
All	9/1/06	Rev# 2 - Reorganization
3.0	1/4/07	Rev# 3 – Reference Title Changes
2.0, 3.0, 5.0	3/27/14	Rev# 4 - Reference Corporation Name Changes

STANDARD OPERATING PROCEDURE

Water-Level Measurements

I. Purpose and Scope

The purpose of this procedure is to provide a guideline for the measurement of the depth to groundwater in piezometers and monitoring wells, even where a second phase of floating liquid (e.g., gasoline) is encountered, and on staff gages in surface-water bodies. This SOP includes guidelines for discrete measurements of static water levels and does not cover the use of continuously recording loggers (see SOP *Use of Data Loggers and Pressure Transducers)*.

II. Equipment and Materials

- Electronic water-level meter (Solinst® or equivalent) with a minimum 100-foot tape; the tape should have graduations in increments of 0.01 feet or less
- Interface probe (Solinst® Model 122 Interface Meter or equivalent)

III. Procedures and Guidelines

Verify that the unit is turned on and functioning properly. Slowly lower the probe on its cable into the piezometer or well until the probe just contacts the water surface; the unit will respond with a tone or light signal. Note the depth from a reference point indicated on the piezometer or well riser. Typically this is the top of the protective casing. If no reference is clearly visible, measure the depth to water from the northern edge of the riser. If access to the top of the riser is difficult, sight across the top of the locking casing adjacent to the measuring point, recording the position of the cable when the probe is at the water surface.

Measure the distance from this point to the closest interval marker on the tape, and record the water level reading in the logbook. Water levels will be measured to the nearest 0.01-foot. Also measure and record the three following readings: (1) the depth of the piezometer or well; (2) the distance from the reference point to the top of the protective; and (3) the distance to the surface of the concrete pad or to ground. The depth of the piezometer or well may be measured using the water-level probe with the instrument turned off.

Free product light or dense nonaqueous phase liquid may be present in the piezometer or well. If the presence of free product is suspected, the thickness of the product should be determined using appropriate equipment (e.g., Solinst® Model 122 Interface Meter). The depth to water also is determined with this equipment and the water-level meter should not be used in the piezometer or well as long as product is present. Typically, a constant sound is emitted from the device when free product is

encountered and an alternating on/off beep sound is emitted when water is encountered.

The apparent elevation of the water level in the well or piezometer is determined by measuring both the apparent depth to water and the thickness of free product. The corrected water-level elevation is calculated by the following equation:

$$WL_c = Wl_a + (\text{Free-product thickness} \times 0.80)$$

Where WL_c = Corrected water-level elevation

Wl_a = Apparent water-level elevation

0.80 = Average value for the density of petroleum hydrocarbon products.

If free product is detected on the surface of the water in the piezometer or well, the value of sampling should be reconsidered because of the potential for contaminating the sampling equipment.

Staff gages will be installed in some surface-water bodies. These facilities typically are constructed by attaching a calibrated, marked staff gage to a wood or metal post, driving the post into the bottom of the surface-water body, and surveying the elevation of the top of the post to a resolution or 0.01-foot. The elevation of the water in the surface-water body then can be determined by reading off the distance the water level is from the top of the post. A shield or other protection may be needed to calm the fluctuations in water level if the gage is installed at a location exposed to wind.

IV. Attachments

None.

V. Key Checks

Before each use, verify that the battery is charged by pressing the test button on the water-level meter. Verify that the unit is operating correctly by testing the probe in distilled or de-ionized water. Leave the unit turned off when not in use.

ECM

HORIBA U-22 MULTI-PARAMETER METER CALIBRATION & USE

APPROVED: _____ DATE: OCTOBER 30, 2009
Thomas Grenci

Summary

The direct read water-quality indicator parameters that are monitored utilizing the Horiba U-22 multi-parameter water quality meter are pH, ORP/EH, dissolved oxygen (DO), turbidity, specific conductance, and temperature. The method presented below shall be utilized to calibrate the U-22 meter daily prior to performing the field measurements. Field calibration procedures summarized below should be performed on the instrument on a daily-use basis. For rental meters, calibration by the equipment company is allowed providing it meets the instruction manual required procedures and a calibration form is included with the meter.

The meter also requires ECM calibration to assure that calibration is correct (in accordance with N.J.A.C. 7:18) by analyzing a series of standards and knowns before each usage. A correction factor, as needed, will be applied to each parameter. In addition to the daily field calibrations, a pH check must be done every 3 hours while the instrument is in use.

Parameters & Specifications

Parameter	Range of Measurement	Accuracy
pH	0 to 14 pH units	+/- 0.1 pH units
Specific Conductance	0 to 9.99 S/m	+/- 1% full scale
Turbidity	0 to 800 NTU	+/- 5% full scale
Dissolved Oxygen	0 to 19.99 mg/L	+/- 0.2 mg/L
Temperature	0 to 55 º C	+/- 1.0 º C
ORP	-1999 to +1999 mV	+/- 15 mV
Salinity	0 to 4%	+/- 0.3%

Reagents

- pH Buffer Solutions: pH 4, 7, and 10, prepare according to manufacturer's instructions. Discard at the first sign of bacterial growth.
- Standard potassium chloride solution, KCl, 0.01000N: Dissolve 745.6 mg anhydrous KCl in conductivity water and dilute to 1,000 mL at 25°C. This solution will have a specific

conductance of 1,413 umhos/cm or 0.141 S/m or 1.413 mS/cm at 25°C. **All reagents should be prepared in laboratory prior to field analysis.**

- 40 NTU turbidity standard: Dilute 2.5 mL of 4000 NTU stock solution (shake well immediately before use) to 250 mL. Prepare daily.
- 400 NTU turbidity standard: Dilute 25 mL of 4000 NTU stock solution (shake well immediately before use) to 250 mL. Prepare daily.
- Deionized Water

Laboratory Calibration

Laboratory calibration must be done in the laboratory prior to field usage. The calibration data will be recorded on the Forms titled Multimeter Laboratory Calibration Record, and Annual Conductivity Meter Cell Constant and Meter calibration. Upon completion, this form will be inserted into the binder titled Horiba Calibration Records.

Temperature

1. Prior to calibration, chill a 250mL beaker of water to about 10°C. Leave another 250mL beaker of water at room temperature.
2. Using the NIST thermometer and Horiba U-22, simultaneously read the temperature on the chilled water. Record both readings on the calibration form.
3. Using the NIST thermometer and Horiba U-22, simultaneously read the temperature on the room temperature water. Record both readings on the calibration form.
4. Calculate the correction factor from the chilled water reading. The correction factor is NIST Thermometer reading – Horiba reading.
5. This needs to be done quarterly.

Conductivity

1. The cell constant for conductivity must be analyzed annually. This will need to be done during laboratory calibration. **If the same meter (check serial number) is used in the same year, the cell constant does not need to be obtained if it is within one year of the initial cell constant calculation.**
2. Fill 4 250 mL beakers with 0.01 M KCl solution.
3. Read each solution with the Horiba U-22. Record these readings on the Annual Conductivity Meter Cell Constant and Meter Calibration form, Readings #1-#4.
4. Record temperature.
5. Calculate the cell constant:
   Cell constant, C =[(0.001413)(RKCl)*1 + 0.0191(temp,°C-25)]
   Where:
   RKCL, measured resistance of 0.01M KCl, ohms = (1/Reading #4, µmhos)*1,000,000
   Reading #4 is the fourth reading of 0.01M KCl

The above calculations and a table for the KCl values can be seen on the Annual Cell Constant and Meter Calibration Form.

Record the cell constant value.

6. An initial 5 point calibration curve must be analyzed once for each meter.
7. Prepare a series of 0.0001M, 0.001M, 0.01M, 0.1M, and 1.0M KCl standards.
8. Analyze the standards with the Horiba U-22. Record the results on the Annual Conductivity Meter Cell Constant and Meter Calibration form.
9. A check standard must be analyzed with each laboratory calibration, and daily with field use. Read a 0.01 M KCl standard with the Horiba U-22. Record this reading and calculate a correction factor if required. The correction factor is Theoretical value S/m – Horiba U22 reading, S/m. If the 0.01 M KCl reading is within ± 10% of true value, a correction factor is not required.

Dissolved Oxygen

1. Zero Calibration Solution-Dissolve 50 g of sodium sulfite to 1 L of de-ionized water.
2. Zero Calibration-Wash the sensor three times with de-ionized water. Fill a beaker with the zero calibration solution and immerse the sensor into the solution.
3. Press the **CAL** key twice in the DO measurement mode. When the instrument enters the Manual Zero Calibration mode, **MAN**, **ZERO**, and **CAL** light up.
4. When the display has stabilized, use the **UP/DOWN** keys to set the value to 0.0.
5. Press the **ENT** key. This starts the manual zero calibration. The measured value is displayed during calibration, and **DATA IN** blinks until the indicated value stabilizes.
6. Wash the sensor with de-ionized water.
7. After zero calibration, press the **CAL** key to make sure that the instrument is in the Manual Span Calibration mode: **MAN**, **SPAN**, and **CAL** light up.
8. Aerate 1 L de-ionized water.
9. Using 300 mL of the aerated water, analyze dissolved oxygen following the Winkler Titration SOP, record result.
10. Using the Horiba U-22, analyze for Dissolved Oxygen by immersing the sensor into the beaker with a portion of the aerated water.
11. After the display has stabilized, use the **UP/DOWN** keys to set value to the Winkler Titration result.
12. Press the ENT key, this starts the manual span calibration. The measured value is displayed during calibration and **DATA IN** blinks until the indicated value stabilizes.
13. Record result on the Multimeter Laboratory Calibration Record. (If result is not equivalent to the Winkler titration result, a correction factor should be applied.)
14. A Winkler titration needs to be done weekly or when in use, whichever is less frequent.

