

Bayer MaterialScience LLC

Remedial Design

125 New South Road
Hicksville, New York
NYSDEC Site No. 130004

February 2013



Certification

I, John C. Brussel, P.E., as a Professional Engineer registered in the State of New York, to the best of my knowledge, and based on my inquiry of the persons involved in preparing this document under my direction, certify that this *Remedial Design* for the Bayer site located at 125 New South Road, Hicksville, New York was completed in general accordance with the following:

- The Record of Decision (ROD) issued by the New York State Department of Environmental Conservation (NYSDEC) on December 18, 2012.
- Paragraph III of the Order on Consent ("Consent Order") between Bayer and the NYSDEC (Index No. A1-0781-11-11, issued by NYSDEC on June 21, 2012).
- Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375-1.8 and 375-2.8.
- NYSDEC Final Commissioner Policy CP-51/Soil Cleanup Guidance, issued October 2010.
- Sections 5.1 and 5.2 of NYSDEC document titled "DER-10 Technical Guidance for Site Investigation and Remediation," (DER-10) issued on May 3, 2010.



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Remedial Design

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1. Introduction

This Remedial Design (RD) has been prepared on behalf of Bayer MaterialScience LLC (Bayer) for the 125 New South Road site ("the Site") located in Hicksville, New York (Figure 1). The RD describes and presents the design for remedial activities to be performed to address impacts to soil resulting from historic site operations. The primary constituents of interest (COIs) identified in soil at concentrations greater than the proposed soil cleanup levels include polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), and metals (arsenic and cadmium).

The remedial activities described in this document were recommended and presented (at a conceptual level) in the *Corrective Measures Study Report* (ARCADIS, 2012) (the CMS Report). The remedial activities were incorporated into the New York State Department of Environmental Conservation (NYSDEC) Record of Decision (ROD), dated December 2012.

The remedial activities will include, but are not limited to, the following:

- Excavating approximately 8,500 cubic yards (CY) of soil at the Site for offsite disposal at a permitted facility(ies). The soil to be excavated for offsite disposal contains the following:
 - PCBs at concentrations exceeding the 10 part per million (ppm) subsurface soil cleanup level presented in the NYSDEC policy document titled "CP-51/Soil Cleanup Guidance" dated October 21, 2010 (CP-51/Soil Cleanup Guidance).
 - Total PAHs at concentrations exceeding the 500 ppm threshold presented in CP-51/Soil Cleanup Guidance.
 - Arsenic and cadmium at concentrations exceeding the commercial use SCOs presented in Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375-6.8(b) (16 ppm and 9.3 ppm, respectively).
- Removing approximately 3,000 CY of surface soil (top 1 foot of soil) that does not meet surface soil cleanup levels, but meets subsurface soil cleanup levels (i.e., PCBs at concentrations less than 10 ppm). This soil will be staged onsite for potential reuse as subsurface fill (greater than 1 foot below ground surface [bgs]) during site restoration. This potential "reuse" soil shall be temporarily stockpiled

within the excavation area footprint (i.e., the area from which the soil is removed) and/or within a lined material staging area to be constructed as described in Subsection 3.3.1. Composite samples will be collected at a frequency of one per 500 CY to characterize the stockpiled material for PCBs, PAHs, arsenic, and cadmium. The soil will be reused as subsurface fill provided that it is not visibly stained, exhibits no obvious odors, and does not contain constituents at concentrations exceeding the site-specific action levels (SSALs) for subsurface soil as presented in Section 3.6.1. If the soil does not meet these criteria, it will be transported for proper offsite disposal. Acceptable reuse soil will ultimately be covered with clean soil meeting the lower of the commercial use and groundwater protection SCOs presented in 6 NYCRR Part 375-6.8(b).

- Dewatering the excavations, as needed, and containerizing the water in an onsite storage tank(s).
- Performing waste characterization sampling to supplement existing analytical data, where needed.
- Performing confirmation soil sampling to verify that the proposed soil cleanup levels are achieved at the excavation limits and documentation soil sampling to establish concentrations in certain areas (e.g., along the northern, eastern, and southern property boundaries).
- Transporting excavated materials that are characterized as waste for offsite disposal.
- Backfilling the excavated areas using materials that meet applicable SCOs and are compatible for site redevelopment.
- Implementing stormwater pollution prevention measures.
- Implementing dust and vapor control measures, as needed based on air monitoring, to suppress dust, odors, and volatile organic vapors (if any) originating from the excavation activities and the handling of excavated soil.

The proposed remedial activities detailed herein: (1) mitigate potential threats to human health and the environment arising from the COIs; (2) are consistent with the remedial objectives for the Site; and (3) will provide conditions that are supportive of future site redevelopment. The proposed remedial activities will be implemented by a

qualified remedial Contractor to be selected by Bayer based on competitive bidding. The remedial activities will be observed by Bayer's representative ("the Engineer") for general compliance with this RD, including the attached supporting documents.

This RD also serves as a bid specification, and therefore includes technical bid information for prospective Contractors, including Design Drawings and Materials and Performance (M&P) Specifications. The Contractor will be required to comply with all requirements of this RD, including:

- Design Drawings
- M&P Specifications (Appendix A)
- Construction Quality Assurance Plan (CQAP) (Appendix B)
- Citizen Participation Plan (CPP) (Appendix C)
- Community Air Monitoring Plan (CAMP) (Appendix D)
- Contingency Plan (Appendix E)
- Minimum Requirements for Waste Loading and Transportation (Appendix F)

The Contractor will also be required to follow provisions of a site-specific Health and Safety Plan (HASP) that: (1) meets the requirements of Title 29 of the Code of Federal Regulations (29 CFR) 1910 and 29 CFR 1926 and covers all personnel who will be employed by the Contractor to perform work at the Site, including direct employees and subcontractors.

Changes to the proposed remedial activities may be required due to field conditions encountered. The NYSDEC will be informed of changes, and the changes will not be implemented without prior NYSDEC approval.

This RD has been prepared in general accordance with the following guidance, agreement, and regulations:

- The ROD



- Paragraph III of the Order on Consent (“Consent Order”) between Bayer and the NYSDEC (Index No. A1-0781-11-11, issued by NYSDEC on June 21, 2012)
- 6 NYCRR Part 375-1.8 and 375-2.8
- CP-51/Soil Cleanup Guidance
- Sections 5.1 and 5.2 of the NYSDEC document titled, “DER-10 Technical Guidance for Site Investigation and Remediation,” (DER-10) issued on May 3, 2010

1.1 Plan Organization

This RD has been organized into the following sections presented in Table 1-1.

Table 1-1
RD Organization

Section	Purpose
Section 1 – Introduction	Provides a brief overview of the proposed remedial activities, site background information, site characterization/nature and extent of impacts, remedial objectives, and regulatory requirements.
Section 2 – Project Responsibilities and Contractor Procurement	Identifies roles and responsibilities for those involved in implementing the remedial activities.
Section 3 – Description of Remedial Activities	Presents a detailed description of the proposed remedial work activities, organized by task.
Section 4 – Post Remediation Activities	Identifies the activities to be performed after completion of soil remedial activities, including preparation of a Final Engineering Report and establishment of institutional controls.
Section 5 – Schedule	Presents the anticipated schedule for implementing the remedial activities.
Section 6 – References	Presents a list of references cited in this RD.

1.2 Background

This section presents relevant background information used to develop the design for the proposed remedial activities described in this RD. A site description is presented below, followed by relevant site historical operations information.



1.2.1 Site Description

The Site consists of a 14-acre triangular-shaped parcel located just southeast of the intersection of New South Road and Commerce Place in the City of Hicksville, New York. The Site is bordered to the north by industrial properties, to the south and west by the Long Island Railroad (LIRR) and commercial/industrial properties, and to the east by a commercial building complex owned by Simone Development and a complex owned by Northrop Grumman Corporation (Northrop Grumman). A site location map is included on Figure 1.

Aside from the Administration Building located in the northern portion of the Site, all other buildings and aboveground structures formerly used in connection with site operations were demolished down to their floor slabs in 2003. The building floor slabs and foundations were demolished and removed between December 2005 and February 2006 in accordance with the NYSDEC-approved *Demolition Work Plan* (ARCADIS BBL [now known as ARCADIS], July 2005) and follow-up correspondence. The location of the Administration Building, the former (demolished) buildings, and former structures are shown on Design Drawing 1 and Figure 2. Remaining subsurface utilities are also shown on Design Drawing 1. The various areas of concern (AOCs) evaluated through the Resource Conservation and Recovery Act (RCRA) corrective action process is shown on Figure 3.

Non-masonry building materials generated by the demolition activities were transported for offsite reclamation/disposal. Impacted concrete and masonry wall materials and impacted concrete flooring/foundations were also transported for offsite disposal. The non-impacted concrete and masonry from the demolition activities were crushed and used onsite as hard fill onsite or stockpiled onsite for future use. The last of the clean stockpiled material was used as subsurface fill during an interim corrective measure (ICM) in 2009 (i.e., to backfill various excavation areas and portions of the onsite sumps referred to as AOCs 28-30. Details of the foundation demolition activities, including related characterization sampling and material handling activities, are presented in the *Demolition Summary Report* (ARCADIS BBL, April 2007).

1.2.2 Historic Site Operations

The Site was formerly used as a production facility for polyester resin, polyurethane dispersions, and polyvinyl chloride (PVC). The facility was originally constructed in 1945 and operations were expanded in subsequent years. The facility was previously owned/operated by the Hooker Chemical and Plastic Corporation/Occidental Chemical



Corporation (HCPC/OCC) from 1966 to 1982. The facility was designated as a Superfund site and placed on the National Priorities List (NPL) established under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) in 1984. Various soil and groundwater investigation/remedial activities have been implemented since that time.

Ruco Polymer Corporation (Ruco) purchased the facility from HCPC/OCC in 1982. The purchase agreement indemnified Ruco for environmental liabilities associated with facility operations conducted prior to the sale. Ruco operated an onsite RCRA interim status drum storage facility in the early 1980s, which formed the basis for the *RCRA Facility Investigation* (RFI) [Blasland, Bouck, & Lee, Inc. (formerly BBL, and now ARCADIS), 2004] and subsequent RCRA corrective action activities. Ruco was acquired by Sybron Chemical Corporation (Sybron) in 1988, and Sybron became the facility owner. Sybron was, in turn, acquired by Bayer Corporation in 2000, and Bayer Corporation became the facility owner. Facility ownership was transferred from Bayer Corporation to Bayer Polymers LLC in 2003 as part of a corporate restructuring. As part of further restructuring, Bayer Polymers LLC became Bayer MaterialScience LLC in 2004. As the successor to Ruco, Bayer received the HCPC/OCC indemnification for environmental liabilities associated with former facility operations.

Based on economic evaluation, manufacturing operations were discontinued in 2002 and transferred to existing Bayer facilities in Georgia and West Virginia. In an effort to prepare the Site for future sale and economic redevelopment, all raw materials, products, and hazardous chemicals were removed from the Site. In addition, facility equipment was decommissioned and tanks/piping was closed pursuant to applicable regulations. Asbestos-containing materials were removed and all other buildings and aboveground structures formerly used in connection with site operations were demolished down to their floor slabs in 2003 (except for the Administration Building located in the northern portion of the Site).

Subsequent to the demolition of the above-ground portions of the buildings, pre-demolition characterization sampling was performed as described in the NYSDEC-approved *Demolition Work Plan*. The characterization sampling was performed on the stockpiled construction and demolition (C&D) debris (from the 2003 building demolition) and the concrete building floor slabs in preparation for "foundation" demolition activities. The sampling was performed to determine whether the materials could be reused (as onsite or offsite fill material) or required offsite disposal. The concrete floor slabs and other concrete surfaces, including ramps, driveways, and

former equipment/tank pads were demolished in 2005 and 2006 in accordance with the *Demolition Work Plan*.

After the demolition activities were completed, the impacted concrete C&D debris was transported for offsite disposal. Remaining concrete and/or C&D debris that could be reused onsite as backfill (considered "exempt C&D debris") were crushed and placed into stockpiles onsite. Some of the stockpiles containing exempt C&D debris were used as onsite fill during ICM activities later in 2006.

In accordance with a January 20, 2006 letter from ARCADIS BBL to the NYSDEC, the concrete from the eastern two-thirds of the former Pilot Plant and surrounding slabs was crushed and then transported for offsite disposal as a nonhazardous waste. Based on pre-demolition characterization sampling, concrete removed from the western one-third of the former Pilot Plant (which included the concrete characterized by a sample where PCBs had been identified at a concentration above 50 ppm) was transported for offsite disposal as a Toxic Substances and Control Act- (TSCA-) regulated/NYS hazardous waste. Details of the handling of the impacted concrete and other C&D debris are presented in the *Demolition Summary Report* (ARCADIS BBL, April 2007).

All but one of the remaining stockpiles of crushed concrete was used as subsurface fill material during the 2009 ICM. The stockpiled material was used to backfill several of the ICM excavation areas and portions of the onsite sumps (AOCs 28 through 30). One of the stockpiles contained PCBs at concentrations greater than 10 ppm and was therefore removed and transported for offsite disposal as part of the 2009 ICM.

1.3 Site Characterization / Nature and Extent of Impacts

Based on available information, site environmental investigations began in the mid-1980s. The primary environmental concerns evaluated by these early investigations included:

- Former discharge of plant wastewater containing volatile organic compounds (VOCs) and heavy metals into onsite sumps/recharge basins.
- Past release of heat transfer fluids containing PCBs.

Three operable units (OUs) (including OU1 – Onsite Soil and Groundwater, OU2 – PCB Soil Removal, and OU3 – Offsite Groundwater) were established in connection

with the investigation activities and RODs were signed for each OU. Investigation and remedial activities associated with the OUs are summarized in the CMS Report.

In addition to the above OUs, a total of 76 solid waste management units (SWMUs)/Areas of Concern (AOCs) were identified based on review of former facility operations. SWMUs/AOCs were first identified in the *Comprehensive Site Closure Plan* for the Hicksville Facility prepared by Bayer and submitted to the NYSDEC in October 2002. The SWMUs/AOCs were observed during site visits by the NYSDEC conducted in December 2002 and May 2003. Based on an evaluation of existing information and the potential for environmental releases, 58 of the 76 AOCs were designated for additional evaluation as part of an RFI and 7 AOCs were eliminated from further consideration. The location of each AOC is shown on Figures 3, 3a, and 3b. An approach for evaluating conditions within the SWMUs/AOCs retained for further evaluation was developed and presented in the *Resource Conservation and Recovery Act Facility Assessment/RCRA Facility Investigation Work Plan* (RFA/RFI Work Plan) (ENSR, December 2003).

Following the development of the RFA/RFI Work Plan, the Site was the subject of a series of environmental investigations and other studies from 2004 through 2011, including:

- Phase I and Phase II RCRA Facility Investigations conducted by BBL in 2004.
- Phase I through Phase VII PCB & VOC soil delineation performed by ARCADIS from 2005 through 2009.
- Phase I through Phase IV Soil Vapor Investigations (SVI) conducted by ARCADIS from 2007 through 2009.
- Metals soil delineation sampling conducted by ARCADIS in 2011.
- Vapor Intrusion (VI) Investigation conducted by ARCADIS in 2011.

The comprehensive results of these investigations are presented in the CMS Report.

A brief discussion of the site topography and drainage is provided below, followed by a discussion of geology, hydrogeology, and the nature and extent of impacts within the soil removal area identified in the ROD.



1.3.1 Site Topography and Drainage

The Site is located on relatively level land with elevations ranging from approximately 127.5 to 132.5 feet above mean sea level. The Site consists of gentle slopes ranging from approximately 0 to 1 percent. Because most of the Site is relatively flat, most of the stormwater infiltrates the ground surface. Some of the stormwater at the Site flows to the recharge basins/rainwater runoff sumps (via overland flow and storm sewer piping). Site topography is shown on Design Drawing 2.

Sanitary wastewater from the facility was formerly conveyed via underground piping to several septic tanks and cesspools/leachate pits (refer to Figures 3, 3a, and 3b for septic tank and leachate pit locations). The leachate pits were eventually abandoned in-place when sanitary sewer piping was installed to convey the sanitary wastewater to the municipal sewer system beneath Commerce Place.

1.3.2 Geology/Hydrogeology

The Site is located in northeastern Nassau County, which is underlain by unconsolidated coastal plain deposits of Cretaceous (60 to 140 million years ago [mya]), Tertiary (2 to 60 mya), and Quaternary age (thousands to 2 mya), overlying metamorphic rocks of Precambrian age (570 mya and greater). The City of Hicksville is located on a generally featureless glacial outwash plain of well-sorted and stratified sand and gravel that slopes gently to the south.

The upper aquifer in the area is identified as the Harbor Drift Quaternary glacial unit, which is composed of sand, gravel, and till deposited by two advances of ice during the Wisconsin Glaciation (Isbister, 1966). Two formations lie below the Harbor Drift Unit, including the Magothy Formation and the underlying Raritan Formation. The Magothy Formation is composed of sand inter-bedded with silt and clay. The Raritan Formation includes the upper clay member and lower Lloyd Sand Member, which lies unconformably on bedrock. The upper clay member is composed primarily of clay and silty clay and lenses of sand and gravel. The Lloyd Sand Member is a stratified deposit, comprising discontinuous layers of sand, gravel, sandy clay, silt, and clay.

The bedrock of the region is Precambrian biotite schist, which is a metamorphic rock of igneous origin. The bedrock surface is relatively smooth and dips to the southeast. The bedrock forms the virtually impermeable base of the groundwater reservoir (Isbister, 1966).



The Site sits on the Harbor Drift Unit, which is composed primarily of glacial outwash sand and gravel. The Magothy aquifer, immediately below the Harbor Drift Unit, is the principal aquifer in the region. It is bounded at the top by the water table and at the bottom by the relatively impermeable Clay Member of the Raritan Formation. The upper part of the Magothy aquifer, consisting of a range glacial outwash sand, gravel, and till, contains water under unconfined conditions. In areas underlain by till of relatively low permeability, the downward movement of water is retarded. Perched and semi-perched water occurs in many places (Isbister, 1966). The lower part of the Magothy aquifer, consisting of heterogeneous sands and gravels, becomes increasingly confined with depth due to numerous discontinuous lenses of silt and clay in the Magothy Formation. Individually, these units do not constitute a distinct confining unit. However, their combined influence through a considerable thickness of the formation acts to impede vertical movement of groundwater. The Magothy aquifer is the primary source of water for municipal and industrial use in the vicinity of the Site. The aquifer is recharged by infiltration of precipitation, industrial discharges, and stormwater runoff collected via recharge basins.