When the above is complete, the form titled Multimeter Laboratory Calibration Record will be completed. Transcribe correction factors to form titled Multimeter Field Calibration Form. This form (2 pages) will accompany the instrument into the field. Field personnel will apply the necessary correction factors to the instrument readings. Field Personnel will bring these forms back to the laboratory after field usage, where they will be inserted into the Horiba Calibration Record binder.

Field-calibration

Prior to each day of use, clean the probe and flow-through cell (if being used) using deionized water and calibrate the Horiba U-22 Meter. Calibration procedure:

1. Make sure the sensor probe is connected to the meter.
2. Press the **Power** key to turn on the instrument.

pH – Manual pH calibration

1. Zero Calibration – Wash the sensor two or three times using deionized water, then pour some pH7 standard solution into the calibration beaker, and immerse the sensor in it.
2. Press the **CAL** key twice in the pH measurement mode. When the instrument enters the Manual Zero Calibration Mode, **MAN**, **ZERO**, and **CAL** light up.
3. The measurement temperature is displayed below the pH reading. Use the UP/DOWN keys to input the value for the pH7 standard solution at the measurement temperature (this value can be found on page 98 of the Horiba meter's instruction manual.
4. Press the **ENT** key. This starts the manual zero calibration. The measured value is displayed during calibration and **DATA IN** blinks until the indicated value stabilizes. When the indicated value stabilizes, **DATA IN** lights up and the calibration finishes.
5. Press the **ENT** key to establish the calibration.
6. Record the final pH7 calibration value on the Multimeter Field Calibration Form.
7. Span Calibration - Wash the sensor two or three times using deionized water, then pour some pH4 standard solution in the calibration beaker, and immerse the sensor in it.
8. After the zero calibration of the pH sensor, press the **CAL** key to make sure that the instrument is in the Manual Span Calibration mode. **MAN**, **ZERO**, and **CAL** will be lit up.
9. The measurement temperature is displayed below the pH reading. Use the UP/DOWN keys to input the value for the pH4 standard solution at the measurement temperature (this value can be found on page 98 of the Horiba meter's instruction manual.

10. Press the **ENT** key. This starts the manual span calibration. The measured value is displayed during calibration and **DATA IN** blinks until the indicated value stabilizes. When the indicated value stabilizes, **DATA IN** lights up and the calibration finishes.
11. Press the **ENT** key to establish the calibration.
12. Record the final pH4 calibration value on the Multimeter Field Calibration Form.
13. Repeat steps 7 – 13 for the pH10 buffer.
14. Once the zero calibration and the span calibration are complete, check the calibration using the pH7 buffer. This value must be ± 0.1 pH units of the expected value. If it is not, the pH calibration procedure must be done again. Record the pH7 calibration check value on the Multimeter Field Calibration Form.

NOTE: **The pH must be checked every 3 hours, and the value must be ±0.2 pH units of expected value. If it is not, the pH calibration procedure must be done again. Record these pH checks on the Multimeter Field Calibration Form.**

Conductivity

1. A calibration check standard must be analyzed daily. Read a 0.01M KCl standard with the Horiba U-22. Apply the cell constant and correction factor (if applicable) from the laboratory calibration to the reading. The check standard value must be ± 10% of the expected value.
2. Record this value on the Multimeter Field Calibration Form.

Turbidity

1. Zero Calibration - Wash the sensor two or three times using deionized water, then place some deionized water into the calibration beaker, and immerse the sensor in it.
2. Press the **CAL** key twice in turbidity measurement mode.
3. When the instrument enters the manual zero calibration mode, **MAN**, **ZERO**, and **CAL** light up.
4. Use the UP/DOWN keys to set the value to 0.0.
5. Press the **ENT** key. The manual zero calibration is started. The measured value is displayed during calibration and **DATA IN** blinks until the indicated value stabilizes. When the indicated value stabilizes, **DATA IN** lights up and the calibration finishes.
6. Press the **ENT** key to establish the calibration.
7. Record this value on the Multimeter Field Calibration Form.
8. Span Calibration - Wash the sensor two or three times using deionized water, then pour a 400 NTU turbidity standard into the calibration beaker, and immerse the sensor in it.

9. After the zero calibration of the pH sensor, press the **CAL** key to make sure that the instrument is in the Manual Span Calibration mode. **MAN**, **ZERO**, and **CAL** will be lit up.
10. Use the UP/DOWN keys to set the value to 400.0.
11. Press the **ENT** key. The manual zero calibration is started. The measured value is displayed during calibration and **DATA IN** blinks until the indicated value stabilizes. When the indicated value stabilizes, **DATA IN** lights up and the calibration finishes.
12. Press the **ENT** key to establish the calibration.
13. Record this value on the Multimeter Field Calibration Form.
14. Repeat steps 8 – 13 for the 40 NTU turbidity standard.

NOTE: **Based on field observations and if the samples' readings are not exceeding 100 NTU, the 400 NTU standard does not need to be used.**

Measurement

1. Press the **MEAS** key to return to the Measurement mode.
2. Record the readings in your field notes for all of the parameters of concern (pH, ORP/EH, DO, turbidity, specific conductance, and temperature). Use the **MEAS** button to scroll from parameter to parameter to collect readings. Use care when recording conductivity readings, as instrument may switch units to compensate for high/low readings.
3. Turn the power to the instrument off by pressing the **Power** key.
4. Use DI water to completely wash the sample from the sensor and wipe or shake off the water droplets.
5. Pour distilled water into the calibration beaker to the marked line. Then, attach the calibration beaker to the sensor probe, cover the connector with the rubber cap, and store the probe assembly in the carrying case.

NOTE: Correction factors from Laboratory Calibration MUST be applied to the obtained measurements. Upon completion of field usage, the Field Calibration Forms must be returned to the Laboratory.

Preventative Maintenance Considerations

- Clean probe with deionized water when done
- Refer to instruction manual for recommended maintenance
- Check batteries, and have replacements on hand
- Due to the importance of obtaining these parameters, the field team should have a spare unit readily available or accessible in case of equipment malfunction.
- Check expiration dates of all reagents prior to going into the field.

Multimeter Laboratory Calibration Record (Form 1/3)

Date/Time _____
Analyst _____
Meter/Serial # _____

Parameter	Original Calibration Reading	Theoretical value	Calibration Value	Instrument Reading	Correction Factor
pH (units)		4.0	7.00 4.00 10.00		
Temperature (°C)		N/A			
Conductivity (S/m)		0.141	1413 µmhos/cm		
DO (mg/L)		N/A			
Turbidity (NTU)		0.0			

Correction Factors:
Temperature =
Conductivity =
Turbidity =
DO =

Multimeter Field Calibration Record (Form 2/3)

Date _____
Project #/Event _____
Meter/Serial # _____

FIELD PERSONNEL: PLEASE APPLY THE FOLLOWING CORRECTION FACTORS TO READINGS

Temperature _____ Turbidity _____
Conductivity _____ Dissolved O2 _____

Field Calibration
Date/Time/Analyst

	pH (units)	Temp (°C)	Conductivity (S/m)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
Theoretical Value	4.0	N/A	0.141	N/A	0.0
After Calibration Value					

Date/Time/Analyst

	pH (units)	Temp (°C)	Conductivity (S/m)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
Theoretical Value	4.0	N/A	0.141	N/A	0.0
After Calibration Value					

Date/Time/Analyst

	pH (units)	Temp (°C)	Conductivity (S/m)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
Theoretical Value	4.0	N/A	0.141	N/A	0.0
After Calibration Value					

Date/Time/Analyst

	pH (units)	Temp (°C)	Conductivity (S/m)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
Theoretical Value	4.0	N/A	0.141	N/A	0.0
After Calibration Value					

Multimeter Field Calibration Record (Form 3/3)

Date _____
Project #/Event _____
Meter/Serial # _____

Date/Time/Analyst

	pH (units)	Temp (°C)	Conductivity (S/m)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
Theoretical Value	4.0	N/A	0.141	N/A	0.0
After Calibration Value					

3 Hour pH check
If value is not within ± 0.2 units of original value, instrument MUST be recalibrated

Date/Time	Initial	Buffer used	Buffer Reading	Action Taken/Comments

PROCEDURE TITLE: Ground Water Monitoring Well Sampling		PAGE: 1 OF 2
PROCEDURE #: SP 4	REVISION # 3	EFFECTIVE DATE: 1-04-07
APPROVED BY:	PUBLISHED BY: ECM, Inc.	

1.0 PURPOSE

Ground water monitoring at the site consists of the collection of ground water samples from select monitoring wells in accordance with the NYSDEC-approved ground water monitoring program for the site. The frequency, number of wells, and analytical parameters are subject to change based upon NYSDEC requirements. This procedure presents general guidelines for the proper collection of groundwater samples from the monitoring wells at the site.

2.0 SCOPE

These requirements apply to EVONIK personnel and its subcontractors involved in ground water monitoring activities at the site.

3.0 REFERENCES

RC-001 Evonik ESH Services N.A. Manual Section 4.4.6
SU-ESH-RC-010 Operational Control at Remedial Sites
Site Access Procedure BB-1
Equipment Calibration Procedure BB-6

4.0 DEFINITIONS

EPA – Environmental Protection Agency
GWTS – Ground Water Treatment System
NYSDEC – New York State Department of Environmental Conservation

5.0 RESPONSIBILITIES

All operations personnel involved in the collection of samples from the ground water monitoring wells at the site are responsible to implement the proper sample collection procedures.

6.0 PROCEDURE

Per the direction of the NYSDEC case management team, ground water sampling activities are conducted using the NYSDEC *Field Sampling Procedures Manual*. The following procedures outline the proper collection of ground water quality data.

NYSDEC *Field Sampling Procedures Manual*:

- Upon arrival at the well, the general condition and security of the well are observed and documented on the monitoring well field inspection log.
- The well is unlocked, opened, and allowed to vent.

- A reading of potential volatile gases in the well is taken with a PID upon opening of the well cap. The results are recorded in the Groundwater Sampling Field Data Sheets.
- The static water level is measured from the top of the inner casing with an electronic water level meter.
- The volume of the standing water column within the well is calculated and a volume equating to three to five standing water columns is purged from the well using a decontaminated, submersible pump.
- Wells with slow recharge rates are purged at a rate of approximately one half gallon per minute to avoid cascading in the well, in accordance with the
- Field measurements of the purge water are recorded for temperature, specific conductance, dissolved oxygen, and pH, prior to, during, and after purging.
- Upon collection, the samples are immediately transferred into laboratory-supplied bottles, sealed, appropriately labeled, and placed in an iced cooler for transport to the laboratory under chain of custody documentation.

7.0 GENERAL REQUIREMENTS

None

8.0 ATTACHMENTS

Monitoring Well Field Inspection Log
Groundwater Sampling Field Data Sheet

9.0 RECORDS

Monitoring Well Field Inspection Log
Groundwater Sampling Field Data Sheet

10.0 REVISION HISTORY

SECTION	DATE	REVISION
All	8/26/05	Rev# 1 – Initial Issue
All	9/1/06	Rev# 2 - Reorganization
3.0	1/4/07	Rev# 3 – Reference Title Changes
2.0, 3.0	3/27/14	Rev# 4 – Reference Corporation Name Changes

STANDARD OPERATING PROCEDURE

Chain-of-Custody

I. Purpose

The purpose of this SOP is to provide information on chain-of-custody procedures for sample transfer documentation.

II. Scope

This procedure describes the steps necessary for transferring samples through the use of Chain-of-Custody Records. A Chain-of-Custody Record is required, without exception, for the tracking and recording of samples collected for on-site or off-site compliance analysis (chemical or geotechnical) during program activities. Use of the Chain-of-Custody Record Form creates an accurate written record that can be used to trace the possession and handling of the sample from the moment of its collection through analysis. This procedure identifies the necessary custody records and describes their completion. This procedure does not take precedence over region specific or site-specific requirements for chain-of-custody.

III. Definitions

Chain-of-Custody Record Form - A Chain-of-Custody Record Form is a printed two-part form that accompanies a sample or group of samples as custody of the sample(s) is transferred from one custodian to another custodian. One copy of the form must be retained in the project file.

Custodian - The person responsible for the custody of samples at a particular time, until custody is transferred to another person (and so documented), who then becomes custodian. A sample is under one's custody if:

- It is in one's actual possession.
- It is in one's view, after being in one's physical possession.
- It was in one's physical possession and then he/she locked it up to prevent tampering.
- It is in a designated and identified secure area.

Sample - A sample is physical evidence collected from a facility or the environment, which is representative of conditions at the point and time that it was collected.

IV. Responsibilities

Project Manager - The Project Manager is responsible for ensuring that project-specific plans are in accordance with these procedures, where applicable, or that other, approved procedures are developed. The Project Manager is responsible for development of documentation of procedures which deviate if any, from those presented herein. The Project Manager is responsible for ensuring that chain-of-custody procedures are implemented. The Project Manager also is responsible for determining that custody procedures have been met by the analytical laboratory.

Field Team Leader - The Field Team Leader is responsible for determining that chain-of-custody procedures are implemented up to and including release to the shipper or laboratory. It is the responsibility of the Field Team Leader to ensure that these procedures are implemented in the field and to ensure that personnel performing sampling activities have been briefed and trained to execute these procedures.

Sample Personnel - It is the responsibility of the field sampling personnel to initiate chain-of-custody procedures, and maintain custody of samples until they are relinquished to another custodian, the sample shipper, or to a common carrier. In some instances, for smaller projects, the roles of each position may be held by the same person.

V. Procedures

The term "chain-of-custody" refers to procedures which ensure that evidence presented in a court of law is valid. The chain-of-custody procedures track the evidence from the time and place it is first obtained to the courtroom, as well as providing security for the evidence as it is moved and/or passed from the custody of one individual to another.

Chain-of-custody procedures, recordkeeping, and documentation are an important part of the management control of samples. Regulatory agencies must be able to provide the chain-of-possession and custody of any samples that are offered for evidence, or that form the basis of analytical test results introduced as evidence. Written procedures must be available and followed whenever evidence samples are collected, transferred, stored, analyzed, or destroyed.

A. Sample Identification

The method of identification of a sample depends on the type of measurement or analysis performed. When in-situ measurements are made, the data are recorded directly in bound logbooks or other field data records with identifying information.

Information which shall be recorded in the field logbook, when in-situ measurements or samples for laboratory analysis are collected, includes:

- Field Sampler(s);
- Project Number Identification;
- Project Sample Number;
- Sample location or sampling station number;
- Date and time of sample collection and/or measurement;
- Field observations;
- Equipment used to collect samples and measurements; and,
- Calibration data for equipment used.

Measurements and observations shall be recorded using waterproof ink.

A. Sample Label

Samples, other than in-situ measurements, are removed and transported from the sample location to a laboratory or other location for analysis. Before removal, however, a sample is often divided into portions, depending upon the analyses to be performed. Each portion is preserved in accordance with the Sampling and Analysis Plan. Each sample container is identified by a sample label (see example - Attachment A). Sample labels are provided, along with sample containers, by the analytical laboratory. The information recorded on the sample label includes:

- Project Number/identification.
- Station Location - The unique sample number identifying this sample.
- Date - A six-digit number indicating the day, month, and year of sample collection (e.g., 12/21/02).
- Time - A four-digit number indicating the 24-hour time of collection (for example: 0954 is 9:54 a.m., and 1629 is 4:29 p.m.).
- Medium - Water, soil, sediment, sludge, waste, etc.
- Sample Type - Grab or composite.
- Preservation - Type and quantity of preservation added.
- Analysis - VOA, BNAs, PCBs, pesticides, metals, cyanide, other.
- Sampled By - Printed name of the sampler.
- Remarks - Any pertinent additional information.

Using only the work assignment number of the sample label maintains the anonymity of sites. This may be necessary, even to the extent of preventing the laboratory performing the analysis from knowing the identify of the site (e.g., if the laboratory is part of an organization that has performed previous work on the site).

A. Chain-of-Custody Procedures

After collection, separation, identification, and preservation, the sample is maintained under chain-of-custody procedures until it is in the custody of the analytical laboratory and has been stored or disposed.

B. Field Custody Procedures

- Samples are collected as described in the site Sampling and Analysis Plan. Care must be taken to record precisely the sample location and to ensure that the sample number on the label matches the Chain-of-Custody Record exactly.

- The person undertaking the actual sampling in the field is responsible for the care and custody of the samples collected until they are properly transferred or dispatched.

- When photographs are taken of the sampling as part of the documentation procedure, the name of the photographer, date, time, site location, and site description are entered sequentially in the site logbook as photos are taken. Once developed, the photographic prints shall be serially numbered, corresponding to the logbook descriptions; photographs will be stored in the project files. It is good practice to identify sample locations in photographs by including an easily read sign with the appropriate sample/location number.

- Sample labels shall be completed for each sample, using waterproof ink unless prohibited by weather conditions, e.g., a logbook notation would explain that a pencil was used to fill out the sample label if the pen would not function in freezing weather.

A. Transfer of Custody and Shipment

Samples are accompanied by a Chain-of-Custody Record Form. A Chain-of-Custody Record Form example is shown in Attachment B. When transferring the possession of samples, the individuals relinquishing and receiving will sign, date, and note the time on the Record. This Record documents sample custody transfer from the sampler, often through another person, to the analyst in the laboratory. The Chain-of-Custody Record is filled out as given below.

- Enter header information (Project number, samplers, and project name).

- Enter sample specific information (sample number, media, sample analysis required and analytical method grab or composite, number and type of sample containers, and date/time sample was collected).

- Sign, date, and enter the time under "Relinquished by" entry.

- Have the person receiving the sample sign the "Received by" entry. If shipping samples by a common carrier, print the carrier to be used in this space (i.e., Federal Express).

- If a carrier is used, enter the airbill number under "Remarks," in the bottom right corner;

- Place the original (top, signed copy) of the Chain-of-Custody Record Form in a plastic zipper-type bag or other appropriate sample shipping package. Retain the copy with field records.

- Sign and date the custody seal, a small and narrow white paper or tape label with black lettering and an adhesive backing. Attachment C is an example of a custody seal. The custody seal is part of the chain-of-custody process and is used to prevent tampering with samples after they have been collected in the field. Custody seals shall be provided by the analytical laboratory.

- Place the seal across the shipping container opening so that it would be broken if the container were to be opened.

- Complete other carrier-required shipping papers.

The custody record is completed using waterproof ink. Any corrections are made by drawing a line through and initialing and dating the change, then entering the correct information. Erasures are not permitted.

Common carriers will usually not accept responsibility for handling Chain-of-Custody Record Forms; this necessitates packing the record in the shipping container (enclosed with other documentation in a plastic zipper-type bag). As long as custody forms are sealed inside the shipping container and the custody seals are intact, commercial carriers are not required to sign the custody form.