The deep confined aquifer is the lowermost aquifer in the area. It consists mainly of Lloyd Sand. The clay member of the Raritan Formation confines the Lloyd in most of the area. Bedrock forms the lower boundary of the deep confined aquifer.

Based on available information, groundwater at the Site is located at depths greater than 50 feet bgs. The general groundwater flow direction in the vicinity of the Site is north to south. Locally, the flow direction is influenced by the range in lithology of the Pleistocene deposits and by municipal and industrial pumping centers and recharge basins.

1.3.3 Nature and Extent of Impacts

As summarized in greater detail in the CMS Report, the nature and extent of impacts associated with the Site were assessed by multiple investigations. The nature and extent of impacts in soil and soil vapor at the Site are briefly discussed below.

1.3.3.1 Soil

A considerable amount of remedial work has already been performed at the Site. Remediation of groundwater impacts was completed by HCPC/OCC under the RODs signed by the USEPA. Therefore, groundwater is not addressed as part of this RD.

Under the USEPA Federal Superfund program, remediation in OU2 was completed to remove PCB-impacted soil/debris from within four areas, including a “direct-spill area” in the vicinity of the Pilot Plant where heat transfer fluid was released, an area surrounding the Pilot Plant where fluid was spread by onsite truck traffic, a sump/recharge basin that received surface water runoff from the vicinity of the Pilot Plant sump No. 3 (also referred to as AOC 30), and former soil stockpile areas east and south of the Pilot Plant. A ROD for OU2 was signed by the USEPA in 1990. The ROD required excavation and offsite treatment and disposal of soils with PCBs at concentrations greater than 10 ppm. Remedial activities within OU2 were completed in December 2001 by Occidental Chemical Corporation (OXY). However, later sampling as part of the NYSDEC RCRA Corrective Action Program identified additional PCB, semi-volatile organic compound (SVOC), and metals impacts at the Site.

Under the RCRA Corrective Action program, soil with PCB concentrations exceeding 50 ppm and other impacted soil were removed from within and around, the limits of AOC 39 (former electrical transformer area) and AOC 45 (former Pilot Plant sumps) and transported for offsite disposal as part of ICMs in 2005 and 2006. An additional ICM completed in 2009 resulted in the removal of additional soil at the Site found to contain PCBs at concentrations greater than 50 ppm. In response to discussions with the NYSDEC during the 2009 ICM, the PCB cleanup level was changed from 50 ppm to 25 ppm, which resulted in deeper removal in 2009 from certain excavation areas to achieve the revised goal. The limits of the PCB-impacted soil removed during the 2009 ICM were determined by the results of Phase I through Phase VII soil sampling performed following the RFI and by results of pre- and post-excavation verification soil sampling performed for the 2009 ICM (final results are presented in the CMS Report). The 2009 ICM also removed soil from several sampling locations where VOCs and SVOCs were identified at concentrations exceeding commercial use SCOs.

Based on the work completed as part of the previous investigations and remedial activities, soil containing PCBs at concentrations exceeding the surface and subsurface soil cleanup levels from CP-51/Soil Cleanup Guidance (i.e., 1 ppm and 10 ppm, respectively), remains at several locations, primarily in the southeast portion of the Site. Soil at certain locations contains SVOCs (primarily PAHs) and metals (arsenic and cadmium) at concentrations exceeding the commercial use SCOs. For the most part, the PAH concentrations at these locations only slightly exceed the commercial use SCOs, and therefore soil at these locations (with two minor exceptions) is acceptable for use as subsurface fill below a one-foot thick clean soil cover. The soil at locations AOC 48-1 (0-1') and P1-S121 (0-0.2') contains total PAHs at concentrations near or greater than the 500 ppm threshold presented in CP-51/Soil Cleanup Guidance



and will require offsite disposal. Soil at each location where arsenic or cadmium has been identified at concentrations exceeding the commercial use SCOs (16 ppm and 9.3 ppm, respectively) will also require offsite disposal. These metals-impacted locations are primarily in the northern and eastern portions of the Site. Soil at each sampling location where VOCs were identified at concentrations exceeding the NYSDEC commercial use SCOs was removed during the 2009 ICM.

1.3.3.2 Soil Vapor

Four phases of onsite soil vapor investigations (SVI) were completed from 2007 to 2009. Sampling locations were selected to provide coverage across the Site, including areas where building construction may occur during site redevelopment; within/near footprints of the former plant buildings; near areas where trichloroethene (TCE) was identified in a 1989 soil vapor assessment; and in various paved areas. The NYSDEC has not established standards, criteria, or guidance values for VOCs in soil vapor.

Constituents detected at the highest concentrations included tetrachloroethene (PCE), TCE, cis-1,2-dichloroethene (cis-1,2-DCE), and vinyl chloride. The highest concentrations were at locations within the footprints of the former onsite buildings and along the eastern property boundary, as follows:

- Along the eastern boundary, PCE concentrations ranged from 880 to 8,100 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) (5-5.5 feet bgs). TCE concentrations ranged from 22 to 190 $\mu\text{g}/\text{m}^3$ (5-5.5 feet bgs). Cis-1,2-DCE was detected at only 1 of 7 sampling locations along or near the eastern boundary, and the concentration identified was 2,400 $\mu\text{g}/\text{m}^3$ (5-5.5 feet bgs).
- Near the southeast corner of the Site, PCE concentrations ranged from 64 to 3,700 $\mu\text{g}/\text{m}^3$ (5-5.5 feet bgs). TCE concentrations ranged from 1.4 $\mu\text{g}/\text{m}^3$ to 32 $\mu\text{g}/\text{m}^3$ (5-5.5 feet bgs).
- In and around the former Plant 1 building footprint, PCE concentrations ranged from 9,500 $\mu\text{g}/\text{m}^3$ (5-5.5 feet bgs) to 150,000 (15-15.5 feet bgs). TCE concentrations ranged from 390 $\mu\text{g}/\text{m}^3$ (5-5.5 feet bgs) to 36,000 $\mu\text{g}/\text{m}^3$ (15-15.5 feet bgs). Vinyl chloride was detected in one sample at 10,000 $\mu\text{g}/\text{m}^3$ (5-5.5 feet bgs).

- In the Plant 3 building footprint, PCE concentrations ranged from 2,200 to 4,500 $\mu\text{g}/\text{m}^3$ (5-5.5 feet bgs). In the Plant 2 building footprint, PCE concentrations ranged from 4,600 to 5,800 $\mu\text{g}/\text{m}^3$ (5-5.5 feet bgs).

1.4 Remedial Objectives

The overall objective of the proposed remedial activities is to remove soil containing PCBs, SVOCs, and metals and install a clean soil cover to provide conditions that are protective of human health and the environment and support site redevelopment. The specific goals of the actions described in this section consist of the following, to the extent practical:

- Prevent ingestion/direct contact with impacted soil.
- Prevent inhalation of or exposure of persons to constituents volatilizing from soil.
- Prevent migration of contaminants that would result in groundwater or surface water contamination.
- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into future buildings at the Site.

These goals will be accomplished by the proposed "Approach 4" site cleanup as outlined in CP-51/Soil Cleanup Guidance and as detailed in Section 3.

1.5 Regulatory Requirements

The following regulations have been identified as being potentially applicable to the proposed remedial activities.

Table 1-5
Applicable Regulations and Guidance Documents

Regulation	Topic
29 CFR 1910 and 1926	Occupational Safety and Health Administration (OSHA) Standards
6 NYCRR Part 360	New York State Solid Waste Management Regulations
6 NYCRR Part 364	Waste Transportation Regulations
6 NYCRR Part 371	Identification and Listing of Hazardous Wastes



Remedial Design

Bayer MaterialScience LLC
Hicksville, New York

Regulation	Topic
6 NYCRR Part 372	Hazardous Waste Manifest System and Related Standards for Generators, Transporters, and Disposal Facilities
6 NYCRR Part 375	Environmental Remediation Programs
6 NYCRR Part 376	Land Disposal Restriction
Clean Water Act Section 402	Discharge to Waters of the United States
6 NYCRR Part 608	Protection of Waters
NYSDEC DER-10	Technical Guidance for Site Investigation and Remediation

Note: The list of regulations provided above is not an all-inclusive list of applicable regulations. The Contractor shall comply with all applicable federal, state, and local regulations when performing the proposed remedial activities.

2. Project Responsibilities and Contractor Procurement

Bayer, NYSDEC, New York State Department of Health (NYSDOH), and ARCADIS will participate jointly in the implementation of the remedial activities described in this document. Bayer has the ultimate responsibility for implementing the remedial activities, including the site-specific CAMP. NYSDEC and NYSDOH personnel are anticipated to be onsite periodically to observe work activities. The Contractor will be responsible for all onsite construction operations during the project, except for certain operations indicated herein. The construction activities will be observed by Bayer's representative (the Engineer) for general compliance with this RD, including the attached supporting documents.

A project organizational structure for implementation of this work plan is included as Attachment A. Key personnel for Bayer, NYSDEC, NYSDOH, and ARCADIS are identified below in Table 2-1.

Table 2-1 - Key Personnel

Name/Affiliation	Address	Phone/Fax/E-mail
Bayer		
Mr. David Schnelzer Manager - Health Environment Safety and Security Governance/ Project Manager	100 Bayer Road Pittsburgh PA 15205	T: 412.777.7603 david.schnelzer@bayer.com
Mr. Ramon Simon, Solid Waste & Remediation Coordinator/Project Support	8500 West Bay Road Baytown, TX 77520-9730	T: 281.383.6149 F: 281.383.6020 ramon.simon@bayer.com
NYSDEC		
Mr. Steven Scharf, PE Project Manager	Remedial Bureau A 625 Broadway, 12 th Floor Albany, NY 12233-7016	T: 518.402.9620 F: 518.402.9022 sxscharf@gw.dec.state.ny.us
NYSDOH		
Ms. Renata Ockerby Public Health Specialist	Empire State Plaza Corning Tower Room 1787 Albany, NY 12237	T: 518.402.7880 reo02@health.state.ny.us
ARCADIS		
Mr. John C. Brussel, PE Principal Engineer/ Project Manager	6723 Towpath Road PO Box 66 Syracuse, NY 13214-0066	T: 315.671.9441 F: 315.449.4111 John.Brussel@arcadis-us.com



Name/Affiliation	Address	Phone/Fax/E-mail
Mr. Andrew C. Enigk Project Environmental Scientist/ Assistant Project Manager	6723 Towpath Road PO Box 66 Syracuse, NY 13214-0066	T: 315.671.9548 F: 315.449.4111 Andrew.Enigk@arcadis-us.com

2.1 Project Responsibilities

Minimum responsibilities of Bayer, the Contractor, and the Engineer for work to be conducted during implementation of the remedial activities at the Site are presented below.

2.1.1 Bayer

Bayer will be responsible for the following:

- Coordinating with the Contractor and Engineer (as necessary) to implement the required work activities in conformance with this RD.
- Issuing a Contract to the selected Contractor.
- Issuing Contract addenda (if any) and modifications (if any) based on input from the Engineer.
- Acting as the “Generator” for materials resulting from the remedial activities that will be transported for offsite disposal.
- Executing waste profiles for offsite treatment/disposal of wastes to be generated by the remedial activities.
- Coordinating with NYSDEC regarding environmental-related work activities.
- Communicating with the Engineer regarding the remedial activities.

2.1.2 Contractor

In general, the Contractor’s responsibilities include, but are not limited to, the following:

- Verifying all existing site conditions, including understanding the existing site data. Failure by the Contractor to understand and verify all existing site conditions shall not result in additional charges to Bayer.
- Thoroughly reviewing this RD, including Design Drawings, M&P Specifications (Appendix A), and supporting plans included as Appendices B through F. Nothing presented in one of the above documents or drawings should relieve the Contractor's obligation to satisfy the components specified in the other documents/drawings. In addition, in the event that there are discrepancies in the information contained in the above-listed documents/drawings, the Contractor shall identify such discrepancies in writing for Bayer and Engineer review.
- Preparing, submitting, and revising (as necessary based on the Engineer's comments and at no additional cost to Bayer) all plans, permits, and information required in this RD.
- Contracting an independent third party air monitoring technician to conduct air monitoring in accordance with the site-specific CAMP (Appendix D) and the Contractor's Health and Safety Plan (HASP).
- Providing all supervision, labor, equipment, and materials necessary to implement the activities described in this RD. All of the Contractor's onsite personnel who conduct work activities on the Site shall be in compliance with applicable requirements established by OSHA, including (but not necessarily limited to) the OSHA 40-hour training and the corresponding 8-hour refresher course updates specified in Part 1910.120 of Title 29 of the Code of Federal Regulations (29 CFR 1910.120). The Contractor shall provide to Bayer and the Engineer, evidence of 40-hour training and corresponding 8-hour refresher course updates for onsite personnel (i.e., certificates of training completion) prior to initiating remedial activities at the Site.
- Providing bills of lading/manifests for the offsite shipment of waste materials from the Site. These shipping documents will be provided to the Engineer to sign on behalf of Bayer (under agreement with Bayer).
- Providing certifications/licenses for equipment operators that verify that training requirements have been met.

- Implementing the activities described in this RD in a safe manner and in accordance with applicable federal, state and local laws, rules and regulations.
- Attending project meetings, including a pre-construction meeting, daily site safety/coordination meetings, weekly project construction/coordination meetings, and a close-out meeting.
- Conducting daily safety/coordination meetings.
- Performing land survey activities to mark proposed and document final excavation limits and verification/documentation sampling locations.
- Notifying the Engineer and Bayer immediately upon discovery of a conflict between the RD/Design Documents and actual site conditions.
- Handling, staging, and containerizing all waste materials generated by the activities described in this RD.
- Coordinating with and subcontracting a waste hauler(s) for offsite transportation of materials generated during completion of the activities described in this RD. Note that the waste hauler(s) must be approved by Bayer.
- Coordinating with and subcontracting a disposal facility(ies) and arranging for disposal of all waste materials generated during remedial activities at the Site that require offsite disposal (e.g., impacted soil from the proposed excavation limits). Note that the disposal facility(ies) must be approved by Bayer.
- Preparing waste profiles for signature by Bayer. The Contractor will be responsible for revising the profiles, as needed, based on review by Bayer/Engineer.
- Covering soil/waste material stockpiles using a low-permeability liner at all times except when actively managing soil in the staging area (10-mil polyethylene sheeting or equivalent) to minimize potential migration/siltation of material/debris to areas beyond the staging area(s). In addition, the Contractor shall cover rolloff waste containers or gondola rail cars (if used) with a water-tight tarp at the end of each work day, during precipitation events, and after filling the containers. The rolloff waste containers and gondola rail cars (if used) shall be lined.

- Coordinating with Bayer and the Engineer, as necessary, to complete required work activities.
- Informing the Engineer and Bayer of any changes in the scope of the remedial activities and obtaining written authorization from Bayer, prior to implementing these changes.

2.1.3 Engineer

The Engineer will provide the following services during implementation of the remedial activities:

- Reviewing Contractor submittals and providing comments, if any, to the Contractor and Bayer.
- Providing a full-time onsite project coordinator to observe and monitor implementation of the remedial activities.
- Maintaining records of the work efforts associated with implementation of the remedial activities, including daily field reports and photographs of the work in progress. The Engineer will take digital photographs to document observations, problems, deficiencies, and work progress. Photographs will be filed by the Engineer in chronological order on a computer storage system.
- Maintaining records of labor, materials, and equipment utilized for the remedial activities and unusual circumstances, if any are encountered.
- Preparing weekly construction progress reports for submittal to the NYSDEC and NYSDOH. The proposed contents of these reports are identified in the CQAP.
- Documenting that the remedial activities are conducted in general conformance with this RD and notifying Bayer of any deviations.
- Monitoring the Contractor's survey control for evaluating payment quantities, as applicable.
- Reviewing waste profiles (prepared by the Contractor) on behalf of Bayer for offsite treatment/disposal of wastes to be generated as part of the remedial activities.

- Reviewing and signing (as an authorized agent for Bayer) waste manifests/bills of lading for shipments of waste materials generated by the remedial activities.
- Maintaining an onsite project log containing waste manifests/bills of lading for wastes generated by the remedial activities.
- Reviewing Contractor invoices/requests for payment.
- Attending project meetings (including a pre-construction meeting, daily site safety/coordination meetings, weekly project construction/coordination meetings, and a project close-out meeting) and preparing meeting minutes.
- Preparing a Final Engineering Report to document completion of the remedial activities.

2.2 Contractor Procurement

Concurrent with NYSDEC and NYSDOH review of the RD, a bid package (consisting of this RD, a Payment Bid Form, Bayer Terms and Conditions, and a cover letter identifying key contact information, pre-bid meeting date, and bid due date) will be distributed to a number of qualified prospective Contractors to solicit bids for implementation of the remedial activities described in this document. Prospective Contractors wishing to perform the work will be required to submit a bid proposal in accordance with the requirements contained in this RD and the bid package. Following delivery of the bid packages to the prospective Contractors, a pre-bid meeting and site visit will be conducted with all prospective Contractors, Bayer, and the Engineer. The purpose of the pre-bid meeting and site visit will be for prospective Contractors to visually examine existing site conditions and thoroughly acquaint themselves with the work required and potential challenges associated with performing the work. During the pre-bid meeting and site visit, prospective Contractors will have the opportunity to verify all existing site conditions (including but not limited to, material of construction, structural conditions, and environmental conditions) to facilitate the preparation of an accurate proposal and work schedule.