The laboratory representative who accepts the incoming sample shipment signs and dates the Chain-of-Custody Record, completing the sample transfer process. It is then the laboratory's responsibility to maintain internal logbooks and custody records throughout sample preparation and analysis.

VI. Quality Assurance Records

Once samples have been packaged and shipped, the Chain-of-Custody copy and airbill receipt become part of the quality assurance record.

VII. Attachments

Sample Label
Chain of Custody Form
Custody Seal

VIII. References

USEPA. *User's Guide to the Contract Laboratory Program*. Office of Emergency and Remedial Response, Washington, D.C. (EPA/540/P-91/002), January 1991.

Attachment A

Example Sample Label

ECM • 349 Route 206 • Hillsborough, NJ 08844 • 908-874-0990

Job # _____ Sample # _____

Project/Client Name _____

Sample ID _____

Initials _____ Date _____ Time _____

No Preservative ❑ Sodium Hydroxide ❑
Sulfuric Acid ❑ Sodium Thiosulfate ❑
Nitric Acid ❑ Acetone Rinsed ❑
Hydrochloric Acid ❑ Other ❑ _____

Test Parameters _____

ECM • 349 Route 206 • Hillsborough, NJ 08844 • 908-874-0990

Job # _____ Sample # _____

Project/Client Name _____

Sample ID _____

Initials _____ Date _____ Time _____

No Preservative ❑ Sodium Hydroxide ❑
Sulfuric Acid ❑ Sodium Thiosulfate ❑
Nitric Acid ❑ Acetone Rinsed ❑
Hydrochloric Acid ❑ Other ❑ _____

Test Parameters _____

ECM • 349 Route 206 • Hillsborough, NJ 08844 • 908-874-0990

Job # _____ Sample # _____

Project/Client Name _____

Sample ID _____

Initials _____ Date _____ Time _____

No Preservative ❑ Sodium Hydroxide ❑
Sulfuric Acid ❑ Sodium Thiosulfate ❑
Nitric Acid ❑ Acetone Rinsed ❑
Hydrochloric Acid ❑ Other ❑ _____

Test Parameters _____

Attachment B

Example Chain-of-Custody Record

STL EDISON

777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

CHAIN OF CUSTODY / ANALYSIS REQUEST

PAGE ___ OF ___

Name (for report and invoice)	Samplers Name (Printed)	Site/Project Identification
Company	P.O. #	State (Location of site): NJ: ☐ NY: ☐ Other:
		Regulatory Program:
Address	Analysis Turnaround Time Standard ☐ Rush Charges Authorized For: 2 Week ☐ 1 Week ☐ Other ☐ _____	ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)
City State		LAB USE ONLY Project No: _____ Job No: _____
Phone Fax		

Sample Identification	Date	Time	Matrix	No. of Cont.												Sample Numbers
Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH					Soil:											
6 = Other _____, 7 = Other _____					Water:											

Special Instructions _____ Water Metals Filtered (Yes/No)? _____

Relinquished by	Company	Date / Time	Received by	Company
1)		/	1)	
Relinquished by	Company	Date / Time	Received by	Company
2)		/	2)	
Relinquished by	Company	Date / Time	Received by	Company
3)		/	3)	
Relinquished by	Company	Date / Time	Received by	Company
4)		/	4)	

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).

Attachment C

Example Custody Seal


LVLI
LIONVILLE LABORATORY INC.
CUSTODY SEAL
Date
Signature
LVLI
LIONVILLE LABORATORY INC.
CUSTODY SEAL
Date
Signature
LVLI
LIONVILLE LABORATORY INC.
CUSTODY SEAL
Date
Signature
LVLI
LIONVILLE LABORATORY INC.
CUSTODY SEAL
Date
Signature
LVLI
LIONVILLE LABORATORY INC.
CUSTODY SEAL
Date
Signature
LVLI
LIONVILLE LABORATORY INC.
CUSTODY SEAL
Date
Signature

PROCEDURE TITLE: Equipment Calibration		PAGE: 1 OF 2
PROCEDURE #: SP 6	REVISION # 3	EFFECTIVE DATE: 1-04-07
APPROVED BY:	PUBLISHED BY: ECM, Inc.	

1.0 PURPOSE

This SOP outlines the requirements for calibration of field equipment utilized during the long term ground water monitoring program at Stony Point. Equipment requiring calibration at the Stony Point site is limited to field screening meters. Field calibration is required for meters recording field parameters, specifically, the following meters require calibration prior to use: pH meter, dissolved oxygen (DO) meter, photo-ionization detection instrument (PID), Horiba U-22 multi-parameter water quality meter (U-22), and the specific conductance (conductivity) meter. Calibration of these meters is performed in accordance with the manufacturers' specifications and is essential to ensuring accurate field data collection.

2.0 SCOPE

These requirements apply to EVONIK personnel and its subcontractors involved in field data collection activities at the site.

3.0 REFERENCES

RC-001 Evonik ESH Services N.A. Manual Section 4.4.6
SU-ESH-RC-010 Operational Control at Remedial Sites
SU-ESH-RC-008 Equipment Calibration

4.0 DEFINITIONS

DO – Dissolved Oxygen
GWTS – Ground Water Treatment System
PID – Photo-ionization Detection Instrument

5.0 RESPONSIBILITIES

All operations personnel involved in field data collection that requires utilizing one of the aforementioned instruments are responsible for the proper equipment calibration procedures.

6.0 PROCEDURE

The procedures for proper field equipment calibration are outlined below.

1. Calibration of field meters is conducted daily during the monitoring program prior to use.
2. The calibration of each meter is documented in the field activity daily logs and the instrument log book that accompanies each individual instrument.
3. Follow manufactures specification for equipment calibration.

4. During the equipment calibration record the following information on the field activity daily logs:

    - Date and time of calibration
    - Type of standardized calibration reagent liquid or gas and calibration range
    - Record of calibration result
    - Adjustment to the instrument as a result of the calibration procedure

7.0 GENERAL REQUIREMENTS

None

8.0 ATTACHMENTS

pH Meter Calibration Procedures

YSI Model 55 Dissolved Oxygen (D.O.) Meter Calibration Procedures

Mini-Rae Photo-Ionization Detector (PID) calibration

Specific Conductance Meter Calibration Procedures

Horiba U-22 Multi-Parameter Water Quality Monitoring Meter Calibration

9.0 RECORDS

Instrument Log Book

10.0 REVISION HISTORY

SECTION	DATE	REVISION
All	8/26/05	Rev# 1 – Initial Issue
All	9/1/06	Rev# 2 - Reorganization
3.0	1/4/07	Rev# 3 – Reference Title Changes
2.0, 3.0	3/27/14	Rev# 4 – Reference Corporation Name Changes

Standard Operating Procedure

VOC Sampling – Water

I. Purpose

To provide general guidelines for sampling aqueous volatile organic compounds.

II. Scope

Standard techniques for collecting representative samples are summarized. Site-specific details are discussed in the Field Sampling Plan.

III. Equipment and Materials

- Sample vials, clean latex or surgical gloves, pH meter
- Hydrochloric acid (HCl) for preservation
- pH meter or pH-indicating paper
- Surgical or latex gloves

IV. Procedures and Guidelines

1. Sample VOCs before sampling other analyte groups.

2. When sampling for VOCs, evaluate the area around the sampling point for possible sources of air contamination by VOCs. Products that may give off VOCs and possibly contaminate a sample include perfumes and cosmetics, skin applied pharmaceuticals, automotive products (gasoline, starting fluid, windshield deicers, carburetor cleaners, etc.) and household paint products (paint strippers, thinners, turpentine, etc.).

3. To check the amount of hydrochloric acid (HCl) that needs to be added at each location, fill a test vial (40 ml) with the water to be sampled, add one drop of hydrochloric acid (HCl), gently mix, and check the pH. Repeat this cycle (if necessary) until you reach a pH of 2, counting the number of drops of HCl required. DISCARD THE TEST VIAL and add an equal number of drops of HCl to each of the sample vials. Proceed to sample. Alternately the laboratory will provide pre-preserved vials.

4. Keep the caps off the sample vials for as short a time as possible.

5. Wear clean latex or surgical gloves.

6. Fill the sample vial immediately, allowing the water stream to strike the inner wall of the vial to minimize formation of air bubbles. DO NOT RINSE THE SAMPLE VIALS BEFORE FILLING.

7. Fill the sample vial with a minimum of turbulence, until the water forms a positive meniscus at the brim.

8. Replace the cap by (Teflon side to water) gently setting it on the water meniscus. Tighten firmly, but DO NOT OVERTIGHTEN.

9. Invert the vial and tap it lightly. If you see air bubbles in the sample, do not add more sample. Use another vial to collect another sample. Repeat if necessary until you obtain a proper sample.

V. Attachments

None.

VI. Key Checks and Items

- Check for possible sources of contamination.
- Trip or field blanks may be required.
- Fill slowly, with as little turbulence as possible.
- Check for air bubbles.

APPENDIX 7

SITE MANAGEMENT/MONITOR WELL FIELD INSPECTION FORMS

ECM

SITE MANAGEMENT/MONITORING WELL FIELD INSPECTION FORM

PROJECT #: 1192 **INSPECTION DATE:** _____

LOCATION: Evonik Corporation, Stony Point, NY **FIELD CREW:** _____

WEATHER CONDITIONS: _____ **LOCK NO:** _____

WELL #	DEPTH TO FLUID	DEPTH TO WATER	PRODUCT THICKNESS	GENERAL AREA CONDITION/COMMENTS	LOCK A	LOCK D

ECM

MONITORING WELL FIELD INSPECTION LOG

PROJECT #: 1192 **INSPECTION DATE:**

LOCATION: Evonik Corporation, Stony Point, NY **FIELD CREW:**

WEATHER CONDITIONS: **LOCK NO:**

WELL #	DEPTH TO FLUID	DEPTH TO WATER	PRODUCT THICKNESS	COMMENTS	LOCK A	LOCK D

APPENDIX 8

FIELD ACTIVITY DAILY LOG

ECM

FIELD ACTIVITY DAILY LOG

PROJECT NAME:	Date
PROJECT NUMBER:	Project Page
FIELD ACTIVITY SUBJECT:	Sheet of

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

VISITORS ON SITE:	CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS.
WEATHER CONDITIONS:	IMPORTANT TELEPHONE CALLS:

PERSONNEL ON SITE:

SIGNATURE: DATE:

APPENDIX 9

EXCAVATION WORK PLAN (EWP)

APPENDIX 9 - EXCAVATION WORK PLAN (EWP) NOTIFICATION

At least 15 days prior to the start of any activity that is anticipated to encounter remaining soil contamination located below grade at the MW-71 AOC presented on Figure 6 – Soil AOC MW-71 Projected Extent of DNAPL, the site owner or their representative will notify the NYSDEC. Table A includes contact information for the above notification. The information on this table will be updated as necessary to provide accurate contact information. A full listing of site-related contact information is provided in Appendix 3.

Table A

Notifications*

NYSDEC, Scott Deyette, Project Manager	518-402-794; scott.deyette@dec.ny.gov
Edward Moore, Regional Hazardous Waste Manager	845-256-3137; edward.moore@dec.ny.gov
Kelly Lewandowski, Chief, Site Control Section	518-402-9577; kelly.lewandowski@dec.ny.gov

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

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent of excavation, plans/drawings for site re-grading, intrusive elements or utilities to be installed below the soil cover, estimated volumes of contaminated soil to be excavated and any work that may impact an engineering control;
- A summary of environmental conditions anticipated to be encountered in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling;
- A schedule for the work, detailing the start and completion of all intrusive work;
- A summary of the applicable components of this EWP;

- A statement that the work will be performed in compliance with this EWP and 29 CFR 1910.120;
- A copy of the contractor's health and safety plan (HASP), in electronic format, if it differs from the HASP provided in Appendix 10 of this SMP;
- Identification of disposal facilities for potential waste streams; and
- Identification of sources of any anticipated backfill, along with all required chemical testing results.

2 SOIL SCREENING METHODS

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

Soils will be segregated based on previous environmental data and screening results for soil waste classification sampling and eventual proper off-site disposal.

3 SOIL STAGING METHODS

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

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

Stockpiles will be inspected at a minimum once each week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by the NYSDEC.

4 MATERIALS EXCAVATION AND LOAD-OUT

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

The owner of the property and remedial party (if applicable) and its contractors are responsible for safe execution of all invasive and other work performed under this Plan.

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

Loaded vehicles leaving the site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and NYSDOT requirements (and all other applicable transportation requirements).

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

Locations where vehicles enter or exit the site shall be inspected daily for evidence of off-site soil tracking.

The qualified environmental professional will be responsible for ensuring that all egress points for truck and equipment transport from the site are clean of dirt and other materials derived from the site during intrusive excavation activities. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to site-derived materials.

5 MATERIALS TRANSPORT OFF-SITE

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded.

Material transported by trucks exiting the site will be secured with tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

Truck transport routes are as follows: Will be determined at the time of soil excavation, pending acceptance of the material to the designated disposal facility. All trucks loaded with site materials will exit the vicinity of the site using approved truck routes. The most appropriate route takes into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting off-site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport; (g) community input where necessary

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

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

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

6 MATERIALS DISPOSAL OFF-SITE

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

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

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

7 FLUIDS MANAGEMENT

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

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

8 COVER SYSTEM RESTORATION

After the completion of soil removal and any other invasive activities the cover system will be restored in a manner that complies with the, decision document. The existing cover system is comprised of a minimum of [12 or 24 inches of clean soil and asphalt pavement. The demarcation layer, consisting of orange snow fencing material, white geotextile or equivalent material, etc. will be replaced to provide a visual reference to the top of the remaining contamination zone, the zone that requires adherence to special conditions for disturbance of remaining contaminated soils defined in this SMP. If the type of cover system changes from that which exists prior to the excavation (i.e., a soil cover is replaced by asphalt), this will constitute a modification of the cover element of the remedy and the upper surface of the remaining contamination. A figure showing the modified surface will be included in the subsequent Periodic Review Report and in an updated SMP.

9 BACKFILL FROM OFF-SITE SOURCES

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

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

All imported soils will meet the backfill and cover soil quality standards established in 6NYCRR 375-6.7(d). Based on an evaluation of the land use, protection of groundwater and protection of ecological resources criteria, the resulting soil quality standards are listed

in Table [x]. Soils that meet ‘exempt’ fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this site, will not be imported onto the site without prior approval by NYSDEC. Solid waste will not be imported onto the site.

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

10 STORMWATER POLLUTION PREVENTION

Barriers and hay bale checks will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by the NYSDEC. All necessary repairs shall be made immediately.

Accumulated sediments will be removed as required to keep the barrier and hay bale check functional.

All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials.

Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

Erosion and sediment control measures identified in the SMP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters.

Silt fencing or hay bales will be installed around the entire perimeter of the construction area.

11 EXCAVATION CONTINGENCY PLAN

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

Sampling will be performed on product, sediment and surrounding soils, etc. as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for a full list of analytes (TAL metals; TCL volatiles and semi-volatiles, TCL pesticides and PCBs), unless the site history and previous sampling results provide a sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC for approval prior to sampling.

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

12 OTHER NUISANCES

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

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

APPENDIX 10

HEALTH AND SAFETY PLAN

ECM, Inc.

HEALTH AND SAFETY PLAN

Project Name: Evonik Stony Point Site
Project Site Location: Stony Point, New York

Project Manager: Bruce Manganiello

Site Safety Officer: Chris Myers

APPROVED:

_____

Thomas Grenci (Date)
Operations Manager

_____

Michael E. Conlin (Date)
Senior Technical Manager

_____

(Date)
Chris Myers
Health and Safety Officer

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Attachment 6 - Plan Acceptance Form

Attachment 7 - Site Safety Briefing Attendance Form

Attachment 8 - Accident Report Form

1.0 Introduction

1.1 Purpose

The purpose of this Site-Specific Health and Safety Plan (HASP) is to assign responsibilities, establish personnel protection standards and mandatory safety practices and procedures, and provide for contingencies that may arise during the site operations at the Evonik Stony Point facility in Stony Point, New York.

1.2 Site Characterization and Hazard Analysis

1.2.1 General Information

Site Location: The site is located in Stony Point, New York (see Attachment 1, site map and emergency routes).

Matrices: Liquid: ✓ Solid: _ Sludge: __ Gas: __

Proposed Date of Investigation: beginning in August 2016
Characteristics: Corrosive: __ Ignitable: __ Radioactive: __
Volatile: ✓ Toxic: ✓ Reactive: __ Unknown: __

Unusual Site Feature: None

Status: Active Site

Documentation/Summary (Overall Hazard): Serious: __ Moderate: __
Low: ✓ Unknown: __

1.2.2 Description and Summary of Work

The project site is the former Kay Fries Site, and is currently unoccupied, located at 50 Holt Drive, Stony Point, New York.

Potentially hazardous substances which were previously made at the site include solvents used in the formulation and manufacturer of industrial paints and pigments. Compounds of concern potentially located on-site are limited to volatile organic compounds (VOCs) in ground water. Compounds of concern in ground water include benzene, chlorobenzene, chloroethane, cis-1,2-dichloroethene, tetrachloroethane, trans-1,2-dichloroethene, trichloroethene, vinyl chloride, and xylene.

Tasks that are anticipated to be completed as part of the current project include: ground synoptic water level measurements and sampling.

2.0 Hazard Analysis for Site Tasks

2.1 Physical Hazards

Physical hazards such as slips, trips, and falls may occur. Workers must move cautiously at a site to avoid tripping and vehicular traffic. While driving in reverse, the operator usually has more limited field of view than while driving forward and must observe extra caution.

Material Handling: Accidents in manual handling of materials are primarily the result of unsafe working habits, such as improper lifting, carrying too heavy a load, incorrect gripping, or failing to wear personal protective equipment. These may be avoided by testing the weight of an object before attempting to lift and carry it. If it is too heavy, get help, and if possible, use mechanical lifting aids. The proper method for lifting is:

- Get a good footing.
- Place feet about shoulder width apart.
- Bend knees to pick up load. Never bend from waist.
- Keep back straight.
- Get a firm hold. Grasp opposite corners of the load, if possible.
- Keep the back as upright as possible.
- Lift gradually by straightening the legs; don't jerk the load.
- Keep the weight as close to the body as possible.
- When changing direction, turn the entire body, including the feet.
- Don't twist the body.

2.2 Electrical Hazards

Various power tools are electrically powered, grounding extension cords and ground-fault circuit interrupters (GFCI) should be used when operating power tools. Qualified personnel shall perform the work at all times.

2.3 Noise Hazard

Hearing protection may be required for work performed during monitoring well installations and aquifer testing. A good rule of thumb is to use hearing protection when two persons cannot understand each other while talking in a normal conversational volume at a distance of three feet.