Following the pre-bid meeting and site visit, prospective Contractors will submit their proposals for review by Bayer. Each prospective Contractor will be required to submit the technical bid information requested below to demonstrate a logical and practical approach for completing the project. The Contractor must submit two (1) electronic

copies (on CD or via e-mail) and up to two (2) hard copies of the following documentation with the bid:

- An organizational chart of key personnel, including any subcontractor(s) to be utilized for the remedial activities.
- Detailed project management information, including the qualifications of proposed onsite and offsite project management personnel and anticipated staffing for the remedial activities.
- A narrative discussion of the proposed approach for completing the remedial activities. The narrative description should be organized to identify activities that will be performed under each work task identified in Section 3 of this RD.
- A listing of equipment that the Contractor plans to use to complete the remedial activities.
- Anticipated project schedule (Gantt chart) which, at minimum, should show the anticipated start date and duration of each work task (including major components of each work task) and proposed sequence of construction activities. For the purposes of project schedule preparation, the Contractor shall assume that mobilization will commence within two weeks following project award. The Contractor shall also assume that no standby time will be allowed during the project.
- Identification of hours during which work activities will be performed at the Site. All work performed by the Contractor shall be conducted to minimize public impact (traffic, parking, noise) to the extent practical. Noise generated by the activities shall be in compliance with the Noise Control Ordinance Section 156-4 of the Town of Oyster Bay Code.
- The completed Remedial Activities Pricing Form (to be provided under separate cover).

The review of the bid proposals will include, but is not limited to, health and safety program and metrics, conformance with the Design Documents, proposed approach and method for performing the remedial activities, comparison of bid prices and cost-sensitivity analysis, proposed work schedule, and experience and qualifications. Following review of the bid proposals, a Contractor will be selected.

2.3 Contractor Submittals

Within two (2) weeks following project award, the Contractor shall prepare and deliver electronic and hard-copies of the submittals listed below to Bayer (1 electronic and 1 hard copy) and the Engineer (1 electronic and 3 hard copies). The submittals will, in turn, be provided by the Engineer to NYSDEC and NYSDOH via e-mail in portable document format (PDF) prior to Contractor mobilization to the property. The Contractor submittals will include the following:

- An Operations Plan that presents the information provided with the Contractor's bid (updated as appropriate), including: (1) the Contractor's organizational chart of key personnel; (2) detailed project management information; (3) list of subcontractors with proof of qualifications and licensing requirements; (4) a narrative discussion of the proposed approach for completing the remedial activities; and (5) proposed equipment for the remedial activities.
- A Contingency Plan that presents measures to prevent unintended releases (spills) at the Site and measures to properly respond to spills and spill-related emergencies, fire, explosion, or other emergency, should they occur.
- The Contractor's proposed Critical Path Method (CPM) schedule, including work-week length and daily work hours. The Contractor shall maintain and update the schedule, as needed, but bi-weekly at a minimum, throughout the construction of the remedial activities.
- Cut-sheets, records, and record drawings for certain materials and equipment to be provided in connection with implementing the remedial activities.
- A HASP that meets the requirements of 29 CFR 1910 and 29 CFR 1926 and covers all personnel who will be employed by the Contractor to perform work at the Site, including direct employees as well as subcontractors.

Further requirements for the Contractor submittals identified above are presented in the Design Drawings and M&P Specifications.

3. Description of Remedial Activities

This section presents a task-by-task summary of the activities to be performed as part of this RD. The work activities are described under the following general tasks:

- Work Task 1 – Project Meetings
- Work Task 2 – Pre-Construction Activities
- Work Task 3 – Mobilization/Site Preparation
- Work Task 4 – Stormwater Pollution Prevention
- Work Task 5 – Site Security, Control, and Access
- Work Task 6 – Excavation Operations
- Work Task 7 – Excavation Confirmation/Documentation Soil Sampling
- Work Task 8 – Excavation Dewatering/Water Management
- Work Task 9 – Material Handling, Reuse, and Disposal
- Work Task 10 – Environmental Monitoring and Mitigation
- Work Task 11 – Decontamination Activities
- Work Task 12 – Backfilling Activities
- Work Task 13 – Site Restoration/Demobilization

A site-specific CQAP that describes the materials, procedures, and testing necessary for proper construction, evaluation, and documentation during implementation of the remedial activities is included as Appendix B.

A description of each work task associated with implementing this RD is presented below.

3.1 Work Task 1 - Project Meetings

A description of meetings to be held in connection with the project and attended by the Contractor is presented below. Additional details for the meetings are presented in M&P Specification Section 01200 (Project Meetings).

Payment for the Contractor's attendance at meetings will be based on the selected Contractor's lump sum and unit rate bid for this work task under Payment Item 1.

3.1.1 Pre-Construction Meeting

Following award of the Contract and prior to Contractor mobilization, a pre-construction meeting will be held at the Site to introduce the project team members representing the Contractor, NYSDEC, NYSDOH, Bayer, and the Engineer. The pre-construction meeting will be scheduled by the Engineer shortly after award of the Contract (no later than ten [10] business days after notice to proceed). The meeting will be conducted to review Contract requirements, establish a schedule of operations, and resolve issues (if any) raised by the attending parties.

The Engineer will prepare and distribute a summary of the pre-construction meeting to the meeting attendees. Failure by the Contractor to inform the Engineer within five (5) business days of receiving the summary of any discrepancies or inaccuracies contained herein indicates that the Contractor concurs with the Engineer's summary of items/issues discussed and agreed upon during the meeting.

3.1.2 Daily Project Coordination Meetings

The Contractor shall attend daily and periodic project coordination meetings held at the Site. Daily meetings shall be attended by the Contractor's Project Supervisor and the Engineer to discuss day-to-day operations, schedule, health and safety items, outstanding issues, and the general status of the remedial activities. The Engineer will include a written summary of each daily project coordination meeting in the project field notebook.

3.1.3 Periodic Project Coordination Meetings

Periodic project coordination meetings shall be held at least weekly to discuss issues including, but not limited to, project status, scope of work, and overall project implementation issues. Site inspections/reviews by Bayer and/or the Engineer will be

performed in connection with selected periodic project coordination meetings. These project coordination meetings shall be attended by representatives of the Contractor (including the Project Manager and Project Supervisor), the Contractor's suppliers/subcontractors (as needed, in-person or by telephone), and the Engineer. Meetings will also be attended by NYSDEC, NYSDOH, and Bayer, in-person or via telephone, as needed. The weekly progress meetings will be scheduled by the Engineer. A written summary of each weekly and periodic project coordination meeting will be prepared by the Engineer and distributed to the meeting attendees.

Failure by the Contractor to inform the Engineer within five (5) business days of receiving the summary of any discrepancies or inaccuracies contained therein, indicates that the Contractor concurs with the Engineer's summary of items/issues discussed and agreed upon during the meeting.

3.2 Work Task 2 - Pre-Construction Activities

Work activities to be performed by the selected Contractor in preparation for implementing the remedial activities include, but are not limited to, the following:

- Providing Bayer with an insurance certificate identifying Bayer and the Engineer as additional insured. Policy limits required for the remedial activities are identified in Bayer's Terms and Conditions.
- Providing, installing, and maintaining a project sign and no trespassing signs, spaced no more than 100-feet apart, along the perimeter of the work area. Requirements for fencing and signs are presented in M&P Specification Sections 01046 (Control of Work) and 01902 (Project Sign).
- Determining horizontal limits of the proposed excavation areas using global positioning system (GPS) or conventional survey equipment and techniques. Locations of existing survey benchmarks and control points used by Bayer for previous site survey work is shown on Design Drawing 3 (coordinates for these points are also presented on the drawing). The proposed boundaries of the excavation areas are also shown on Design Drawing 3, and survey coordinates for the corners of the proposed excavation areas are presented in Table 1. The survey coordinates provided with this RD are relative to the New York State Plane Coordinate System, North American Datum of 1983 (NAD 83). Requirements for survey control are presented in M&P Specification Section 01160 (Survey Control).

- Using flagged wooden stakes, flagged metal pins, and/or spray paint, as appropriate, to mark the limits of the proposed excavation areas.
- Contacting New York 811 (formerly Dignet of NYC & LI Inc., or New York City and Long Island One Call Center) to initiate a utility clearance request a minimum of three (3) business days prior to the start of the remedial activities, to identify and mark the locations of underground utilities (e.g., electricity, fiber optic cable, natural gas, water, sewer, telephone, etc.) and structures, at and near the work areas.
- Verifying site conditions and identifying, marking, and verifying the location(s) of aboveground and underground utilities, equipment, and structures, as necessary to implement the remedial activities. The Contractor will also be responsible for properly protecting and/or removing certain underground utilities as required for completing the remedial activities. The identification, marking, and verifying of site conditions and underground utilities, equipment, and structures shall be performed to: (1) minimize accidental utility strikes during excavation; (2) evaluate the construction materials and status (active/inactive) of utilities; (3) and facilitate utility protection and/or removal. This includes, but is not limited to, the following:
 - Using utility locating/signal tracing equipment to evaluate the extent and terminals for the water lines that comprise the fire water loop.
 - Verifying the locations of septic system components (i.e., leachate pits, septic tanks) that fall within or are immediately adjacent to the excavation areas.
 - Installing temporary barriers and/or other visual markers (e.g., sawhorses, wooden stakes and flagging, orange traffic cones, etc.) to identify and protect existing post indicator gate valves (valves for the fire suppression waterlines) and hydrants.

Based on available information, all utilities have been deactivated and disconnected at the property boundary, except for: (1) waterlines originating near the intersection of New South Road and Commerce Place servicing the Administration Building; (2) waterlines that comprise the fire water loop through the interior section of the Site (the water has been shut off by closing valves, but the lines remain); and (3) electric and gas service to the Administration Building. The Contractor will be responsible for confirming the locations and status of all utilities. The subsurface utilities within and around the work area shall be handled as follows: (1) abandoned utilities shall be removed and exposed ends of the lines (at the excavation limits) shall be capped; (2)

the portions of the fire waterline loop that extend through the excavation areas shall be removed, as needed, and the exposed ends of the lines (at the excavation limits) shall be capped by a licensed plumber; (3) the portion of concrete leachate pits or septic tank within PCB-impacted excavation areas shall be removed and transported for offsite disposal with the PCB-impacted soils from the area. If a portion of the structure remains, it shall be filled with approved backfill material and left in-place consistent with previous handling performed during the ICMs. After the structure is filled, the excavation area shall be backfilled as described in this RD.

The Contractor is responsible for all activities and associated costs related to identifying, marking, and/or verifying site conditions and the location(s) of all aboveground and underground utilities, equipment, and structures, as necessary to implement the remedial activities in accordance with applicable codes, requirements, and best practices.

If the Contractor damages existing utilities, equipment, or structures, the Contractor shall notify the property owner and the appropriate utility company/municipality and shall fully repair all damages at no additional cost to Bayer or the property owner. Repairs (if necessary) shall be completed in accordance with all requirements of the utility company/municipality and to the satisfaction of the Engineer, property owner, and Bayer.

Payment for the pre-construction activities performed by the Contractor will be based on the selected Contractor's lump sum and unit rate bid for this work task under Payment Item 2.

3.3 Work Task 3 - Mobilization / Site Preparation

Site mobilization shall be initiated by the Contractor following the pre-construction meeting and within 15 business days after notification from Bayer to proceed. The Contractor shall not begin mobilization to the Site until notification to proceed is provided by Bayer, the Contractor's insurance certificate has been received and approved by Bayer and the Engineer, and necessary Contractor submittals have been reviewed by the Engineer as described in M&P Specification Section 01300 (Submittals). Mobilization and site preparation work to be performed by the selected Contractor include the following:

- Mobilizing all labor, equipment, materials, and supplies needed to implement the remedial activities. Equipment mobilized to the Site shall be subject to a visual

inspection by the Engineer. Equipment that arrives at the Site in an unsatisfactory condition (e.g., with adhered soil/debris, noticeable fluid leaks, mechanical problems, etc.), in the opinion of the Engineer, shall be removed from the Site and replaced by the Contractor at no additional cost to Bayer.

- Providing, mobilizing, and maintaining a minimum of two office trailers at the site, unless the Contractor elects to equip the Administration Building to fulfill the requirements set forth for the office trailers in M&P Specification Section 01901 (Temporary Facilities and Office Support). The office trailers shall consist of one for use by the Contractor, Bayer, and Engineer (minimum of 400 square feet [SF] and with a partition to provide a separate, semi-private part of the trailer for Bayer/Engineer) and one for use by the NYSDEC (minimum of 160 SF). The office trailers shall be blocked and leveled, provided with anchoring systems to prevent overturning due to wind forces, and equipped as described in M&P Specification Section 01901.
- Equipping the Administration Building (in lieu of providing office trailers) to serve as office and meeting space during the remedial activities. This would include, but not be limited to, the following: (1) repairing and providing electrical service to the series of offices bordering the south and west sides of the building (adjacent to the garage area served by the overhead bay door); (2) activating phone lines and providing high-speed wireless internet service inside the building to meet the minimum requirements outlined in the M&P Specifications; (3) making any needed repairs to the heating and ventilation system to maintain indoor temperatures of between 65 and 75 degrees Fahrenheit for the duration of the project; and (4) providing needed furniture and appurtenances as listed and described in the M&P Specifications. Costs for equipping the Administration Building for use as the field office and all costs associated with providing and maintaining telephone and internet service would be borne by the Contractor. Monthly costs for electricity, natural gas, water supply, and sewer associated with Contractor use of the building for field office space would be paid for by Bayer.
- Providing, maintaining, and servicing onsite sanitary facilities (i.e., port-a-johns and/or the restrooms inside the Administration Building) and potable water supply for use by all onsite personnel engaged in the remedial activities. Requirements for the sanitation and water supply services are presented in M&P Specification Section 01901 (Temporary Facilities and Office Support). The Contractor will be responsible for providing all necessary sanitary supplies to maintain these facilities.

- Installing and maintaining stormwater pollution prevention (erosion and sedimentation control) measures as described in Work Task 4.
- Constructing remediation support areas including, but not limited to: (1) waste material staging areas; (2) onsite storage areas (for clean materials); and (3) equipment, material, and personnel decontamination areas, as shown on Design Drawing 2. The Contractor will be responsible for maintaining the remediation support areas (including the integrity of the liner systems), as necessary, during implementation of the remedial activities. Additional information related to construction of the temporary waste material staging areas and equipment/personnel decontamination areas is provided in Subsections 3.3.1 through 3.3.3.
- Mobilizing portable storage tank(s), as needed, for temporary storage of liquid wastes generated by the remedial activities. The existing poly storage tanks south of the Administration Building will be available for Contractor use, pending testing to confirm the integrity of the tanks for temporary staging of liquids (i.e., no leaks or visual evidence of deterioration).
- Providing all snow removal within the limits of the proposed work area (for access to field office trailers, support facilities, equipment/supply staging areas, material staging areas, equipment decontamination areas, the excavation area, etc.) as needed and agreed to by Bayer and the Engineer.

The Contractor will be responsible for contracting and having an independent third-party firm provide air monitoring devices to conduct air monitoring activities in accordance with the CAMP during excavation and soil handling activities or other activities that have the potential to generate dust or vapors. The Contractor or third-party firm shall implement the Contractor's health and safety program.

In response to a request from the NYSDEC, Bayer will perform a focused VI investigation inside the Administration Building if the building is to remain for future use. The investigation results will be used to assess actions needed (if any) for potential long-term occupancy of the building (by future tenants). The proposed VI investigation will be conducted as described in a January 24, 2013 letter from ARCADIS to the NYSDEC.

If VOC concentrations in indoor air of the Administration Building exceed air guideline values contained in the NYSDOH document titled "Guidance for Evaluating Soil Vapor Intrusion in the State of New York" dated October 2006, but are below Occupational



Safety and Health Administration (OSHA) permissible exposure levels, then no mitigation would be performed inside the building prior to remediation. This is because: (1) the proposed remedial activities involve occupational exposure to constituents of interest at the site such as VOCs; and (2) onsite remediation personnel will be required to have OSHA 40-hour training and corresponding 8-hour refresher course updates. Mitigation would be performed, as needed, based on the VI results prior to transfer of the building from Bayer to the next property owner.

Payment for mobilization and site preparation activities by the Contractor, as described herein (except for the erosion and sedimentation controls and air monitoring, which will be tracked under a different payment item) will be based on the selected Contractor's lump sum and unit rate bid for this work task under Payment Item 3.

3.3.1 Temporary Material Staging Area

The Contractor shall construct temporary lined staging areas to facilitate the temporary storage of excavated materials, including: (1) impacted soils and debris designated for offsite disposal (i.e., for those materials that will not be direct-loaded for offsite transportation and disposal); (2) debris that require further handling (e.g., concrete that needs to be crushed/downsized as required by the offsite disposal facility); and (3) materials to potentially be reused as subsurface fill. Potential locations for the staging area(s) are identified on Design Drawing 2. Actual locations proposed by the Contractor must be submitted to and reviewed by the Engineer.

The staging area(s) may include lined rolloff containers and/or an impoundment with the sides bermed and both the sides and bottom lined with a low-permeability liner sloped to a lined collection sump(s). An impoundment area shall include additional precautions to protect the integrity of the liners, including a drainage/soil layer and cushion geotextiles, as described below. The Contractor shall be responsible for constructing and maintaining the staging area(s) to accommodate all staging scenarios.

If the Contractor elects to use an impoundment for the material staging area(s), the material staging area(s) shall be constructed to meet the following minimum requirements:

- The existing ground surface will be graded and compacted, as required.