2.4 Chemical Hazard

Potentially hazardous substances (Chemical Hazards) may be encountered on-site in areas to be sampled. Compounds of concern potentially located on-site are limited to VOCs in ground water. Measures should be taken to avoid personal contamination through typical methods of entry; these include: respiratory, oral and dermal exposure.

Monitoring will be performed with a photo-ionization detector to monitor potential vapor releases within the workers' breathing zone during all intrusive work. Appropriate personal potective equipment (PPE) will be utilized during site work to avoid dermal exposure. PPE will be selected based on the compounds of concern with a potential to be encountered during each task. Eating, drinking, and smoking will not be allowed in site work areas to minimize the potential for oral exposure.

2.5 Underground Utilities

A phone call to the New York Dig Safely system will be made prior to the installation of any soil borings or monitoring wells at the site. This call will be made to alert the utility companies of work to be performed and allow them to visit the site and mark their respective utilities. An attempt will be made to select soil boring/monitoring well locations that are free of utilities based on the markout information and available plans for the site. If soil boring/monitoring well locations are selected that may be in conflict with known underground utilities, hand probing will be conducted in advance of the drill bit to clear the location.

3.0 Site Control

3.1 General

The purpose of site control is to minimize potential contamination of workers, protect the public from site hazards, and prevent vandalism. Site control is especially important in emergency situations. Several site control procedures will be implemented to reduce worker and public exposure to chemical, physical, biological, and safety hazards.

3.2 Site Work Zones

To prevent the accidental spread of hazardous substances from a contaminated area to a clean area, zones will be delineated on the site where various operations will occur. The site will be divided into a minimum of three zones, as follows:

- The Exclusion Zone (EZ) - The area where contamination is either likely to be present or because of activity, will potentially harm personnel, which will include the five foot radius around the immediate work zone. Entry into the Exclusion Zone requires the use of PPE. No unauthorized individuals are permitted in the Exclusion Zone, and the SSO has the authority to deny any person access to the Exclusion Zone if, in their judgment, the person does not meet entry requirements.

- The Contamination Reduction Zone (CRZ) - The area where personnel and equipment are decontaminated. It is essentially a buffer zone between contaminated areas and clean areas, which will include the area 10 feet around the Exclusion Zone.

- The Support Zone (SZ) - The area situated in clean areas (outside the Exclusion and Contaminated Reduction Zone) where the chance to encounter hazardous materials or conditions is minimal; therefore, PPE is not required.

3.3 Standard Work Practices

General

The following general safe work practices apply:

- Eating, drinking, chewing gum or tobacco, and smoking are prohibited in contaminated or potentially contaminated areas, or where there is a possibility for the transfer of contamination.

- Contact with potentially contaminated substances should be avoided. Puddles, pools, mud, etc., should not be walked through. Kneeling, leaning, or sitting on equipment or the ground should be avoided, wherever possible. Monitoring equipment should not be placed on a potentially contaminated surface, such as the ground.

- Spillage should be prevented, to the extent possible. In the event that spillage occurs, the liquid should be contained, if possible.

- Splashing of contaminated materials should be prevented.

- Field crew members should use all their senses to alert themselves to potentially dangerous situations (i.e., presence of strong, irritating, or nauseating odors).

- Field crew members should be familiar with the physical characteristics of investigations, including:
  - Wind direction in relation to the ground zero area
  - Accessibility to associates, equipment, and vehicles
  - Communications
  - Hot zones (areas of known or suspected contamination)
  - Site access and egress routes
  - Nearest water sources
  - Routes and procedures to be used during emergencies
  - Contingency contacts

- A minimum number of personnel and equipment should be in the work area, but only to the extent consistent with workforce requirements of safe site operations.

- All wastes generated during ECM or subcontractor activities at the site must be disposed of as directed by the Project Manager. All hazardous wastes generated, if any, are the property and responsibility of EVONIK.

- No one wearing contact lenses or having a beard will be permitted in the work area if Level C or higher protection is required.

Buddy System

Workers will conduct all site activities with a buddy who is able to:

- Provide his or her partner with assistance.
- Observe his or her partner for signs or chemical or heat exposure.
- Periodically check the integrity of his or partner's protective clothing.
- Notify the site supervisor if emergency help is needed.
- Prearrange hand signals or other emergency communication signals such as:
  - Hand gripping throat: out of air, can't breathe.
  - Gripping partner's wrist of placing both hands around waist: leave area immediately, no debate.
  - Hands on top of head: need assistance.
  - Thumbs up: okay, I'm all right, I understand.
  - Thumbs down: no, negative.
  - Arms waving upright: send backup support.

4.0 Monitoring

4.1 General

Monitoring will be performed on site to ensure proper selection of engineering controls, work practices, and PPE so that employees are not exposed to contaminant levels that exceed permissible exposure

limits or published exposure levels for hazardous substances. Air monitoring will be performed to identify Immediately Dangerous to Life and Health (IDLH) conditions, and/or exposure over permissible exposure limits.

4.2 Monitoring Requirements

Equipment necessary for site monitoring consists of a photoinization detector (PID), as well as a Combustible Gas Indicator (CGI) and oxygen level meter during confined space entries. The types of monitoring instruments specified by the hazards, as well as the action levels to upgrade personal protection, are summarized in Attachment 5. Health and safety guidelines and procedures for confined space/limited egress (CS/LE) operations are included in Attachment 9, while a sample work permit for CS/LE operations is included as Attachment 10.

Instrument Calibration

All applicable instruments will be calibrated daily prior to and after use.

5.0 Personal Protective Equipment

Personal protective equipment (PPE) is required to safeguard site personnel from various hazards. Varying levels of protection may be required depending on the level of contaminants and the degree of physical hazard. This section presents the various levels of protection and defines the conditions of use for each level.

5.1 Respiratory Protection

Respiratory protection is an integral part of the employee health and safety at hazardous waste sites.

5.2 Site-Specific Respiratory Protection program

The site respiratory protection program will consist of the following:

- All site personnel who may use respiratory protection will have an assigned respirator.
- All site personnel who may use respiratory protection will have been fit tested and qualified in the use of an air purifying respirator within the past 12 months.
- All site personnel who may use respiratory protection must within the past year, have been medically certified as being capable of wearing a respirator.
- Only properly cleaned, maintained, NIOSH-approved respirators are to be used on this site.
- If respirators are used, the respirator cartridge is to be properly disposed of at the end of each work shift, or when load-up or breakthrough occurs.
- Contact lenses are not to be worn when a respirator is worn.
- All site personnel who may use respiratory protection will be clean-shaven. Mustaches and side burns are permitted, but they must not touch the sealing surface of the respirator.
- Respirators will be inspected, and a positive/negative pressure test performed prior to each use.
- After each use, the respiratory will be wiped with a disinfectant, cleansing wipe. When used, the respirator will be thoroughly cleaned a the end of the work shift.

The respirator will be stored in a clean plastic bag.

5.3 Levels of Protection

Protection levels are determined based upon contaminants confirmed or suspected present in the work area.

5.4 Level D Protection

The minimum level of protection that will be required of ECM personnel and subcontractors at the site will be Level D. The following equipment will be used:

- Work clothing as prescribed by weather
- Safety toe work boots, ANSI approved
- Safety glasses or goggles, ANSI approved
- Hard hat ANSI approved (when overhead hazards are present)

- Hearing protection (if noise levels exceed 85 dBA, then hearing protection with a U.S. EPA NRR of at least 20 dBA shall be used)
- Face shield (as necessary)
- Appropriate work gloves (as necessary)

5.5 Modified Level D Protection

Modified Level D protection is scheduled to be donned during site inspection operations. Modified Level D may consist of the following:

- Tyvek® coveralls
- Safety toe work boots
- Vinyl or latex booties, or PVC overboots
- Safety glasses or goggles
- Hard hat (when overhead hazards are present)
- Face shield (when projectiles pose a hazard)
- Chemical resistant gloves (as needed)
- Appropriate work gloves (if necessary)
- Hearing protection (if necessary)

5.6 Level C Protection

Level C protection will be required when the airborne concentration of contaminants are known or suspected to be one half the ACGIH TLV or the OSHA PEL. The following equipment will be used for Level C protection:

- Full face, air purifying respirator with organic vapor cartridges in combination with high efficiency particulate filters (HEPA) which are NIOSH/MSHA approved.
- Hooded, chemical resistant suit such as Polyethylene coated Tyvek®.
- Nitrile or PVC gloves over latex or nitrile sample gloves.
- Safety toe work boots, ANSI approved.
- Chemical resistant boots with steel toes or vinyl booties over safety toe shoes.
- Hard hat, ANSI approved (when overhead hazards are present).
- Face shield (when projectiles pose a hazard).
- Hearing protection (if necessary).

5.7 Level B Protection

Level B protection will be required during all activities in which vessels or pipes are opened or when conducting a confined space entry. The following equipment will be used for Level B protection:

- Full face, air supplied respirator (SCBA or supplied air).
- Hooded, chemical resistant suit such as Polyethylene coated Tyvek® over white Tyvek® suit.
- Nitrile or PVC gloves over latex or nitrile sample gloves.
- Safety toe work boots, ANSI approved.
- Chemical resistant boots with steel toes or vinyl booties over safety toe shoes.
- Hard hat, ANSI approved (when overhead hazards are present).
- Hearing protection (if necessary).

5.8 Selection of PPE

Equipment for personal protection will be selected based on the potential for contact, site conditions, ambient air quality, and the judgment of supervising site personnel and HS professionals. The PPE used will be chosen to be effective against the compound(s) present on the site.