- A minimum of 4 inches of base material (Type “E” compacted granular fill as identified in M&P Specification 02206 [Selected Fill]) shall be installed on the ground surface within the limits of the staging area.
- The staging areas shall be lined with a high density polyethylene (HDPE) liner of sufficient strength and thickness (no less than 40 mil) to prevent puncture during use. Non-woven geotextile fabric shall be placed below and above the HDPE liner. The placement of soil into the staging area shall not involve any equipment or procedures that may jeopardize the integrity of the underlying impermeable liner. Requirements for the HDPE liner and geotextile are presented in M&P Specification Sections 02272 (Geomembrane – HDPE Liner) and 02270 (Geotextile Fabric).
- The staging area shall be sloped and equipped with a sump to collect liquids that have drained from the soil. A submersible pump shall be placed in the sump to transfer liquids to an appropriate container. Liquids that accumulate within the sump shall be managed by the Contractor as described in Subsection 3.8.2.
- A minimum of 12 inches of sacrificial drainage soil (Type “B” granular fill as identified in M&P Specification Section 02206 [Selected Fill]) shall be installed over the liner to: (1) anchor the liner; (2) act as a physical and visual buffer between the liner and material placed within the area; and (3) permit liquids within the staging areas to flow to the sump.
- A minimum 18-inch high water-tight perimeter berm shall be constructed around the staging area to contain water that drains from the staged soil and to mitigate the potential for surface water runoff (from outside the bermed area) to contact the staged soil. The berm may be constructed by extending the 40 mil HDPE liner over bermed soil sidewalls or sidewalls constructed using concrete “jersey barriers” or “blocks”.
- The staging area shall be continuously covered with a properly anchored plastic cover (no less than 10 mil), except while soil is actively being managed (placed or removed). The cover will be provided to minimize potential siltation/migration of soil/debris beyond the staging areas. The cover shall be maintained and secured over the waste material (to resist wind forces) for the duration of staging activities, except when the waste material is being actively managed. Soil, waste materials, and debris may not be used as anchor materials. In addition, emission and vapor controls shall be employed, as necessary, when soil is being actively managed.



- The staging area shall be properly maintained, inspected daily, and any noted deficiencies shall be promptly corrected by the Contractor.
- Upon removal of all materials, the Contractor shall remove and treat/dispose of any temporary staging areas (including liner materials). The staging area materials shall be handled as described in Subsection 3.13.

3.3.2 Equipment Decontamination Area

The Contractor shall construct and maintain decontamination area(s) for trucks, equipment, and personnel during implementation of the remedial activities. Potential locations for the decontamination area(s) are identified on Design Drawing 2. Actual locations proposed by the Contractor must be submitted to and reviewed by the Engineer. The decontamination area(s) shall be constructed in the same manner as the material staging areas, except: (1) a stone or earthen ramp will be constructed to allow equipment to drive into the area; and (2) wood planks shall be placed on top of the granular fill to provide a stable base and limit potential damage to the decontamination area liner. The Contractor shall provide and maintain a high-pressure washer to decontaminate vehicles and equipment.

3.3.3 Personnel Decontamination Area

The Contractor shall construct and maintain a personnel decontamination area (to be located inside the Contamination Reduction Zone, as described in Subsection 3.5) that contains, at a minimum, the following:

- 6-mil HDPE sheeting placed on the ground.
- A boot wash tub with solution of detergent and water, and a long-handle brush.
- An additional boot wash tub containing rinse water, a long-handle brush, and a final rinse with a hand pump sprayer.
- A 55-gallon drum lined with a 6-mil thick bag for personal protective equipment (PPE) disposal.
- A hand wash tub with a solution of detergent and water.



- An additional hand wash tub containing rinse water and a final rinse with a hand pump sprayer.
- Paper hand towels.

3.4 Work Task 4 - Stormwater Pollution Prevention

In accordance with NYSDEC's General Permit (GP-0-10-001) for Stormwater Discharges from Construction Activities (GP-0-10-001), projects disturbing one or more acres are required to develop a Stormwater Pollution Prevention Plan (SWPPP). However, projects conducted in accordance with a NYSDEC-approved remedial work plan are not required to obtain coverage under GP-0-10-001, but are required to meet the substantive requirements of the GP-0-10-001. This project will disturb approximately three acres. Therefore, this section provides stormwater-related information to supplement site- and project-information provided elsewhere in this RD in fulfillment of the substantive requirements of GP-0-10-001 for SWPPP development.

Payment for the stormwater pollution prevention work activities implemented by the Contractor as described in the subsections below will be based on the selected Contractor's lump sum and unit rate bid for this work task under Payment Item 4.

3.4.1 Stormwater Management Objectives

Potential stormwater pollutant sources generally include sediment, equipment maintenance-related fluids (grease, oils), and litter/construction-related debris. To minimize the potential impacts of the pollutant sources, the following stormwater management objectives have been established:

- Minimize potential erosion of existing soil within and adjacent to active work areas.
- Minimize the potential for the conveyance of sediment-laden stormwater to downgradient areas beyond the excavation limits.
- Minimize offsite tracking of materials.
- Minimize accumulation of water within active work areas.
- Minimize the potential for equipment-related spills and accumulation of construction-related debris.



3.4.2 Hydrologic Soil Groups

According to the Web Soil Survey, site soils primarily consist of urban land soils. Hydrologic soil groups are not available for urban land due to the previous development at the Site. The southernmost tip of the property has a small portion (i.e., 0.1 acres) of Udipsamments soils, which has been classified as hydrologic soil group type "A". Refer to Section 1.3.3.1 for additional site soil-related information.

3.4.3 Erosion and Sediment Controls

Erosion and sediment (E&S) control measures shall be installed prior to soil disturbing activities. The Contractor shall construct and maintain the control measures in accordance with the New York State Standards and Specifications for Erosion and Sedimentation Control (Empire State Chapter of the Soil and Water Conservation Society, August 2005). At a minimum, E&S control measures shall include, but are not limited to, the following activities:

- Installing and maintaining silt fencing, hay bales, and/or fiber filtration tubes downslope of the work area. Silt fencing and/or fiber filtration tubes shall also be installed downslope of the actual excavation areas and material staging areas, as needed, to achieve the goals presented above.
- Installing and maintaining lined berms around the material staging areas and equipment decontamination areas, and providing and maintaining sumps within these areas for wash water collection.
- Maintaining a cover (e.g., polypropylene sheeting) over excavated materials placed in the material staging area(s) at all times, except when materials are being actively placed, stabilized, or removed.
- Constructing one or more equipment decontamination areas at or near the work area boundary in accordance with Subsection 3.3.2.
- Constructing a tire wash area, if needed, to remove soil and other debris from tires of vehicles/equipment prior to exiting the site.
- Maintaining on-site spill prevention equipment/kits and following appropriate spill prevention procedures.

- Maintaining good house-keeping practices for trash and debris removal.

Refer to Design Drawing 2 for the locations and details of the E&S controls.

3.4.4 E&S Control Inspection

The Contractor shall be responsible for installation, monitoring, and maintenance of E&S control measures for the duration of the remedial activities. The Contractor shall have a qualified inspector, familiar with E&S control, conduct weekly inspections of the E&S controls for deficiencies. Inspection reports will be used to document inspection results in accordance with the CQAP. E&S control inspections shall be documented by the Contractor and kept on-site throughout construction. Copies of the E&S control inspections shall be provided to the Engineer within two business days following the inspection.

3.4.5 E&S Control Maintenance and Final Removal

Throughout the project, the Contractor shall remove accumulated sediment collected by the control measures and shall repair or replace the control measures, as necessary, to maintain performance as intended. The removed material shall be transferred to the lined material staging area for offsite disposal with the excavated soil. The Contractor shall be responsible for maintaining the erosion and sediment control measures (including the perennial vegetation) until final site stabilization (i.e., 80% dense perennial vegetation over the entire disturbed area or other suitable stabilization cover) is agreed upon by Bayer/Engineer. Following site stabilization, the Contractor shall remove the remaining erosion and sediment control measures with Bayer/Engineer approval.

3.4.6 Post-Construction Stormwater Management

Post-construction stormwater management controls include restoring disturbed areas with a perennial vegetative cover, generally to pre-construction grades. As noted above, temporary E&S controls shall remain in-place and maintained until perennial vegetation is established (minimum uniform 80% density of native perennial vegetation as accepted by the Engineer). It is anticipated that the amount of impervious area, and consequently the total runoff, will decrease as the result of the remedial activities. Therefore, additional controls to mitigate potential water quality and quantity impacts have not been provided.

3.5 Work Task 5 - Site Security, Control, and Access

Access to the Site will be restricted by the perimeter fencing that surrounds the Site as shown on Design Drawing 2. Additional measures shall be taken by the Contractor to further limit site access and augment security during the remedial activities, as described below. Site security around excavation, staging, handling, decontamination, and storage areas shall be maintained throughout the project. The level of security will be dependent on the activities being performed and location of activities. Minimum security measures to be implemented include: (1) the perimeter fencing; (2) temporary fencing and/or barriers; (3) warning tape and signs; (4) maintenance of sign-in/sign-out sheets; and (5) implementation of safe work practices. Minimum requirements for the security measures are provided below, and the exact methods used by the Contractor shall be specified in the Contractor's Operations Plan.

- *Perimeter Fencing* – The Site is currently enclosed by an existing perimeter security fence to control access for unauthorized personnel. Ingress and egress to the Site will be provided by the access gates near the intersection of New South Road and Commerce Place.
- *Temporary Fencing and Warning Tape* – The perimeter fence will be supplemented by temporary construction fencing and caution tape to be used to delineate and secure areas of the ongoing remedial activities, including the Exclusion Zone and Contamination Reduction Zone. The Exclusion Zone will be the active work area immediate to the excavation and material staging areas, and the area inside the waste transporter's trailer or rolloff waste container. The Contamination Reduction Zone will be the area immediately outside the Exclusion Zone, including the truck loading area, and shall be used as a primary decontamination area for equipment and personnel. The Exclusion Zone and Contamination Reduction Zone will change as excavation progresses. The Contractor shall use yellow caution tape fastened to tee posts to delineate the perimeter of the Exclusion Zone. The Contractor shall use 4 feet high, orange-colored, high-visibility construction fence constructed of HDPE and fastened to tee posts to delineate the perimeter of the Contamination Reduction Zone. At a minimum, the Contamination Reduction Zone will be 3-foot buffer around the Exclusion Zone.
- *Sign-In/Sign-Out Sheet* – For the duration of remediation activities, a sign-in/sign-out sheet will be maintained for the Site at the Administration Building (or field construction trailer occupied by the Engineer). All site construction workers, other

site personnel, and visitors will be required to sign in upon entering the Site and sign out upon leaving and enter corresponding entry/departure times. The Contractor shall enforce the sign-in/sign-out requirement.

- Implementation of Safe Work Practices – Implementation of safe work practices will provide for additional site security during remediation. Safe work practices that will contribute to overall site security include the following measures to be implemented by the Contractor:
 - Maintaining temporary construction fencing and signage around all open excavation areas and other potentially dangerous areas.
 - Parking heavy equipment in a designated area each night and removing keys.
 - Maintaining an organized work area, including maintaining stabilized construction entrances and any access roads (as needed), and properly storing tools and equipment.
 - Participating in daily security review and health and safety meetings with the Engineer.
 - Maintaining covers on staging areas and associated sumps when not in-use during working hours and at all times outside working hours.

The Contractor will be responsible for maintaining site security, controls and access in connection with each work task under this bid. Although this task is critical to the overall success of the project, costs for this task are deemed insignificant in comparison to the costs for other work tasks under this project. Therefore, a separate bid item for maintaining site security, controls and access is not provided. Contractor costs associated with providing site security, controls and access shall be included in the Contractor's unit pricing for the other work tasks on this project (there will be no "Payment Item 5").

3.6 Work Task 6 - Excavation Operations

Excavation operations to be completed by the Contractor as part of the remedial activities include the following:

- Removing surface and subsurface soil containing PCBs at concentrations exceeding the 10 ppm subsurface soil cleanup level presented in CP-51/Soil Cleanup Guidance, total PAHs at concentrations exceeding the 500 ppm threshold presented in CP-51/Soil Cleanup Guidance, and arsenic and cadmium at concentrations exceeding the 16 ppm and 9.3 ppm commercial use SCOs presented in 6 NYCRR Part 375-6.8(b).
- Removing surface soil (top 1 foot of soil) that does not meet surface soil cleanup levels, but meets subsurface soil cleanup levels (i.e., PCBs at concentrations less than 10 ppm). The Contractor shall stage this soil onsite for reuse as subsurface fill (greater than 1 foot bgs) during site restoration, subject to the requirements in Subsection 3.6.1.
- Removing concrete foundations and asphalt pavement within the excavation limits, as needed, to reach target excavation depths.

The proposed horizontal and vertical limits of the excavations are shown on Figures 3, 3a, and 3b and Design Drawings 2 and 3. Based on existing soil analytical data, the deepest excavation proposed for this remedial project is 10 feet bgs. Additional soil removal may be performed, if needed, based on confirmation sampling results, but no excavation will extend below the 10-foot excavation cutoff depth specified in the ROD. The Contractor shall not proceed with excavation beyond the proposed depths/elevations shown on the Design Drawings without Engineer approval. Based on previous investigation and remedial activities, the soil to be removed as part of the proposed excavation activities generally consists of sand and gravel.

The excavation operations are described under the subtasks below.

3.6.1 Soil Removal

The Contractor shall remove soil from the a total of 60 separate and adjoining excavation areas and an elevated area referred to as the “mound area” as part of the proposed remedial activities (refer to Design Drawing 3):

- *The “A” Group Excavation Areas (Areas 1A-37A):* Soil from these 37 excavation areas shall be transported for offsite disposal (except for approximately 442 CY of clean soil placed as part of the 2009 ICM that needs to be removed to access underlying impacted soil). These excavation areas are generally located: (1) in the northern portion of the Site (along the northern and eastern fence lines); and (2) in

the southern portion of the Site, around the Pilot Plant and Plant 1 building footprints. These excavation areas encompass a total of approximately 54,100 SF (just over 1.2 acres). Soil from these areas will be removed to depths ranging from approximately 1 to 8 feet bgs. Based on the excavation dimensions, approximately 7,140 in-situ CY of soil will be removed from these excavation areas. The rationale for soil removal in each excavation area and the corresponding verification sampling locations, excavation surface areas, volumes, and depths are summarized in Table 2. Soil to be removed from these areas consists of the following:

- Approximately 86 in-situ CY containing the highest concentrations of PAHs at the site, which are located in the vicinity of sampling locations AOC-48-1 (0-1') (immediately southwest of the Plant 1 footprint) and P1-S121 (0-0.2') (halfway between the Plant 1 footprint and the rainwater runoff sump identified as AOC 28). The PAH removal threshold established for this project is 500 ppm total PAHs.
- Approximately 851 in-situ CY containing arsenic and cadmium at concentrations greater than the commercial use SCOs presented in 6 NYCRR Part 375-6.8(b), which are 16 ppm and 9.3 ppm, respectively. The excavations to address arsenic and cadmium concentrations extend to depths of 1 or 2 feet bgs.
- Approximately 6,203 in-situ CY containing PCBs at concentrations greater than the 10 ppm subsurface soil cleanup level presented in CP-51/Soil Cleanup Guidance. Of this total, 380 in-situ CY also contains arsenic and cadmium at concentrations exceeding the commercial use SCOs.
- *The "B" Group Excavation Areas (Areas 1B-24B):* Soil from these 24 shallow excavation areas (1 foot deep maximum) shall be staged onsite for potential reuse as subsurface fill (greater than 1 foot bgs) during site restoration. This potential "reuse" soil shall be temporarily stockpiled within the excavation area footprint (i.e., the area from which the soil is removed) and/or within a lined material staging area. The soil shall be continuously covered with a properly anchored plastic cover (no less than 10 mil), except while soil is actively being managed (placed or removed) from the staging/stockpile area. Composite samples shall be collected at a frequency of one per 500 CY to characterize the stockpiled material for PCBs, PAHs, arsenic, and cadmium. The soil shall be reused as subsurface fill provided

that it is not visibly stained, exhibits no obvious odors, and does not contain constituents at concentrations exceeding the following SSALs for subsurface soil:

Table 3-6
Proposed Site Specific Action Levels

Constituent	SSAL for Subsurface Soil (ppm)
PCBs	10
Total PAHs	500
Arsenic	16
Cadmium	60

If the soil does not meet these criteria, it shall be transported for proper offsite disposal. Acceptable reuse soil shall be covered (as described under Work Task 12 – Backfilling Activities) with clean soil meeting the lower of the commercial use and groundwater protection SCOs presented in 6 NYCRR Part 375-6.8(b). These shallow excavation areas encompass a total of approximately 79,847 SF (just over 1.8 acres) and are generally located in the eastern portion of the site (around the “A” Group Excavation Areas). Based on the 1 foot excavation depth for each of these areas, approximately 2,957 in-situ CY of soil will be removed from these excavation areas. Use of this soil (which meets subsurface soil cleanup objectives) as subsurface fill offers the following advantages:

- Reduces the importation of clean fill for backfill in excavation areas by approximately 2,957 in-situ CY, which reduces vehicle traffic (truck or rail) through the surrounding communities, and reduces purchase and/or transportation costs associated with imported fill.
- Ultimately results in a more uniform grade across the Site that is more user-friendly for maintenance and redevelopment (i.e., there would otherwise be 1-foot humps at sporadic locations across the Site if a cap were to be constructed directly over the existing soil).
- Results in demarcation layer (discussed under Work Task 12 below) being placed at more consistent depth(s) (i.e., generally one depth across a large contiguous area) to distinguish between soil that meets “clean” cover requirements and that which does not (i.e., making the remedy more consistent and protective).



- Expedites backfilling and completion of the remedial action.
- *The Mound Area:* The mound area consists of soil within the southwestern portion of the Plant 1 footprint that is approximately 3 feet higher than the surrounding grade. The mound area soil was directly below the Plant 1 floor slab (similarly elevated soil elsewhere within the Plant 1 footprint was removed as part of the 2009 ICM). Soil from the mound area contains PCBs, SVOCs, and metals at concentrations exceeding SCOs and shall be transported for offsite disposal. The mound area encompasses approximately 10,035 SF and 1,115 in-situ CY.

It is anticipated that the Contractor will conduct the excavation operations in the above-described areas using conventional construction equipment, such as excavators and/or backhoes (final selection of equipment will be up to the Contractor). The excavators/backhoes and additional equipment (e.g., bulldozers, loaders, dump trucks, etc.) may be used to transfer the soil removed from the "B" Group Excavation Areas to backfill the excavations greater than 1 foot deep and/or existing sumps. The soil handling shall be performed in a manner that avoids tracking soil outside the excavation footprints.

The means and methods for supporting excavations greater than 4 feet in depth shall be provided by the Contractor for review/approval by Bayer/Engineer. The support system may include but not be limited to the following:

- Sloping/benching the excavation(s) sidewalls in accordance with the OSHA requirements for excavations as outlined in 29 CFR part 1926 Subpart P (as necessary). A detailed design for the sloping/benching system will be prepared by the selected Contractor in accordance with applicable OSHA regulations; and/or
- Installing temporary bracing and/or steel sheetpile walls. A detailed design for the temporary bracing and/or steel sheetpile walls system will be prepared by the selected Contractor in accordance with applicable OSHA regulations. Additional excavation may be needed in various areas to remove underground utilities to facilitate the bracing/sheetpile wall installation. The design of the bracing /sheetpile wall would be made based on existing data and the results of standard penetration tests, particle size distribution testing, and other geotechnical testing, if needed, to be performed on soil samples collected from soil borings around the proposed perimeter of each area. All sheeting must be decontaminated after use as discussed in Work Task 11 (Decontamination Activities). The temporary

bracing/sheetpile wall installation must be designed and approved by a professional engineer.

The design for the excavation sidewall support system selected by the Contractor shall be provided to the Engineer for review and approval prior to construction.

Soil removed for sloping, benching, or trenching (for bracing or sheeting) with PCB concentrations between 1 ppm and 10 ppm shall be reused as subsurface fill material (greater than 1 foot bgs) within the excavation area, following completion of the excavation activities.

Upon reaching the proposed limits within each excavation area, the Engineer will observe the excavation sidewalls and floor for the presence of visual staining. If heavy staining is observed, additional soil shall be removed from the excavation area, and an additional observation of the excavation shall be performed. If additional soil removal is conducted (beyond the limits defined by this RD), the Contractor shall collect additional confirmation soil samples from the "new" limits for laboratory analysis (refer to Subsection 3.7 below for details of the proposed confirmation sampling).

Until the excavations are backfilled, daily inspections shall be completed by trained Contractor personnel to evaluate situations that could result in possible cave-ins or failure of protective systems (e.g. trench boxes). Based on the inspection results, corrective actions shall be implemented, as needed.

The Contractor also shall be responsible for maintaining appropriate clearances from utilities and structures (e.g., underground piping, valves, hydrants, etc.). If the Contractor damages existing utilities, equipment, or structures, the Contractor shall be responsible for notifying the property owner and appropriate utility company/municipality and fully repairing all damages at no additional cost to Bayer. Repairs (if necessary) shall be completed in accordance with all requirements of the owner and utility company/municipality, and to the satisfaction of the Engineer.

Payment for soil excavation operations implemented by the Contractor as described above will be based on the selected Contractor's fixed unit rate bid for excavation and handling of the following:

- 8,255 CY of soil excavation for offsite disposal (based on in-situ volume) under Payment Item 6.1. This includes 7,140 CY from the "A" Group Excavation Areas and 1,115 CY from the mound area.



- 2,957 CY of soil excavation for onsite reuse as subsurface fill (based on in-situ volume) under Payment Item 6.2.

The excavation volumes will be based on the in-situ volumes as determined based on pre- and post-excavation survey as performed by the Contractor's Professional Land Surveyor licensed in the State of New York. The handling of the soil identified above (i.e., loading, offsite transportation/disposal, onsite transfer, etc.) is covered under other work tasks/payment items and shall not be included under Payment Items 6.1 and 6.2. All fixed unit costs will remain in effect for the duration of the project. Payment for items that are based on fixed unit prices will be based on the actual quantity of the units used/generated by the activities as agreed to between the Contractor, Bayer, and the Engineer.

3.6.2 Concrete Foundation and Asphalt Removal

Subsurface concrete foundations may be encountered during excavation in areas that overlap the footprints of the former buildings. Outside the former Pilot Plant and the eastern portion of Plant 1, foundations were removed to a depth of approximately 2 feet below surrounding grade during foundation demolition activities. The majority of the foundations within the footprints of the Pilot Plant and eastern portion of the Plant 1 building were removed in their entirety.

The Contractor shall remove subsurface foundations (e.g., typically spread footers) encountered within the limits of the proposed excavation areas. For purposes of estimating a cost to complete this task, the Contractor shall assume that 300 CY of subsurface foundations could potentially be encountered in the excavation areas. The Contractor shall have appropriate equipment onsite and available to remove such subsurface structures during the excavation activities. Subsurface structure(s) that are removed shall be broken up using a ram-hoe and/or conventional bucket mounted on an excavator/backhoe, in accordance with M&P Specification Section 02202 (Rock and Debris Removal). Upon removal, the resulting debris shall be handled as described under Work Task 9.

The Contractor shall remove approximately 40 CY of existing asphalt surface prior to removing soil surrounding Impact Environmental (Impact) sampling location DW081 in the parking area located in the northwestern corner of the Site as shown on Figure 3 (refer to the inlay). Given the poor condition of the asphalt in this area and plans for site redevelopment, it is not necessary to saw-cut the asphalt prior to removal. It can be cut and removed using conventional excavation equipment. The asphalt shall be

removed and stockpiled separately for handling as described under Work Task 9. Costs for the asphalt excavation will be tracked under Payment Item 6.1.

Payment for the concrete foundation removal work performed by the Contractor will be based on the selected Contractor's fixed unit rate bid for removing 300 CY of concrete for this subtask under Payment Item 6.3. All fixed unit costs will remain in effect for the duration of the project. Payment for items that are based on fixed unit prices will be based on the actual quantity of the units used/generated by the activities as agreed to between the Contractor, Bayer, and the Engineer. The concrete volume will be based on sizes of foundations upon removal (before crushing) and/or the total volume as calculated by dividing the tonnage reported by the disposal facility under Subtask 3.9.1, by 2.0 tons/CY, as directed by the Engineer.

3.7 Work Task 7 - Excavation Confirmation/Documentation Soil Sampling

Although a significant amount of soil sampling has already been performed as part of the previous investigations and ICMs, verification soil sampling will be performed at the horizontal and vertical limits of certain excavation areas to provide spatial coverage for sampling points generally consistent with the frequencies outlined in Section 5.4(b)5. of DER-10. Based on the sizes of the proposed excavations, this includes one sample per approximately every 30 lineal feet of excavation sidewall and one sample per approximately every 900 square feet of excavation bottom area.

The proposed verification soil sampling will involve collection of confirmation and documentation soil samples for laboratory analysis, as indicated below.

- Confirmation soil samples will be collected to confirm whether proposed soil cleanup levels have been achieved or whether further excavation is needed.
- Documentation soil samples will be collected to document the concentrations of constituents of interest remaining in selected areas (generally along the site boundaries). No step-out excavation or follow-up sampling will be required in the event that results for a documentation soil sample exceed the proposed soil cleanup levels.

The proposed confirmation soil sampling locations (in relation to the proposed excavation limits and the previous soil sampling locations used to determine approximate excavation limits) are shown on Figures 3, 3a, and 3b. An analytical sample summary, which identifies each proposed confirmation and documentation soil

sampling location and corresponding sample type (excavation sidewall or bottom), sampling interval, and proposed analyses, is included as Table 3. As indicated in Table 3, the verification soil samples shall be submitted for laboratory analysis for one or more of the following constituents:

- PCBs using USEPA SW-846 Method 8082.
- PAHs using USEPA SW-846 Method 8270C.
- Arsenic and cadmium using USEPA SW-846 Method 6010.

The PAH analyte list to be used for this project consists of each SVOC listed in 6 NYCRR Part 375-6.8(b).

The laboratory used to analyze the confirmation and documentation soil samples shall be certified by the NYSDOH Environmental Laboratory Approval Program (ELAP) for the parameters being analyzed. The laboratory shall be capable of providing detection limits at or below the commercial use SCOs outlined in 6 NYCRR Part 375-6.8(b) to allow for comparison of the analytical results to those objectives by the Contractor and Engineer. NYSDEC Analytical Services Protocol (ASP) Category B data deliverables and laboratory electronic data deliverables shall be provided for the confirmation and documentation soil samples.

Quality assurance/quality control (QA/QC) samples (including one field duplicate, one matrix spike, and one matrix spike duplicate per 20 samples) shall be collected and analyzed for each parameter for the 270 confirmation/documentation sampling locations described in this section and in accordance with the Quality Assurance Project Plan presented in the RFA/RFI Work Plan.

The proposed confirmation and documentation soil sampling shall be performed by the Contractor. Confirmation soil samples shall be collected prior to the start of excavation activities (prior to mobilizing excavation equipment) and during excavation activities, as needed. Documentation soil samples shall be collected upon completion of excavation. The Contractor shall schedule and implement work activities accordingly to avoid equipment/labor downtime (standby) associated with waiting for analytical results for confirmation soil samples. No standby time will be allowed during the project.

Payment for drilling soil borings needed to collect confirmation soil samples will be based on the selected Contractor's lineal footage of drilling (Payment Item 7.1). Payment for the actual verification soil sampling and analysis as described above and in the two subsections below will be based on the Contractor's unit costs per sample analysis under the following payment Items:

- Payment Item 7.2 – Unit cost per sample analyzed for PCBs.
- Payment Item 7.3 – Unit cost per sample analyzed for PAHs.
- Payment Item 7.4 – Unit cost per sample analyzed for arsenic and cadmium.

Samples to be tracked under the above payment items include field samples and sample duplicates. The Contractor shall factor costs for matrix spike/matrix spike duplicate samples in the unit costs for the sample analyses above (matrix spike/matrix spike duplicate samples will not be counted as separate samples).

Further information related to the proposed confirmation and documentation soil sampling activities is presented below.

3.7.1 Confirmation Soil Sampling

Confirmation soil sampling shall be performed at 248 locations to confirm the horizontal and vertical extent of soil exhibiting PCBs at concentrations greater than 10 ppm, total PAHs at concentrations greater than 500 ppm, and/or arsenic and cadmium at concentrations greater than 16 ppm and 9.3 ppm, respectively.

The proposed confirmation soil sampling locations shall be field-identified using coordinates obtained from Table 1. Each proposed sampling location shall be marked using either a flagged metal pin or wooden stake. Confirmation soil samples collected prior to excavation shall be from soil borings completed using auger or direct-push sampling techniques. Soils removed from each boring shall be characterized for color, texture, moisture, density, cohesion, plasticity and indication (if any) of staining or obvious odor. Digital photos will be taken to document soil conditions. The soil borings will not need to be backfilled because the proposed excavations will extend to the confirmation soil sampling locations.



If sampling is performed during the excavation activities, the Contractor shall collect the confirmation soil samples from the proposed locations using the excavator bucket or manned entry into the excavation (following OSHA requirements for excavation entry).

Confirmation soil samples collected prior to excavation shall be analyzed on a standard turnaround (10 days), and confirmation samples collected during excavation activities shall be analyzed on an expedited turnaround (2-3 day) (to facilitate receipt of data to allow backfilling of excavations).

If COIs are detected at concentrations exceeding the soil cleanup levels in the sidewall or bottom confirmation samples, an additional sample will be collected from 5 feet beyond the original sidewall or 2 feet beyond the bottom sampling location where the exceedance was identified (or other distance as determined by the Engineer). The additional confirmation samples will be submitted for laboratory analysis for the appropriate COIs. This process will be continued until the soil cleanup levels have been achieved at all locations or NYSDEC approval is otherwise provided to discontinue excavation/confirmation sampling (e.g., based on results generally consistent with cleanup levels). In any case, excavation will not extend below the cutoff depth of 10 feet.

3.7.2 Documentation Soil Sampling

Documentation sampling shall be performed at 20 locations to document concentrations of COIs (primarily arsenic and cadmium) in soil remaining at the excavation limits. The documentation soil sampling locations are generally located along excavation sidewalls that coincide with or are near the fence line on the property boundary.

The proposed documentation soil sampling locations shall be field-identified using coordinates obtained from Table 1. Each proposed sampling location shall be marked using either a flagged metal pin or wooden stake. Unlike the confirmation soil samples, each of the documentation soil samples will be collected after excavation is completed. Digital photos will be taken to document soil conditions at the documentation soil sampling locations.

Documentation soil samples shall be analyzed on a standard turnaround (10 days) for receipt of analytical results.

3.8 Work Task 8 - Excavation Dewatering/Water Management

The Contractor shall dewater the excavations and manage water generated from the excavation dewatering and from other site activities (e.g., equipment decontamination, etc.), as needed. Excavation dewatering and water management shall be performed as described in the subtasks below.

Payment for the excavation dewatering/water management performed by the Contractor will be based on the selected Contractor's fixed lump sum and unit rate bid for this work task under Payment Item 8. All fixed unit costs will remain in effect for the duration of the project. Payment for items that are based on fixed unit prices will be based on the actual quantity of the units used/generated by the activities as agreed to between the Contractor, Bayer, and the Engineer.

3.8.1 Excavation Dewatering

The proposed maximum excavation depth (8 feet bgs) is well above the water table, which is approximately 50 feet bgs. Because the site soil consists mostly of permeable materials (sand and gravel), rainwater is anticipated to infiltrate into the excavation(s). However, if water collects in an excavation and dewatering is needed, the Contractor shall dewater the excavation by pumping from a low point (sump) created within the excavation. If water is to be pumped directly from the excavation, the Contractor shall take actions to reduce the amount of solids that mix with the water. These may include the following:

- Lining the sump with a non-woven geotextile, and placing washed stone in the bottom of the sump.
- Inserting the end of the suction hose used for pumping into a cylindrical object (e.g., corrugated metal pipe or 55-gallon drum) that is perforated, wrapped in a non-woven geotextile, and placed in the low point of the excavation.

Surface water diversion methods shall be used to minimize the amount of runoff that enters the excavation. Surface water diversion methods may include, but are not limited to, channeling surface water flow around the excavation area by digging a temporary ditch, constructing berms, or installing piping to create a preferential flow path.

3.8.2 Water Management

The Contractor shall provide, mobilize, and maintain a storage tank for holding water generated during the remedial activities and stage the tank in a lined and bermed containment area. As previously indicated, the existing poly storage tanks south of the Administration Building will be available for Contractor use, pending testing to confirm the integrity of the tanks for temporary staging of liquids (i.e., no leaks or visual evidence of deterioration). The Contractor shall take steps to minimize the amount of water generated by the remedial activities. Water generated during the remedial activities may include, but not be limited to, the following:

- Precipitation and surface water runoff that enter the excavation
- Precipitation that accumulates in the material staging area
- Perched water from the excavation
- Water generated by decontamination

The Contractor shall collect a sample to characterize the water for offsite treatment/discharge. The sample shall be analyzed in accordance with the constituent list, reporting limits, and analytical methods required by the wastewater treatment facility. The constituent list is anticipated to include PCBs, PAHs, and metals, at a minimum. Pending receipt and review of the characterization sampling results by the Contractor and Engineer, the Contractor shall transport the water to an industrial wastewater treatment facility for offsite treatment/discharge.

The holding tank(s) shall be placed at a location that will not interfere with excavation operations. The Contractor will be responsible for providing a means to deal with freezing conditions that may be encountered later in the construction season.

3.9 Work Task 9 - Material Handling, Reuse, and Disposal

Waste characterization soil sampling shall be performed by the Contractor (as needed) to supplement existing soil analytical data for waste profiling. For bidding purposes, the Contractor shall assume that: (1) the waste characterization samples will be collected at a frequency of 1 sample per 750 tons of soil to be transported for offsite disposal; and (2) the samples will be analyzed for PCBs and RCRA hazardous waste characteristics, including ignitability, corrosivity, reactivity, and Toxicity Characteristic

Leaching Procedure (TCLP) VOCs, TCLP SVOCs, and TCLP metals. The sampling may be performed following excavation, and/or prior to the start of excavation activities to provide data to support the direct-loading of impacted materials removed by the excavation operations for offsite disposal. The Contractor shall direct-load excavated impacted materials (materials that do not meet reuse criteria), to the extent possible, to minimize the size of onsite staging areas and to minimize double-handling of the materials. The loading of impacted materials shall be done in a manner that minimizes the potential for inadvertent releases to the environment, unsafe conditions for site personnel, and delays or complications in project implementation. Excavated soil that requires dewatering to remove free liquids (if any), and excavated material that requires further characterization (if needed, as described in this work task), shall be stockpiled in lined material staging areas or within the actual excavation pit prior to offsite transportation and disposal.

Details of the proposed material handling, reuse, and offsite transportation and disposal are presented in Subsections 3.9.1 through 3.9.3 below. Minimum requirements for the loading and offsite transportation of wastes generated during the remedial activities are presented in Appendix F. A brief overview of these requirements is presented below.

All dump trailers, dump truck boxes, rolloff waste containers, and gondola rail cars (collectively referred to as "waste transport containers") used to transport impacted materials for offsite disposal shall be lined with polyethylene sheeting (covering the inside of the entire container) prior to waste loading. In addition, all dump trailers, dump truck boxes, and rolloff waste containers shall have a watertight tailgate secured via turnbuckles and shall be covered with a tarp prior to departing the Site. Bayer is preferential to direct-loading gondola rail cars to reduce onsite/offsite construction vehicle traffic, minimize construction related impacts to the surrounding neighborhood, and avoid double-handling materials. An onsite railroad spur has been upgraded and extended to accommodate approximately 18 rail cars onsite. During the previous ICM, 9 gondola rail cars were rotated onsite while 9 cars were in transit throughout the excavation activities.

The waste loading area shall be in the Contamination Reduction Zone, adjacent to the Exclusion Zone. The Contractor shall place 10 mil (minimum thickness) polyethylene sheeting on the ground surface in the waste loading area to protect the area from incidental spillage during loading. In addition, the Contractor shall drape plastic tarps equipped with shepherd hooks over the side of the waste transport containers to minimize contact of impacted materials with the outsides of the containers.

The Contractor shall use conventional equipment (e.g. excavator, loader) to load materials into the waste transport containers. The Contractor shall exercise care during loading to prevent spillage of impacted materials onto the outsides of the waste transport containers. The Contractor's staff (not the truck driver) shall reposition tarp bars over the loads, and the Contractor or the driver shall cover the waste transport containers with a solid tarp (constructed of vinyl or reinforced polyethylene) following loading, prior to departing the Site. The tarps shall extend over the entire load and be secured to resist wind forces at highway speeds. The drivers shall not be permitted to walk over the waste material. The use of mesh covers is prohibited.