5.9 Using PPE

Depending upon the level of protection selected for this project, specific donning and doffing procedures may or may not be required. The following procedures are mandatory if Level C or higher PPE is selected.

All persons entering the EZ shall put on the required PPE in accordance with the requirements of this plan. When leaving the EZ, PPE will be removed in accordance with the procedures listed, in order to minimize the spread of contamination.

5.10 Donning Procedures

These procedures are mandatory, only if Level C or higher PPE is required for the project:

- Put on the required chemical protective coveralls or rain gear.
- put on the required chemical protective boots or boot covers.
- Tape the legs or the coveralls to the boots with duct tape.
- Put on the required chemical protective gloves.
- Tape the wrists of the protective coveralls to the gloves.
- Don the required respirator and perform appropriate fit check.
- Put hood or head covering over head and respirator straps.
- Don remaining PPE, such as safety glasses or goggles and hard hat.

If these procedures are instituted, one person shall remain outside the work area to ensure that each person entering has the proper protective equipment. No persons shall be allowed to enter the EZ if they are not wearing the required PPE.

5.11 Doffing Procedures

The following procedures are only mandatory if Level C or higher PPE is required for this project. Whenever a person leaves a Level C or higher work site, the following decontamination sequence will be followed:

- Upon entering the CRZ, remove protective garments, equipment and respirator. All disposable clothing should be placed in plastic bags, which are labeled with contaminated waste labels.
- Proceed to clean area.
- Clean and disinfect respirator for next use.
- Proceed to sign-out point.

All disposable equipment, garments and PPE shall be bagged in two 6 mil plastic bags, properly labeled for disposal. See Section 7.0 for detailed information on decontamination stations.

5.12 Selection Matrix

The level of personal protection selected will be based upon real-time air monitoring of the work environment and an assessment by the Site Safety Officer (SSO) of the potential for skin contact with contaminated materials. This matrix is based upon information available at the time this plan was written.

6.0 Site Control

6.1 Authorization to Enter

Only personnel who have completed 40 hours of hazardous waste operations training or refresher training within the past 12 months, as defined under OSHA Regulation 29 CFR 1910.120, and have been certified as fit for hazardous waste operations by a physician within the past 12 months shall be allowed within a site area designated as an EZ or CRZ. Personnel without such training or medical qualification may enter the designated support zone only. The SSO will maintain a list of authorized persons, which will be provided to each ECM site representative

6.2 Hazard Briefing

No person will be allowed on any ECM sites during site operations without first being given a site hazard briefing. In general, the briefing will consist of a review of the Tailgate Safety Meeting. All persons on the site, including visitors, must document their attendance at this meeting by signing the site-specific Tailgate Safety Meeting form.

6.3 Documentation of Certification

A training and medical file will be established for the project and is kept at the ECM office. The 40-hour training, update, and specialty training (first-aid/cardiopulmonary resuscitation [CPR]) certificates, as well as the current annual medical clearance for all project field personnel, will be maintained within that file. All ECM and subcontractor personnel must provide their training and medical documentation to the SS prior to the start of field work.

6.4 Entry Log

The ECM representative at the site shall record on their Field Activity Daily Log (FADL) all visitors to the site. A log-in/log-out sheet shall be maintained at each site. The FADL may be used for record keeping. At the end of each shift, the log will be collected by the ECM site representative for incorporation into the project file.

6.5 Entry Requirements

In addition to the entry requirement listed above, no personnel will be allowed on any ECM field site unless they are wearing the minimum PPE as described in Chapter 5.0.

6.6 Emergency Entry and Exit

Persons who must enter the site on an emergency basis will be briefed of the hazard by the SSO. All hazardous activities will cease in the event of any emergency and any sources of emissions will be controlled, if possible.

Persons exiting the site because of an emergency will gather in a safe area for a head count. The SSO is responsible for ensuring that all persons who entered the work area have exited in the event of an emergency.

7.0 Decontamination

7.1 Standard Procedures

- A decontamination area should be located between the Hot Line (upwind boundary of the Exclusion Zone) and the Support Zone boundary.
- All protective gear should be left on site during any lunch break following decontamination procedures.

7.2 Decontamination of Equipment

To the extent possible, measures should be taken to prevent contamination of monitoring equipment. Monitoring instruments, unless they are splashed, usually do not become contaminated. Any delicate instrument that cannot be decontaminated easily should have a bag taped and secured around it.

8.0 Forms

Various forms have been included in the Attachments (Attachment 1 through 8) portion of this plan to effectively document Health and Safety related activities as they are being coordinated on-site by the designated Health and Safety Officer.

These include, a figure depicting site emergency routes (Figure 1), information regarding contingency contacts, a Health and Safety Plan acknowledgment form (to be signed by on-site personnel), an accident report form to document on-site injuries to site workers, if applicable, a site safety briefing form to acknowledge that site workers have been briefed on site health and safety procedures, a list of the potentially hazardous substances encountered on-site and their affects on the workers should they be exposed to them, a form describing first aid procedures in the event of over exposure by personnel and a chart depicting the site monitoring requirements for workers.

ATTACHMENT 1

Emergency Route Map



ATTACHMENT 2

CONTINGENCY CONTACTS

Ambulance	Emergency Ambulance	911
Hospital	Nyack Hospital	1-845-348-2000
Fire Department	Stony Point Fire Dept.	911
Police Department	Stony Point Police Dept.	911
Poison Control	National Poison Control Center	1-800-492-2414
Client Contact	Andrew Kruczek	1-973-541-8050
ECM Office		1-908-874-0990
ECM Project Manager	Bruce Manganiello	1-908-625-2971
ECM Senior Technical Manager	Michael Conlin	1-321-636-5010
Office H&S Coordinator	Chris Myers	1-908-625-9677
Site H&S Officer		1-908-874-0990

LOCATION OF HOSPITAL/CLINIC

Head west on Holt Drive towards S. Liberty Drive. Turn left onto 9W South and continue on 9W-S for 4.7 miles. Continue onto NY 303 S for 3.6 miles. Turn left onto Lake Road and first right onto Christian Herald Rd. Continue on Old Mountain Road, and continue onto N. Midland Avenue. Nyack Hospital is at 160 North Midland Avenue, Nyack, NY 10960.

ATTACHMENT 3

EXPOSURE LIMITS, FLASHPOINTS, AND TOXICITY DATA FOR COMPOUNDS OF CONCERN POTENTIALLY LOCATED ONSITE

Compound	TLV/PEL (ppm)	Flashpoint	Toxicity Data	Carcinogenicity
Chlorobenzene	75	85 °F	Not Reported	Not a listed carcinogen
Benzene	0.5	12ºF	Not Reported	Carcinogen
Toluene	50	40ºF	Not Reported	Not a listed carcinogen
1,1-Dichloroethane	200	22 °F	Not Reported	Not a listed carcinogen
Methylene Chloride	50	None Reported	Not Reported	Listed OSHA carcinogen
Tetrachloroethene	50	None Reported	Not Reported	Suspected carcinogen
Trichloroethene	50	90 °F	Not Reported	Suspected carcinogen
RegenOx®	Not Available	None Reported	Not Reported	Not a listed carcinogen

ATTACHMENT 4

ROUTES OF ENTRY, RECOGNITION QUALITIES AND FIRST AID TREATMENT FOR COMPOUNDS OF CONCERN POTENTIALLY LOCATED ONSITE

Compound	Routes of Entry	Eye Irritation	Skin Irritation	Symptoms	Target Organs	First Aid Treatment
Benzene	Inhalation Ingestion Contact Absorption	Yes	Yes	Irritation eyes, skin, nose, resp. system; giddiness, headache, nausea, staggered gait; fatigue, anor	Blood, central nervous system, skin, bone marrow, resp. system, eyes	Eye: Irrigate immediately Skin: Soap wash promptly Inhalation: Move to fresh air Ingestion: Get medical attention
Chlorobenzene	Ingestion, Inhalation	Yes	Yes	Skin, eye, and nose irritant, drowsiness, incoordination	Respiearory system, eyes, skin, CNS, liver	Eye: Irrigate immediately Skin: Soap wash promptly Inhalation: Move to fresh air Ingestion: Get medical attention
Toluene	Ingestion Inhalation Absorption Contact	Yes	Yes	Irritation eyes, nose; fatigue, weakness, confusion, euphoria, dizziness, headache; dilated pupils, lacrimation (discharge of tears); nervousness, muscle fatigue, insomnia; parasthesia; dermatitis; liver, kidney damage	Eyes, skin, respiratory system, central nervous system, liver, kidneys	Eye: Irrigate immediately Skin: Soap wash promptly Inhalation: Move to fresh air Ingestion: Get medical attention
1,1-Dichloroethane	Ingestion, Inhalation	Yes	Yes	CNS depression, skin irritant, liver and kidney damage	Skin, liver, kidneys	Eye: Irrigate immediately Skin: Soap wash promptly Inhalation: Move to fresh air Ingestion: Get medical attention
Methylene Chloride	Ingestion, Inhalation	Yes	Yes	Fatigue, weakness, sleepiness, light-headednesss, limb numbnes, tingling, nausea, eye and skin irritation	Skin, CVS, eyes, CNS	Eye: Irrigate immediately Skin: Soap wash promptly Inhalation: Move to fresh air Ingestion: Get medical attention
Tetrachloroethene	Ingestion, Inhalation	Yes	Yes	Eye, nose, and throat irritation, nausea, flushed face and neck, vertigo, dizziness, incoordination, somnolence, skin erythema, liver damage	Liver, kidneys, eyes, upper respiratory system, CNS	Eye: Irrigate immediately Skin: Soap wash promptly Inhalation: Move to fresh air Ingestion: Get medical attention
Trichloroethene	Ingestion, Inhalation, Absorption	Yes	Yes	Headache, vertigo, visual distortion, tremors, somnolence, eye irritation, dermatitis, cardiac arrrhythmea, paresthesia	Respiratory system, heart, liver, kidneys, CNS, skin	Eye: Irrigate immediately Skin: Soap wash promptly Inhalation: Move to fresh air Ingestion: Get medical attention
Xylenes	Inhalation Contact Ingestion Absorption	Yes	Yes	Irritation eyes, skin, throat, nose; dizziness, excitement, drowsy, vomit, abdominal pain, dermatitis, staggered gait	Eyes, skin, resp. system, central nervous system, GI tract, blood, liver, kidneys	Eye: Irrigate immediately Skin: Soap wash promptly Inhalation: Move to fresh air Ingestion: Get medical attention