The Contractor will be responsible for visually inspecting the waste transportation vehicles (box sidewall, box tailgate, tires, etc.) and performing decontamination, as needed, prior to leaving the Site, to prevent offsite tracking of materials. Each load shall be transported to the designated facility by a licensed hauler in accordance with applicable local, state, and federal regulations. Each waste transporter shall have a valid waste transporter permit (6 NYCRR Part 364). Wastes shall be transported under a non-hazardous waste manifest or bill-of-lading, as appropriate, or under a hazardous waste if any hazardous materials are encountered (although not expected based on work performed to date and existing soil analytical data). The Contractor will be responsible for preparing waste profiles for review by the Engineer and signature by Bayer. The Contractor will also be responsible for preparing manifests/bills of lading and providing them to the Engineer to sign on behalf of Bayer (under agreement with Bayer). Pending receipt of landfill acceptance, the Contractor shall transport the material for proper offsite disposal. The manifests/bills-of-lading will list Bayer as the waste generator. Vehicles shall be placarded, as needed.

3.9.1 Handling / Disposal of Concrete Footers and Debris

The Contractor and Engineer shall assess the concrete removed during excavation (e.g., pilings, spread footers) for the presence of adhered stained soil. The Contractor shall physically remove such soil by scraping and/or pressure washing, to the satisfaction of the Engineer. If visible staining or evidence of spills is identified on the surfaces, the Contractor shall coordinate with the proposed disposal facility regarding the potential scope of any characterization sampling. Samples to characterize the material, if needed, will be collected by the Contractor and submitted (at the Contractor's expense) for laboratory analysis. Pending receipt of landfill acceptance, the Contractor shall transport the concrete for proper offsite disposal. It is anticipated that most, if not all of the concrete, can be transported to a C&D debris landfill for disposal. The Contractor should assume that equipment required to process/handle

the material (e.g. ram-hoe, crusher), as needed to meet sizing requirements from the offsite disposal facility, shall be onsite and available for use during intrusive activities.

For bidding purposes, the Contractor shall assume that the concrete will be classified as "exempt" (non-impacted) C&D debris and transported to a landfill for disposal. The estimated volume of concrete to be handled as C&D debris is 300 CY (equivalent to 600 tons assuming a concrete density of 2.0 tons/CY). Payment for loading, offsite transportation, and disposal of the concrete debris will be based on the Contractor's unit pricing provided under Payment Item 9.1a (per tons of material received by the disposal facility as reported on weight tickets/certificates of disposal provided by the disposal facility). Payment for actual demolition and removal of the concrete debris is covered under Payment Item 6.3.

Other subsurface debris removed from the excavation areas, such as steel/iron pipes and conduits, shall be stockpiled separately and transported for offsite reclamation (steel/iron) as appropriate. The potential for recycling will be determined based on the condition of the steel/iron (whether visibly clean or coated in product) and the potential presence of asbestos-containing insulation materials. If visible product or residues are identified on the surfaces, the Contractor shall coordinate with the proposed recycling or disposal facility regarding the potential scope of any characterization sampling and any requirements for product removal. The Contractor shall also perform asbestos abatement and manage the pipes accordingly if asbestos is encountered. Samples to characterize the materials (product, residue, asbestos), if needed, shall be collected by Contractor or subcontractor personnel, with appropriate training, and submitted (at the Contractor's expense), for laboratory analysis. Pending receipt of landfill acceptance, the Contractor shall transport the debris for proper offsite recycling or disposal.

For bidding purposes, the Contractor shall assume that approximately 500 lineal feet of pipe ranging in size from 8 to 12 inches will be uncovered and removed during the remedial activities. The Contractor will be responsible for coordinating with Bayer and local utility service providers to isolate/shut-off service to the lines, cut the lines at locations just outside the excavation areas and removing the sections of the lines within the excavation/ISS limits. Payment for this item will be based on the Contractor's unit pricing provided under Payment Item 9.1b (per tons of material received by the disposal facility as reported on weight tickets/certificates of disposal provided by the disposal facility). The Contractor shall also provide lump sum pricing for asbestos abatement, if needed, which will be based on various estimated lengths of asbestos-wrapped piping (i.e., 250 feet and 500 feet) under Payment Items 9.1c and 9.1d. The lengths will be based on field measurements obtained by the Contractor and

concurrence provided by the Engineer. Asbestos abatement and disposal shall be performed in accordance with the requirements of 12 NYCRR Part 56 (Code Rule 56), including any Variances prepared by the Contractor and approved by the New York State Department of Labor.

3.9.2 Handling / Disposal of Asphalt Pavement and Sub-Base Material

Asphalt pavement from the parking area located in the northwestern corner of the Site shall be broken up by the Contractor and transported for offsite disposal with the impacted soil from the area. The volume of asphalt has been estimated at approximately 40 in-situ CY. The sub-base material and soil beneath the sub-base material to 1-foot bgs shall be staged with impacted soil (under Subtask 3.9.3) for offsite disposal. There will be no separate payment item for this task.

3.9.3 Handling / Disposal of Impacted Surface and Subsurface Soil

The majority of the surface and subsurface soil removed from the "A" Group Excavation Areas contains PCBs, PAHs, and/or metals at concentrations exceeding soil cleanup levels established for this project and requires offsite disposal. The soil from these areas (with minor exceptions as indicated in Subsection 3.9.4) shall be transferred to a lined material staging area or direct-loaded into waste transport containers for offsite transportation and disposal. These materials shall be transported for proper offsite disposal based on existing analytical data and results for any additional waste characterization soil sampling to be performed by the Contractor, as required by the disposal facility(ies), prior to starting excavation activities.

Waste haulers will be required to follow all local traffic laws and ordinances. Potential truck routes for arrival at and departure from the Site are as follows:

- *Arrival:* From I-495/Long Island Expressway, take Exit 41S toward Route (RT) 106 S/RT107 S (Hicksville). Turn slightly left onto South Service Road/South Marginal Road. Take the second right onto RT107 S/N Broadway. Continue on RT 107 South/N Broadway and turn left onto East Old Country Road. From East Old Country Road, turn right onto New South Road. The Site is on the left.
- *Departure:* From New South Road South, turn left onto East Old Country Road. Continue on East Old Country Road and take a right onto RT 107 N/S. Broadway. Continue north to the ramp for I-495/Long Island Expressway.

Payment for material handling (transfer to staging areas, as needed, and loading into waste transport containers) and offsite transportation will be tracked under Payment Item 9.2 and will be based on the selected Contractor's fixed unit pricing for this work task (per tons of material received by the disposal facility as reported on weight tickets/certificates of disposal provided by the disposal facility). Prospective Contractors shall identify the proposed treatment/disposal facilities for non-hazardous waste and hazardous waste (assume that any hazardous waste would be due to PCB concentrations greater than 50 ppm) in their bids. All fixed unit costs will remain in effect for the duration of the project.

3.9.4 Handling of Reuse Soil

As previously indicated, soil containing PCBs at concentrations greater than 25 ppm was previously removed as part of the 2009 ICM. PCBs at concentrations greater than 10 ppm remain in subsurface soil below the clean backfill placed to restore certain 2009 ICM excavation areas. These former excavation areas will need to be "revisited" as part of the proposed remedial action to achieve the 10 ppm subsurface soil cleanup level established for this RD. Soil below depths ranging from 2 to 6 feet bgs in four proposed excavation areas (Excavation Areas 16A, 20A, 22A, and 25A) contains PCBs at concentrations greater than 10 ppm.

The previous soil removal depths in these four proposed excavation areas, the proposed new soil removal depths to achieve the 10 ppm subsurface soil cleanup level, and the intervals and corresponding volumes of clean soil from these areas (eligible for reuse as fill), are identified in the table below.

Table 3-9
Previous and Proposed Soil Removal Depths:
Revisited Excavation Areas

Excavation Area	Surface Area (SF)	Removal Depths (feet bgs)		Reuse Soil Interval (feet)	Reuse Soil Volume (in-situ CY)
		Previous (2009 ICM)	Proposed (2013 Remedial Action)		
16A	398	2	8.5	None	0
20A	1,127	6	10	0-4'	167
22A	578	6	10	0-4'	86
25A	999	4	10	0-2'	74
Total Reuse Soil Volume:					327



For each of the above-identified excavation areas, the overlying clean soil (extending to within 2 feet of the 2009 ICM excavation bottom) shall first be removed and stockpiled for later use as backfill (as subsurface fill). The remaining soil between this depth and the proposed removal depths shown on the Design Drawings (and indicated in Table 3-1) shall be transported for offsite disposal in accordance with applicable rules and regulations.

As indicated in Section 3.6.1, there are 24 areas where concentrations of COIs in existing surface soil do not meet the surface soil cleanup levels but meet subsurface soil cleanup levels. Soil removed from these areas (the "B" Group Excavation Areas -- 1B through 24B) shall be stockpiled for later reuse as subsurface backfill (greater than 1 foot bgs) provided that the soil, upon excavation, exhibits no visible staining and can be compacted to achieve minimum compaction requirements. In the event that a portion of the fill is found to have staining, that portion may be taken for offsite disposal without further characterization, pending approval from Bayer/Engineer.

Payment for excavating soil from each of the above-identified areas (the four revisited excavation areas and the 24 shallow soil removal areas) will be tracked under Payment Item 6.2. Payment for managing the soil to be reused as subsurface fill (handling the soil following excavation and subsequent soil placement, grading, and compaction in excavations greater than 1 foot deep) will be tracked under Payment Item 9.3 and based on the selected Contractor's fixed unit pricing for this subtask (per in-situ volume of soil removed from the excavations for reuse as subsurface fill as determined based on survey and agreed to by the Engineer).

3.10 Work Task 10 - Environmental Monitoring and Mitigation

The Contractor shall employ appropriate measures during implementation of the remedial activities to limit the generation of noise, vapors/odors, and dust to within acceptable levels. The magnitude and extent of vapor/odor and dust control measures required will be based on the results of air monitoring performed by the Contractor's third party air monitoring technician. The main objectives of the air monitoring and response actions are to protect the health and safety of onsite workers and the surrounding community and to address potential nuisance odors. Minimum Contractor requirements for noise, vapors/odors, and dust suppression are presented below, followed by an overview of the proposed air monitoring programs.

3.10.1 Noise, Dust, Vapor, and Odor Suppression

The Contractor shall employ adequate measures during implementation of the remedial activities to maintain noise levels produced by construction equipment to safe and tolerable limits, as set forth by OSHA, USEPA, and any applicable New York State and local code ordinances (including the Noise Control Ordinance Section 156-4 of the Town of Oyster Bay Code). All construction equipment posing a potential noise nuisance shall be outfitted with noise-muffling devices by the Contractor at no additional cost to Bayer. The Contractor shall also implement air emissions control and fugitive dust suppression measures to limit the potential for nuisance odors, organic vapor emissions, and dust emissions from the Site during the remedial activities. At a minimum, odor/vapor and dust controls shall be initiated whenever any of the following occur: (1) site personnel detect a significant odor that is acknowledged by Bayer/Engineer; (2) the public complains of an odor; (3) perimeter action levels for air monitoring as specified in the CAMP (Appendix D) are exceeded; (4) the work area action levels for air monitoring as specified in the Contractor's HASP are exceeded; or (5) site personnel observe visible dust related to site work that is acknowledged by Bayer/Engineer. Contractor methods to control odors/vapors and dust during remedial activities may include, but shall not be limited to, the following:

- Applying a BioSolve[®] solution (spray) that uses encapsulation and chemical masking to suppress vapors/odors originating from the excavation area, excavator bucket, staging area, or waste transportation vehicles. BioSolve[®] product information is included in Attachment B. The Contractor shall apply the BioSolve[®] solution using a pressure washer. If required, a Contractor worker shall be available for dedicated application of BioSolve[®] solution.
- Operating a perimeter misting system, such as the Piion Flexi-Fog system.
- Applying a water spray to suppress dust originating from excavation and dumping and from vehicle traffic.
- Limiting travel speed and applying water to gravel haul roads, if needed.
- Minimizing the number and size of excavation areas open at one time.
- Covering the soil and materials in the staging area(s) using ultraviolet resistant, minimum 10 mil thickness, polyethylene sheeting.

Payment for noise, vapor/odor, and dust suppression and implemented by the Contractor will be based on the selected Contractor's unit rate (per week) bid for this work task under Payment Item 10.1.

3.10.2 Air Monitoring

Details of the air monitoring to be performed by the Contractor's independent third party air monitoring technician during the remedial activities, including the monitoring equipment and procedures to be used, proposed action levels, and reporting requirements are presented in the CAMP. Work area air monitoring to be performed by the Contractor shall be detailed in the Contractor's HASP. Minimum requirements for the Contractor's site-specific HASP are presented in M&P Specification Section 01010 (Summary of Work). A brief summary of the work area air monitoring to be performed by the Contractor and the perimeter/community air monitoring to be performed by the Contractor's independent third party air monitoring technician is presented below.

Work Area/Breathing Zone Air Monitoring

The Contractor shall implement a work area/breathing zone air monitoring program that involves the use of direct-reading instruments that measure total organic vapor and particulate concentrations. The Contractor shall perform the monitoring during all intrusive and/or potential dust-generating activities (e.g., erosion and sedimentation control measures installation, excavation, backfilling, and material handling). Results of the monitoring will be used to identify engineering controls. Further monitoring will be performed after implementation of engineering controls and the results may be used to identify the level of PPE required, if needed. The results will also serve to document potential full-shift exposures for Contractor personnel and potential acute exposure conditions.

Perimeter/Community Air Monitoring

The perimeter/community air monitoring program will be implemented by an independent third party retained by the Contractor ("air monitoring technician") in accordance with the CAMP. The program will involve the use of direct-reading instruments (mounted on tripods or other structure) to measure total organic vapor and particulate levels at four designated air monitoring sample stations. The air monitoring sample station locations will be determined daily (at the start of each workday and midway through the workday) based on wind direction, as follows:

- Station "UP" will be positioned to monitor conditions upwind of site activities.
- Stations "DN1", "DN2", and "DN3" will be positioned to monitor conditions as follows: (1) downwind from site activities; and (2) between site activities and nearest receptors.

Station "DN2" will be positioned at the downwind perimeter of the immediate work area (Exclusion Zone) as determined based on the prevailing wind direction. Recognizing that there will be wind gusts from time-to-time that differ from the prevailing wind direction, Stations "DN1" and "DN3" will be positioned equidistant on either side of Station "DN2" to create a monitoring "envelope" downwind from the Exclusion Zone (to account for variability in wind direction). As indicated by the Design Drawings, the Exclusion Zone will generally extend toward or directly to the shared property boundaries with the Simone Building Complex (to the east) and the LIRR (to the south). Based on the site layout, the footprint of the proposed remedial activities (which occupy most of the eastern half of the site), and the locations of nearby buildings, it is anticipated that the three downwind locations will generally be established along the property boundary (just inside the fence line), generally opposite the adjacent offsite commercial/industrial facilities. Therefore, the proposed downwind monitoring stations will also serve as stations between the site and the nearest receptor. Monitoring data from each of these stations will also be used to make field adjustments (if needed) to be protective of offsite receptors.

Proposed downwind monitoring stations for various prevailing wind directions are identified in the table below:

Table 3-10
Wind Directions and Proposed Downwind CAMP Sampling Stations

Prevailing Wind Direction From:	Proposed Downwind CAMP Sampling Stations
West/ Northwest	Opposite the Simone Building Complex at 1 Enterprise Place. If the wind direction is from the northwest, one of these stations may be positioned along the southernmost property boundary depending on the location of intrusive work activities.
North/ Northeast/ East	Opposite the Long Island Railroad and the neighboring Westye Group East, Capitol Warehouse Corp., and American Compressed Gases facilities (and/or opposite New South Road depending on the location of intrusive work activities).



Prevailing Wind Direction From:	Proposed Downwind CAMP Sampling Stations
Southeast/ South	In the northern portion of the site and/or along the western property boundary (west of the paved former parking lots and directly opposite New South Road), depending on the location of intrusive work activities.
Southwest	Opposite the Simone Building Complex and/or along the northern fence line opposite several offsite commercial/industrial facilities (e.g., beyond the proposed arsenic soil removal area), depending on the location of intrusive work activities.

The air monitoring technician will identify the downwind air monitoring sample station locations at the start of each workday based on wind directions and work activities, for review by the Engineer. Adjustments will be made to the sample station locations (start of afternoon) if the prevailing wind direction changes.

The perimeter/community air monitoring will be performed during all intrusive and/or potential dust-generating activities and will provide an early warning system so that engineering controls can be put in place to prevent community exposure to emissions from project activities. The dedicated air monitoring technician will routinely check the air monitoring sample stations to confirm that the equipment is functioning properly and to record manual hourly air monitoring readings. The technician will also document activities being performed while air monitoring is ongoing.

The direct-reading instruments at the air monitoring sample stations will continuously monitor air quality and compute 15-minute running average concentrations (calculated for continuous 15-minute increments – i.e., 08:00 to 08:15, 08:15 to 08:30, etc.) whenever site activities are being conducted. Results of the perimeter/community air monitoring for total organic vapors and particulates (both instantaneous readings and 15-minute averages) will be recorded by the monitoring instruments (dataloggers).

The air monitoring technician will submit a weekly CAMP report (via e-mail) to the NYSDEC, NYSDOH, Bayer, and ARCADIS. The weekly CAMP report will include, but not be limited to, the following:

- A brief memorandum summarizing the air monitoring work activities and results for the monitoring period, including an in-text table that presents a “dashboard” view of the organic vapor and particulate concentrations measured at each station during the period. The memorandum will be supported by two attachments: (1)

Attachment A showing air monitoring station daily locations; and (2) Attachment B presenting graphs of the 15-minute time-weighted average VOC and particulate concentrations recorded at each of the four sampling stations (one graph for each station showing the weekly results relative to action levels).

- A “zip” file that contains the raw data files from the individual monitors and meteorological data from the weather station.