ATTACHMENT 5

MONITORING INSTRUMENTS, ACTION LEVELS, AND PROTECTIVE MEASURES FOR COMPOUNDS OF CONCERN POTENTIALLY LOCATED ONSITE

Hazard	Monitoring Method	Action Level	Monitoring Schedule	Protective Measures
Organic vapors	PID	0 ppm above background in the breathing zone	Periodically (every 30 minutes) during invasive field activities	Level D
Organic vapors	PID	1-10 ppm above background in the breathing zone	Periodically (every 30 minutes) during invasive field activities.	Level C
Organic vapors	PID	≥ 10 ppm	Cease Operations	Level B
Flammable vapors (LEL)	CGI	<10% LEL	Normal operations.	Level D or C
Flammable vapors(LEL)	CGI	≥ 10% LEL	Stop work, ventilate area, investigate the source of vapors.	Level C or B
Oxygen Level	O_2 Level Meter			

PROTECTIVE EQUIPMENT FOR ONSITE ACTIVITIES

Activity	Level	Protective Equipment
All on site activities	D	– Weather appropriate work clothing – Safety toe work boots, ANSI approved – Safety glasses/goggles, ANSI approved – Hard hat, ANSI approved – Hearing protection – Face shield – Work gloves
	Modified D	– Tyvek coveralls – Safety toe work boots – Vinyl/latex booties or PVC overboots – Safety glasses/goggles – Hard hat – Face shield – Chemical resistant gloves – Work gloves – Hearing protection
	C	– Full face respirator with organic vapor cartridges with high efficiency filters – Hooded Polyethylene or Tyvek suit – Nitrile or PVC gloves over latex or nitrile sample gloves – Safety toe work boots, ANSI approved – Vinyl booties over safety boots or chemical resistant boots with steel toes – Hard hat, ANSI approved – Face shield – Hearing protection

ATTACHMENT 6

PLAN ACCEPTANCE FORM
PROJECT HEALTH AND SAFETY PLAN

INSTRUCTIONS: This form is to be completed by each Environmental Compliance Monitoring, Inc. employee, subcontractors, and other participants whoare on site during groundwater monitoring investigation . This form is to be returned to the ECM Health and Safety Coordinator prior to site activities.

Project No: **1192 – Stony Point**

Revised Date: **August 2016**

I represent that I have read and understand the contents of the above Plan and agree to perform my work in accordance with it.

_____	_____
Signed	**Signed**
_____	_____
Print Name	Print Name
_____	_____
Date	Date
_____	_____
Signed	**Signed**
_____	_____
Print Name	Print Name
_____	_____
Date	Date
_____	_____
Signed	**Signed**
_____	_____
Print Name	Print Name
_____	_____
Date	Date

_____	_____
Signed	**Signed**
_____	_____
Print Name	Print Name
_____	_____
Date	Date
_____	_____
Signed	**Signed**
_____	_____
Print Name	Print Name
_____	_____
Date	Date

ATTACHMENT 7

SITE SAFETY BRIEFING FORM

ATTENDEES

Print Name	**Sign Name**

Meeting conducted by: _____

ATTACHMENT 8

ACCIDENT REPORT FORM

SUPERVISOR'S REPORT OF ACCIDENT		Do Not Use For Motor Vehicle Accident
To:		From: Telephone:
Name of injured or ill employee:		
Date of accident:	Time of accident:	Exact location of accident:
Narrative Description of Accident:		
Nature of Illness or Injury and Part of Body Involved:		Lost Time: YES_____ NO_____
Probable Disability (Check One) _____ Lost work day _____ First Aid Only _____ No lost work day _____Other (explain):		
Corrective Action Taken By Reporting Unit:		
Corrective Action Which Remains To Be Taken (By whom and by when):		
Name of Supervisor:		Title:
Signature:		Date:

APPENDIX 11

RESPONSIBILITIES OF OWNER AND REMEDIAL PARTY

APPENDIX 11
RESPONSIBILITIES of
OWNER and REMEDIAL PARTY

Responsibilities

The responsibilities for implementing the Site Management Plan ("SMP") for the Former Kay Fries Site site (the "site"), number 34402], are divided between the site owner(s) and a Remedial Party, as defined below. The owner(s) is currently listed as:
MBC Contractors, Pat Magee, Jr. (the "owner").

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

Evonik Corporation, Daniel Saunders, Manager ESHQ Services North America,
2 Turner Place, Piscataway, New Jersey 08854.

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

Site Owner's Responsibilities:

1) The owner shall follow the provisions of the SMP as they relate to future construction and excavation at the site.

2) In accordance with a periodic time frame determined by the NYSDEC, the owner shall periodically certify, in writing, that all Institutional Controls set forth in a(n) Environmental Easement, remain in place and continue to be complied with. The owner shall provide a written certification to the RP, upon the RP's request, in order to allow the RP to include the certification in the site's Periodic Review Report (PRR) certification to the NYSDEC.

3) In the event the site is delisted, the owner remains bound by the Environmental Easement and shall submit, upon request by the NYSDEC, a written certification that the Environmental Easement, is still in place and has been complied with.

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

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

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

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

8) The owner will maintain the integrity monitoring wells on behalf of the RP. The RP remains ultimately responsible for maintaining the engineering controls.

9) Until such time as the NYSDEC deems the vapor mitigation system unnecessary, the owner shall operate any system, pay for the utilities for the system's operation, and report any maintenance issues to the RP and the NYSDEC.

10) Until such time as the NYSDEC deems the drinking water treatment system unnecessary, the owner shall operate the drinking water treatment system, pay for the utilities and report any maintenance issues to the RP and the NYSDEC.

11) In accordance with the tenant notification law, within 15 days of receipt, the owner must supply a copy of any vapor intrusion data, that is produced with respect to structures and that exceeds NYSDOH or OSHA guidelines on the site, whether produced by the NYSDEC, RP, or owner, to the tenants on the property. The owner must otherwise comply with the tenant and occupant notification provisions of Environmental Conservation Law Article 27, Title 24.

Remedial Party Responsibilities

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

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

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

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

5) The RP shall notify the NYSDEC and the owner of any changes in RP ownership and/or control and of any changes in the party/entity responsible for the operation,

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

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

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

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

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

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

APPENDIX 12

FIELD SAMPLING PLAN

APPENDIX 12 – FIELD SAMPLING PLAN

MONITORING WELL FIELD SAMPLING PROCEDURES

- Upon arrival at the well, the general condition and security of the well was observed and documented on the Site Management/Monitor Well Field Inspection Form.
- The well is unlocked, opened, and allowed to vent. A reading of potential volatile gases in the well is taken with a PID upon opening of the well cap.
- The static water level was measured from the top of the inner casing with an electronic water level meter before well purging, after purging, and after sampling.
- The volume of the standing water column within the well was calculated and a volume equating to three to five standing water columns was purged from the well using a decontaminated, submersible pump. Wells with slow recharge rates were purged at a rate of approximately one-half gallon per minute to avoid cascading in the well.
- Field measurements of the purge water were recorded for temperature, specific conductance, dissolved oxygen, ORP and pH, prior to, during, and after purging.
- Laboratory- cleaned bailers are used to collect the ground water samples. Upon collection, the samples were immediately transferred into laboratory-supplied bottles, sealed, appropriately labeled, and placed in an iced cooler for transport to the laboratory under chain of custody documentation.

Field measurements and sampling data were documented on Monitoring Well Sampling Field Data Sheets. The recorded field measurements are included as an appendix to the annual PRR.

APPENDIX 13

SITE MANAGEMENT FORMS

APPENDIX 13

SITE MANAGEMENT FORMS

Summary of Green Remediation Metrics for Site Management

Site Name: _____ Site Code: _____
Address: _____ City: _____
State: _____ Zip Code: _____ County: _____

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

Current Reporting Period
Reporting Period From: _____ To: _____

Contact Information
Preparer's Name: _____ Phone No.: _____
Preparer's Affiliation: _____

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

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

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

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

	Current Reporting Period (tons)	**Total to Date (tons)**
Total waste generated on-site		
OM&M generated waste		
Of that total amount, provide quantity:		
Transported off-site to landfills		

Transported off-site to other disposal facilities		
Transported off-site for recycling/reuse		
Reused on-site		

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

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

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

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

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

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

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

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

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

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

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

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

APPENDIX 14

REMEDIAL SYSTEM OPTIMIZATION TABLE OF CONTENTS

Appendix 14

REMEDIAL OPTIMIZATION TABLE OF CONTENTS

REMEDIAL SYSTEM OPTIMIZATION FOR MBC Contractors, Inc.

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APPENDIX 15

PERMITS AND PERMIT EQUIVALENTS

APPENDIX 15
PERMITS AND/OR PERMIT EQUIVALENT