In the event of an exceedance of an air monitoring action level for either total organic vapors or particulates, the air monitoring technician will notify Bayer and the NYSDEC (via telephone) and the Engineer (in person) once the exceedance is observed (real-time). Within 24 hours of the exceedance, the technician will send a follow-up e-mail to NYSDEC, NYSDOH, Bayer, and the Engineer that summarizes the data, the cause of the exceedance, and corrective measures implemented (or to be implemented) as a result of the exceedance.

Chemical-specific air monitoring shall also be conducted by the air monitoring technician (as directed by the Engineer and at the Contractor's expense) if perimeter action levels for VOCs are regularly exceeded. Such chemical specific air monitoring may involve use of colorimetric detector tubes (e.g., Draeger tubes) or collection of air samples via Summa[®] canisters and analysis for VOCs by a NYSDOH ELAP-certified laboratory using USEPA Compendium Method TO-15, or equivalent. Results for the chemical-specific air samples will be reported to NYSDEC, NYSDOH, Bayer, the Engineer, and the Contractor with the weekly air monitoring data submittal discussed above.

Payment for the third party air monitoring described above will be based on the selected Contractor's unit rate (per week) bid for this work task under Payment Item 10.2.

3.11 Work Task 11 - Decontamination Activities

The Contractor will be responsible for conducting decontamination activities, as necessary, for all personnel and equipment that come in contact with impacted materials at the Site. The Contractor shall decontaminate equipment and personnel in the equipment decontamination areas and personnel decontamination areas that will be constructed as described in Subsections 3.3.2 and 3.3.3.

At a minimum, the Contractor shall decontaminate equipment and materials that come in contact with impacted site media (including excavation equipment, loaders, trucks, tanks, pumps, hand-tools, etc.) prior to handling clean materials and prior to demobilizing the equipment and materials from the Site. In addition, equipment shall be decontaminated if used to handle material exhibiting a toxicity characteristic prior to further handling of non-hazardous soil. The equipment decontamination is required to prevent cross-contamination onsite and offsite.

The Contractor will select the means and methods (as part of the Operations Plan) for decontaminating equipment, materials, and personnel. Specific cleaning procedures will be required of the Contractor, including the following (at a minimum):

- Each transport vehicle shall be visually inspected by the Contractor before leaving the loading area. The Contractor shall remove accumulations of soil on the vehicle tires or other exterior surfaces manually or, if necessary, by using a high-pressure water and/or steam spray in the equipment decontamination area.
- Material handling equipment that has come into contact with waste-containing soils shall be cleaned in the equipment decontamination area before it enters non-work areas, handles "clean" materials (e.g., backfill), or leaves the Site. Equipment cleaning shall be performed manually, using a high-pressure water spray and/or steam cleaning or other appropriate measures identified by the Contractor and approved by the Engineer.
- Precautions shall be taken to limit contact between the equipment, personnel performing the decontamination activities, and any cleaning liquids/debris that may accumulate in the decontamination area.
- Liquid materials, such as decontamination water (and other residual material collected during equipment decontamination) shall be containerized in NYSDOT-approved 55-gallon drums or other appropriate containers and transported to an industrial wastewater treatment facility for treatment/discharge. Interim holding tanks can be used by the Contractor, but shall be decontaminated after final use to the satisfaction of the Engineer.
- Solids and other waste materials generated by equipment decontamination shall also be containerized for offsite disposal. When impacted soil transport activities are in progress, the residual solid wastes may be included with the offsite shipments of impacted soil.



- A visual inspection of equipment and materials (including excavation equipment, loaders, trucks, tanks, pumps, hand-tools, etc.) shall be performed by the Contractor and the Engineer following final equipment cleaning. If the visual inspection indicates that waste materials remain, the Contractor shall re-clean the equipment, and an additional inspection shall be performed by the Contractor and the Engineer. The Contractor shall perform decontamination activities until no visible soil, debris, or stains are present on the equipment surfaces (to the satisfaction of the Engineer). Unless otherwise directed by the Engineer, any equipment to be taken offsite by the Contractor shall be subject to a visual review by the Engineer and cleaning (or additional cleaning, as necessary, at no additional cost to Bayer) at the decontamination area.

Payment for the decontamination activities will be based on the selected Contractor's lump sum bid for this work task under Payment Item 11.

3.12 Work Task 12 - Backfilling Activities

The Contractor may begin backfilling an excavation after completion of soil removal within that excavation, provided that confirmation sampling results indicate that the soil cleanup levels established for the project have been achieved.

At least three (3) weeks prior to bringing backfill onsite and/or placing backfill, the Contractor shall collect samples from the backfill source(s) for laboratory analysis for PCBs, pesticides, VOCs, SVOCs, and inorganic constituents to verify that the proposed material meets analytical requirements in accordance with M&P Specification Sections 02206 and 02210 (Selected Fill and Topsoil and Seeding, respectively). The proposed compound list shall include each constituent listed in 6 NYCRR Part 375-6.8(b). The laboratory used to analyze the backfill samples shall have NYSDOH ELAP certification for the parameters being analyzed. The laboratory shall be capable of providing detection limits at or below the commercial use and groundwater protection SCOs presented in 6 NYCRR Part 375-6.8(b) to allow for comparison of the analytical results to those objectives by the Contractor and Engineer. NYSDEC ASP Category B data deliverables and laboratory electronic data deliverables shall be provided for the backfill samples.

Alternate sources of backfill shall be identified by the Contractor (and tested at the Contractor's expense) if unacceptable sample results are obtained for the Contractor's proposed fill. All backfill brought onsite by the Contractor must meet the lower of either



the protection of groundwater values or the protection of public health SCOs for commercial use presented in 6 NYCRR Part 375-6.8(b).

The estimated volume of imported fill needed for this project is 6,813 CY (in-situ volume following compaction). This is calculated as the total volume of soil to be excavated (excluding the mound area soil) minus the volume of reuse soil anticipated to be available, which are identified below.

- Excluding the mound area soil excavation, the total soil excavation volume is 10,097 CY. This includes 7,140 CY from the "A" Group Excavation Areas and 2,957 CY from the "B" Group Excavation Areas.
- The total reuse soil volume anticipated to be available is 3,284 CY. This includes 2,957 CY from the "B" Group Excavation Areas and 327 CY of soil from the "revisited" excavation areas as identified in Table 3-1. The proposed reuse soil will need to be sampled as described in Subsection 3.6.1 to determine whether it can be reused as subsurface fill or requires offsite disposal.

At least one sample from each backfill source will be required, with a sampling frequency as follows:

- For material being imported from a virgin mine/pit, one round of characterization samples will be required for each backfill type to be obtained from the mine/pit.
- For material sources other than a virgin mine/pit, samples will be required for each backfill type to be obtained from the source(s) and sampling shall be performed in general accordance with the protocols outlined in Section 5.4(e)10. of DER-10 and Table 5.4(e)10. For purposes of this project, one set of samples will be required for each 500 CY of material imported to the site (for an estimated overall total of 14 backfill samples).

The samples for VOC analysis shall be discrete grab samples, and the samples for PCB, pesticide, SVOC, and inorganic constituent analysis shall be composite samples.

The Contractor will also be responsible for providing the Engineer with the following for the fill: (1) sieve analysis reports and moisture/density test results for the proposed imported fill materials as described in M&P Specification Sections 02201 (Earthwork) and 02206 (Fill Materials); (2) the name and location of the fill source(s); (3) identification of any state or local approvals as a fill source; and (4) a brief history of the

property that is the source of the fill. The Engineer, in turn, will provide the above information to the NYSDEC for approval of the proposed fill.

Prior to placing backfill, the Contractor shall remove standing water (precipitation or surface water runoff) and groundwater, if any, that accumulates within the excavation areas. The standing water shall be transferred to a portable storage tank(s) for characterization and subsequent management as described in Subsection 3.8.2. The Contractor shall also perform survey activities to document the excavation limits and provide bills-of-lading to the Engineer to document that the fill delivered to the Site is from a NYSDEC-approved source(s).

The Contractor shall install a permeable non-woven geotextile or orange construction fencing (demarcation layer) at the interface of each excavation area completion depth or interface with surface soils reused as onsite subsurface fill. Requirements for the geotextile material and installation are presented in M&P Specification Section 02270 (Geotextile Fabric). If the Contractor uses the orange construction fencing, it shall be installed using similar techniques as the geotextile material and to the satisfaction of the Engineer. Soil below the demarcation layer will need to be managed by the property owner in accordance with a Site Management Plan (SMP) to be prepared by Bayer. The Contractor shall also survey the locations and elevations of the demarcation layer.

In general, the Contractor shall place and compact all fill materials in 1-foot lifts, within each excavation area until each area is restored to within 6 inches of the surrounding (original) grade. The final 6 inches will backfilled with 6 inches of topsoil of sufficient quality to maintain a vegetation layer. The Contractor shall retain and pay all costs for compaction testing on the fill materials (excluding the topsoil layer) by an independent testing laboratory. Compaction testing shall be performed every 2,500 square feet for each lift. All backfill shall be compacted to a minimum of 95% of maximum dry unit weight as determined by Proctor testing following American Society for Testing and Materials (ASTM) Method D698. The testing laboratory shall test soils in accordance with ASTM D2922 (nuclear method) with proctors for each soil type.

Payment for placing, grading, and compacting the reuse material described above (including associated compaction testing) will be tracked under Payment Item 9.3. Payment for characterizing (sampling and analyzing) the proposed imported clean backfill material will be tracked under Payment Item 12.1 on a per sample basis. Payment for installing demarcation layer will be based on a square footage basis (Payment Item 12.2) as determined by survey by the Contractor's Professional Land

Surveyor licensed in the State of New York. Payment for purchasing, delivering, placing, grading, and compacting the imported clean backfill (including associated compaction testing) will be tracked under Payment Items 12.3 and 12.4 (for run-of-bank gravel and topsoil, respectively) and based on a per in-situ CY basis. The quantity will be the total in-situ volume of imported clean backfill placed within the excavation areas and will be determined by comparing post-excavation survey to survey of the excavation boundaries prior to backfill placement (as provided by the Professional Land Surveyor). The calculated volume of imported clean backfill for excavation will be corrected (reduced) by the volume of reuse material placed as subsurface backfill within the areas (also to be determined by survey).

3.13 Work Task 13 - Site Restoration / Demobilization

At the conclusion of the remedial activities, the Contractor shall conduct site restoration/demobilization activities, including (but not limited to) the following:

- Seeding and mulching the new topsoil and all areas of the Site disturbed by the remedial activities in accordance with the M&P Specification Section 02210 (Topsoil and Seeding). A final site inspection will be performed by the Engineer to verify that all disturbed areas are stabilized with a perennial vegetative cover (with a minimum 80 percent density). If this is not the case, the Contractor shall implement measures to correct inadequate areas until Engineer approval of final site stabilization is provided.
- Dismantling the work area(s), staging area(s), and equipment and material decontamination areas.
- Removing certain erosion and sedimentation control measures as discussed under Subsection 3.4.
- Transporting residual wastes (e.g., disposable equipment, PPE, sampling equipment, cleaning residuals, sacrificial soil and liners from the material staging areas and equipment decontamination areas, etc.) remaining at the completion of the remedial activities for offsite disposal in accordance with applicable rules and regulations. Characterization sampling of the residual wastes (if needed) shall be performed by the Contractor. Samples collected by the Contractor to characterize residual wastes shall be submitted by the Contractor to a NYSDOH ELAP-certified laboratory for analysis. Clean granular fill below the material staging area and equipment decontamination area liners may be reused as subsurface fill.



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- Removing all Contractor equipment, materials, and personnel from the Site.
- Preparing and providing required final field records and as-built documentation to the Engineer. The Contractor shall maintain and provide field records and survey information to the Engineer during the remedial project at milestones to be determined in the field and agreed upon by the Engineer.

Payment for seeding and mulching will be based on the unit price for this item per installed square foot basis under Payment Item 13. The quantity will be determined by survey (as provided by a Professional Land Surveyor licensed in the State of New York). Payment for the remaining site restoration/demobilization activities under this work task will be based on the selected Contractor's lump sum bid for this work task.

4. Post Remediation Activities

This section presents the activities to be performed after completion of the remedial activities. The work activities are described under the following general tasks:

- Final Engineering Report
- Institutional Controls

A description of each work task is presented below.

4.1 Final Engineering Report

Following completion of the remedial activities, the Engineer will prepare a Final Engineering Report on behalf of Bayer in accordance with the guidance provided in Section 5.8 of DER-10. The Final Engineering Report will include the following:

- Relevant background information, including site location/description, site history, and summary of previous investigations and ICMs.
- A summary of the remedial activities, including:
 - A description of any problems encountered during construction and their resolutions.
 - A description of changes to the design documents and why the changes were made.
 - Concentrations of constituents (based on characterization sampling) in media (soil, water) removed.
 - A listing of the waste streams, including quantity of materials disposed and corresponding disposal locations.
 - The quantity of excavated material reused as subsurface fill.
 - Boundaries of the real property subject to the environmental easement (EE) or other institutional controls.

- A detailed description of site restoration activities.
- A list of the remedial action objectives and remedial goals applied to the remedial activities.
- A detailed description of the source(s) and quality of fill.
- A detailed description of the community air monitoring and other remedial action compliance activities performed.
- Tables and figures containing pre-remedial waste characterization (if needed), backfill, and QA/QC data keyed appropriately so that completion of the remedial action is documented. The figures will indicate the estimated volume of impacted soil that was removed.
- “As-built” drawings bearing the stamp and signature of a Professional Engineer licensed in the State of New York and showing:
 - Surveyed excavation limits and demarcation layer locations and elevations.
 - Permanent survey markers for horizontal and vertical control for site management.
- A description of the institutional controls employed at the Site and a copy of the EE.
- A certification statement with the signature and seal of a professional engineer licensed to practice in New York State.

The Final Engineering Report will also include a compact disc (CD) that contains the following:

- Fully-executed manifests/certificates of disposal documenting the offsite transportation and disposal of waste materials generated as part of the remedial activities.
- Copies of weekly field reports and air monitoring logs and data documenting results of daily air monitoring performed in accordance with the CAMP.

- Results of all analyses, including laboratory analytical data reports and data validation reports.
- Key project documents summarizing previous investigation and remedial activities.
- Correspondence with NYSDEC and others, as deemed relevant to the remedial activities.

4.2 Institutional Controls

Institutional controls consisting of an EE and SMP will be developed by Bayer to address residual impacts remaining at the completion of the excavation activities. The EE will:

- Restrict future use and development of the Site to industrial and certain commercial uses.
- Notify future property owners of the presence of residual impacts in soil at the Site.
- Prohibit the use of groundwater.
- Require compliance with the approved SMP.
- Require the property owner to complete and submit an annual certification to the NYSDEC.

The SMP will be developed primarily to address residually impacted soil that may be excavated from the Site during the potential future work that involves subsurface excavation or construction. The SMP will also:

- Require that clean cover materials be maintained. At the completion of the remedial activities and redevelopment, the cover will be in the form of 1 foot of clean soils meeting the commercial use SCOs, asphalt pavement, or concrete. The soil cover may be replaced with concrete or asphalt with a minimum total cross-sectional thickness of 6-inches of material (including both the asphalt/ concrete and clean sub-base material).
- Set forth the inspection and maintenance activities for the cover materials.

- Identify known locations where impacted subsurface soil remains at the Site.
- Prohibit the performance of intrusive subsurface activities (below the clean cover materials) without appropriate controls and measures.
- Require characterization of soil excavated below the cover materials and appropriate management of that soil (reuse as subsurface fill or offsite disposal as set forth in the SMP).
- Require installation of a vapor barrier and sub-slab depressurization (SSD) system piping during construction of enclosed buildings/structures intended for human occupancy, and installation and operation of a full SSD system, if needed, based on results of indoor air monitoring during or after building construction.
- Require preparation and submittal of an annual report to NYSDEC demonstrating that the institutional controls are being maintained and remain effective.

5. Schedule

This section presents the schedule for implementing the proposed remedial activities at the Site. Specific work activities identified for the completion of the remedial activities and the estimated time to complete the work activities are as follows:

**Table 5-1
Work Activities and Anticipated Duration**

Work Activity	Estimated Time to Complete Work Activity
NYSDEC Review/Approval of RD	4 weeks
Contractor Procurement (concurrent with NYSDEC review of the RD)	4 weeks
Contractor Preparation of Plans and Submittals	3 weeks
Implement Remedial Activities	3-4 months
Prepare Final Engineering Report/Institutional Controls	8 weeks

As indicated above, Bayer anticipates that the remedial field activities will take approximately three to four months to complete. The schedule for completing the remedial activities could be impacted by NYSDEC review time frames, weather conditions, and/or unexpected field conditions requiring additional excavation or material handling. Bayer will notify NYSDEC regarding delays that impact the schedule for completing the remedial activities. A detailed project schedule for the design and implementation of the remedial activities is included as Attachment C.



6. References

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Tables

TABLE 1
EXCAVATION AREAS, VERIFICATION SAMPLING LOCATIONS,
AND SURVEY COORDINATES

REMEDIAL DESIGN
BAYER MATERIALSCIENCE LLC
125 NEW SOUTH ROAD
HICKSVILLE, NEW YORK

Excavation Area No.	Control Point No./ Proposed Sampling Location ID	Northing	Easting
Excavation Boundary Control Points & Coordinates			
1A	1A01	194613.3701	2137263.494
	1A02	194626.3335	2137393.579
	1A03	194593.1114	2137397.308
	1A04	194579.1711	2137267.62
2A	2A01	194638.6933	2137519.365
	2A02	194645.9324	2137597.366
	2A03	194581.158	2137603.691
	2A04	194573.4281	2137525.732
3A	3A01	194633.4427	2137462.789
	2A01	194638.6933	2137519.365
	2A04	194573.4281	2137525.732
	3A02	194567.8226	2137469.199
4A	4A01	194562.3262	2137606.21
	4A02	194565.4495	2137634.775
	4A03	194483.1123	2137644.098
	4A04	194479.7217	2137615.872
5A	5A01	194486.5123	2137292.152
	5A02	194467.0764	2137315.005
	5A03	194444.2237	2137295.569
	5A04	194463.6596	2137272.716
6A	6A01	194332.8892	2137660.072
	6A02	194290.8341	2137663.987
	6A03	194285.386	2137611.697
	6A04	194323.5378	2137565.149
7A	6A02	194290.8341	2137663.987
	7A01	194257.7131	2137667.453
	7A02	194255.1713	2137647.978
	6A03	194285.386	2137611.697
8A	8A01	194138.5704	2137471.822
	8A02	194115.6954	2137499.083
	8A03	194091.408	2137478.702
	8A04	194114.2605	2137451.468
9A	9A01	194134.0337	2137514.463
	9A02	194095.0076	2137560.973
	9A03	194076.6643	2137545.581
	8A02	194115.6954	2137499.083

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BAYER MATERIALSCIENCE LLC
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Excavation Area No.	Control Point No./ Proposed Sampling Locaton ID	Northing	Easting
10A	10A01	194080.7879	2137549.041
	10A02	194052.2489	2137583.033
	10A03	194026.5937	2137561.505
	10A04	194055.1312	2137527.496
11A	10A04	194055.1312	2137527.496
	10A03	194026.5937	2137561.505
	11A01	194005.7532	2137544.018
	11A02	194034.2906	2137510.008
12A	12A01	194021.9701	2137465.076
	12A02	194003.7773	2137486.755
	12A03	193981.7081	2137468.223
	12A04	193999.9198	2137446.522
13A	12A04	193999.9198	2137446.522
	13A01	193972.1484	2137479.421
	13A02	193953.3461	2137463.645
	13A03	193981.0131	2137430.673
14A	14A01	194008.5138	2137490.729
	14A02	193977.4406	2137527.796
	14A03	193950.2943	2137505.018
	12A03	193981.7081	2137468.223
15A	14A02	193977.4406	2137527.796
	15A01	193962.9242	2137545.096
	15A02	193935.6925	2137522.12
	14A03	193950.2943	2137505.018
16A	16A01	194010.5711	2137509.618
	16A02	193990.6505	2137532.065
	16A03	193980.7969	2137523.796
	16A04	194000.0736	2137500.809
17A	17A01	193982.4321	2137549.77
	17A02	193984.3307	2137591.051
	17A03	193930.8729	2137593.439
	17A04	193928.9484	2137552.172
18A	17A03	193930.8729	2137593.439
	18A01	193896.8939	2137595.03
	18A02	193895.8865	2137572.523
	18A03	193929.794	2137571.001
19A	19A01	193964.826	2137621.944
	19A02	193934.8562	2137623.29
	19A03	193933.5102	2137593.32
	19A04	193963.48	2137591.974

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Excavation Area No.	Control Point No./ Proposed Sampling Locaton ID	Northing	Easting
20A	20A01	193977.0955	2137696.864
	20A02	193948.1393	2137699.811
	20A03	193946.0919	2137659.215
	20A04	193973.4459	2137657.012
21A	21A01	193861.7507	2137607.146
	21A02	193819.8933	2137657.03
	21A03	193787.4028	2137629.514
	21A04	193829.2904	2137579.826
22A	21A02	193861.7507	2137607.146
	22A01	193799.086	2137681.827
	22A02	193785.6698	2137670.37
	22A03	193806.1924	2137645.447
23A	22A01	193799.086	2137681.827
	23A01	193768.7795	2137717.95
	23A02	193744.2119	2137697.216
	23A03	193774.565	2137661.043
24A	24A04	193793.3995	2137634.599
	24A01	193771.8508	2137660.549
	24A02	193762.8844	2137653.027
	24A03	193784.5808	2137627.19
25A	25A01	193802.9698	2137557.146
	25A02	193783.049	2137580.887
	25A03	193758.4349	2137560.233
	25A04	193778.4687	2137536.358
26A	26A01	193804.2215	2137609.674
	26A02	193795.2083	2137620.306
	26A03	193750.1384	2137582.499
	26A04	193764.5308	2137565.359
	25A02	193783.049	2137580.887
	26A05	193777.7499	2137587.462
27A	26A04	193764.5308	2137565.359
	27A01	193747.336	2137585.851
	27A02	193728.868	2137570.354
	27A03	193746.0629	2137549.862
28A	28A01	193812.9408	2137545.263
	25A01	193802.9698	2137557.146
	25A04	193778.4687	2137536.358
	28A02	193788.3268	2137524.61

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Excavation Area No.	Control Point No./ Proposed Sampling Location ID	Northing	Easting
29A	29A01	193832.2389	2137438.391
	29A02	193789.5381	2137489.188
	29A03	193762.7291	2137466.682
	29A04	193805.3722	2137415.862
30A	29A02	193789.5381	2137489.188
	30A01	193773.5311	2137508.155
	30A02	193746.8493	2137485.607
	29A03	193762.7291	2137466.682
31A	31A01	193815.0365	2137481.957
	31A02	193798.2957	2137501.908
	31A03	193786.8501	2137492.283
	31A04	193803.7383	2137472.326
32A	29A04	193805.3722	2137415.862
	32A01	193777.5793	2137448.985
	32A02	193748.7085	2137424.754
	32A03	193776.5015	2137391.632
33A	32A03	193776.5015	2137391.632
	32A02	193748.7085	2137424.754
	33A01	193726.7775	2137406.352
	33A02	193754.8926	2137373.494
34A	34A01	193980.0227	2137263.495
	34A02	193933.4331	2137318.551
	34A03	193917.2851	2137305.002
	34A04	193964.1256	2137250.155
35A	35A01	194018.8035	2137192.049
	35A02	193999.5199	2137215.031
	35A03	193976.5385	2137195.747
	35A04	193995.8221	2137172.766
36A	36A01	194041.9715	2137388.037
	36A02	194028.6459	2137404.124
	36A03	194014.1199	2137391.764
	36A04	194027.6284	2137375.889
37A	37A01	194064.8868	2137469.354
	37A02	194051.1787	2137485.693
	37A03	194035.2708	2137472.343
	37A04	194048.9804	2137456.005

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Excavation Area No.	Control Point No./ Propossed Sampling Locaton ID	Northing	Easting
1B	1B01	194589.8749	2137367.198
	1B02	194553.4984	2137370.385
	1B03	194550.8801	2137340.5
	1B04	194586.668	2137337.364
2B	2B01	194499.7198	2137579.322
	2B02	194503.7722	2137613.059
	2B03	194473.9776	2137616.562
	2B04	194469.934	2137582.9
3B	3B01	194447.7222	2137332.614
	3B02	194423.9969	2137360.615
	3B03	194379.3917	2137323.01
	3B04	194403.117	2137295.009
4B	4B01	194436.8738	2137406.065
	4B02	194417.5902	2137429.047
	4B03	194394.6088	2137409.763
	4B04	194413.8925	2137386.782
5B	5B01	194458.3199	2137563.028
	5B02	194432.9153	2137593.304
	5B03	194369.6985	2137540.258
	5B04	194395.1031	2137509.982
6B	6B01	194324.5389	2137378.281
	6B02	194305.2552	2137401.262
	6B03	194282.2739	2137381.978
	6B04	194301.5575	2137358.997
7B	7B01	194355.328	2137452.778
	7B02	194315.0788	2137500.745
	7B03	194287.5837	2137477.674
	7B04	194327.8329	2137429.707
8B	8B01	194311.5006	2137579.802
	8B02	194292.4981	2137603.019
	8B03	194266.7782	2137581.438
	8B04	194286.0618	2137558.456
9B	9B01	194285.0636	2137432.191
	9B02	194260.2384	2137461.776
	9B03	194206.7218	2137416.87
	9B04	194231.5469	2137387.285
10B	10B01	194275.301	2137500.087
	10B02	194239.6267	2137542.602
	10B03	194211.1425	2137518.701
	10B04	194246.8168	2137476.186

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HICKSVILLE, NEW YORK

Excavation Area No.	Control Point No./ Proposed Sampling Location ID	Northing	Easting
11B	11B01	194259.2672	2137582.664
	11B02	194239.9835	2137605.646
	11B03	194217.0022	2137586.362
	11B04	194236.2858	2137563.381
12B	12B01	194156.8867	2137487.191
	9A01	194134.0337	2137514.463
	8A02	194115.6954	2137499.083
	8A01	194138.5704	2137471.822
13B	13B01	194080.1369	2137600.301
	13B02	194060.8533	2137623.282
	13B03	194035.9849	2137602.415
	13B04	193991.3849	2137655.567
	13B05	193962.9752	2137657.855
	13B06	193960.1737	2137622.153
	19A01	193964.826	2137621.944
	19A04	193963.48	2137591.974
	17A02	193984.3307	2137591.051
	17A01	193982.4321	2137549.77
	13B07	193974.6254	2137550.121
	13B08	193984.2703	2137539.253
	13B09	193999.2461	2137551.69
	11A01	194005.7532	2137544.018
	10A02	194052.2489	2137583.033
	13B10	194055.2686	2137579.434
14B	8A04	194114.2605	2137451.468
	8A03	194091.408	2137478.702
	14B01	194071.2474	2137461.78
	37A01	194064.8868	2137469.354
	37A04	194048.9804	2137456.005
	14B02	194015.0919	2137496.39
	12A02	194003.7773	2137486.755
	12A01	194021.9701	2137465.076
	13A03	193981.0131	2137430.673
	36A03	194014.1199	2137391.764
	36A02	194028.6459	2137404.124
	36A01	194041.9715	2137388.037
	14B03	194057.6966	2137401.356
	14B04	194082.4557	2137373.405
	14B05	194104.2497	2137391.693
	14B06	194078.712	2137421.681

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Excavation Area No.	Control Point No./ Proposed Sampling Location ID	Northing	Easting
15B	15B01	193943.7559	2137528.923
	15B02	193928.5612	2137547.032
	18A03	193929.794	2137571.001
	15B03	193910.7466	2137571.856
	15B04	193908.9952	2137553.43
	15A02	193935.6925	2137522.12
16B	16B01	193863.223	2137522.898
	16B02	193869.6583	2137576.164
	18A02	193895.8865	2137572.523
	18A01	193896.8939	2137595.03
	16B03	193874.826	2137596.071
	16B04	193881.1567	2137706.633
	23A01	193768.7795	2137717.95
	21A01	193861.7507	2137607.146
	25A01	193802.9698	2137557.146
	28A01	193812.9408	2137545.263
	28A02	193788.3268	2137524.61
	25A03	193758.4349	2137560.233
	27A03	193746.0629	2137549.862
	27A02	193728.868	2137570.354
	16B05	193697.6213	2137544.135
	16B06	193658.4638	2137590.802
	16B07	193660.5501	2137646.635
	16B08	193626.5434	2137647.953
	16B09	193618.7306	2137575.176
	16B10	193642.9738	2137518.9
	16B11	193668.9868	2137482.407
	16B12	193685.8932	2137496.593
	16B13	193725.7755	2137450.729
	16B14	193704.4901	2137432.869
	33A01	193726.7775	2137406.352
	32A01	193777.5793	2137448.985
	30A02	193746.8493	2137485.607
	30A01	193773.5311	2137508.155
	31A03	193786.8501	2137492.283
	31A02	193798.2957	2137501.908
	31A01	193815.0365	2137481.957

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Excavation Area No.	Control Point No./ Proposed Sampling Location ID	Northing	Easting
17B	17B01	193869.5497	2137393.925
	29A01	193832.2389	2137438.391
	33A02	193754.8926	2137373.494
	17B02	193811.7882	2137306.295
	17B03	193826.7456	2137318.846
	17B04	193807.3796	2137341.758
18B	34A02	193933.4331	2137318.551
	18B01	193909.0002	2137347.425
	18B02	193892.9727	2137333.976
	34A03	193917.2851	2137305.002
19B	19B01	194015.2489	2137221.81
	19B02	193995.9653	2137244.791
	19B03	193983.397	2137234.245
	19B04	194002.682	2137211.265
20B	35A03	193976.5385	2137195.747
	20B01	193959.542	2137216.003
	20B02	193940.7675	2137200.249
	20B03	193957.764	2137179.993
21B	21B01	194016.8165	2137096.057
	21B02	193965.1489	2137157.633
	21B03	193949.3375	2137144.365
	21B04	194001.3413	2137083.072
22B	22B01	194097.9699	2137231.241
	22B02	194088.6529	2137242.169
	22B03	194065.4514	2137223.141
	22B04	194075.14	2137211.777
23B	23B01	194169.6325	2137224.451
	23B02	194150.3489	2137247.433
	23B03	194127.3675	2137228.149
	23B04	194146.6511	2137205.168
24B	24B01	194368.5486	2137058.31
	24B02	194349.265	2137081.291
	24B03	194326.2836	2137062.008
	24B04	194345.5673	2137039.026

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Excavation Area No.	Control Point No./ Proposed Sampling Location ID	Northing	Easting
Verification Sampling Locations & Coordinates			
1A	V-RD-1	194596.2706	2137265.557
	V-RD-2	194581.3317	2137287.72
	V-RD-3	194584.5381	2137317.549
	V-RD-4	194587.7445	2137347.379
	V-RD-5	194590.9509	2137377.208
	V-RD-6	194609.7225	2137395.443
	V-RD-7	194622.9038	2137359.163
	V-RD-8	194616.9541	2137299.459
2A	V-RD-9	194617.5146	2137521.431
	V-RD-10	194589.2057	2137524.193
	V-RD-11	194575.813	2137549.785
	V-RD-12	194578.7731	2137579.638
	V-RD-13	194596.9332	2137602.126
	V-RD-14	194625.2736	2137599.682
	V-RD-15	194642.3129	2137558.365
3A	V-RD-16	194611.9087	2137464.893
	V-RD-17	194583.6001	2137467.658
	V-RD-18	194568.9657	2137480.728
	V-RD-19	194571.9406	2137510.58
	V-RD-20	194636.3703	2137492.011
4A	V-RD-21	194546.5537	2137608.01
	V-RD-22	194520.3538	2137610.799
	V-RD-23	194493.9074	2137614.213
	V-RD-24	194481.466	2137630.393
	V-RD-25	194523.6791	2137639.229
	V-RD-26	194563.8879	2137620.492
5A	V-RD-27	194475.0859	2137282.434
	V-RD-28	194453.9416	2137284.142
	V-RD-29	194455.65	2137305.287
	V-RD-30	194476.7943	2137303.578

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Excavation Area No.	Control Point No./ Proposed Sampling Location ID	Northing	Easting
6A	V-RD-31	194314.3548	2137576.351
	V-RD-32	194295.2067	2137599.713
	V-RD-33	194286.4272	2137622.412
	V-RD-34	194289.0992	2137647.731
	V-RD-35	194311.8332	2137662.063
	V-RD-36	194331.0899	2137641.808
	V-RD-37	194328.1422	2137610.759
	V-RD-38	194325.2678	2137582.709
	V-RD-39	194310.3823	2137647.427
	V-RD-40	194308.5382	2137628.825
	V-RD-41	194306.1686	2137604.921
7A	V-RD-42	194277.6577	2137621.112
	V-RD-43	194259.6364	2137642.644
	V-RD-44	194256.6205	2137659.146
	V-RD-45	194276.6256	2137665.516
8A	V-RD-46	194126.4154	2137461.645
	V-RD-47	194102.8345	2137465.085
9A	V-RD-48	194124.8523	2137506.774
	V-RD-49	194085.8344	2137553.259
	V-RD-50	194105.1698	2137528.658
10A	V-RD-51	194040.8624	2137544.501
	V-RD-52	194039.4213	2137572.269
	V-RD-53	194066.5176	2137566.028
	V-RD-54	194049.3601	2137556.283
11A	V-RD-55	194016.1734	2137552.762
	V-RD-56	194021.8659	2137546.642
12A	V-RD-57	194011.4055	2137456.19
	V-RD-58	194012.8743	2137475.915
	V-RD-59	193999.8923	2137470.488
13A	V-RD-60	193990.9258	2137438.99
	V-RD-61	193968.4907	2137445.303
	V-RD-62	193963.2587	2137471.962
	V-RD-63	193977.8169	2137474.743
	V-RD-64	193991.7332	2137458.158
14A	V-RD-65	193993.1938	2137477.894
	V-RD-66	193959.516	2137494.028
	V-RD-67	193963.8675	2137516.407
15A	V-RD-68	193942.9934	2137513.569

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Excavation Area No.	Control Point No./ Proposed Sampling Location ID	Northing	Easting
16A	V-RD-69	194005.3258	2137505.216
	V-RD-70	193990.4387	2137512.306
	V-RD-71	193985.2223	2137527.51
	V-RD-72	194000.6108	2137520.841
17A	V-RD-73	193970.6751	2137550.298
	V-RD-74	193940.7054	2137551.644
	V-RD-75	193929.9285	2137572.3
	V-RD-76	193973.8373	2137591.581
	V-RD-77	193983.3474	2137570.445
	V-RD-78	193959.0656	2137573.154
18A	V-RD-79	193919.0539	2137571.483
	V-RD-80	193896.3914	2137583.905
	V-RD-81	193921.7693	2137593.8
19A	V-RD-82	193948.427	2137592.715
	V-RD-83	193934.1151	2137608.373
	V-RD-84	193949.773	2137622.685
	V-RD-85	193964.0849	2137607.027
20A	V-RD-86	193959.7689	2137658.113
	V-RD-87	193947.4331	2137679.48
	V-RD-88	193962.9349	2137698.305
	V-RD-89	193975.2707	2137676.938
	V-RD-90	193959.2814	2137681.786
21A	V-RD-91	193845.1928	2137593.236
	V-RD-92	193831.6063	2137642.962
	V-RD-93	193851.7717	2137619.033
22A	V-RD-94	193813.0494	2137651.224
	V-RD-95	193795.9404	2137657.891
	V-RD-96	193792.452	2137676.157
	V-RD-97	193809.561	2137669.49
23A	V-RD-98	193759.388	2137679.124
	V-RD-99	193756.4952	2137707.577
	V-RD-100	193783.9323	2137699.883
24A	V-RD-101	193788.9922	2137630.886
	V-RD-102	193773.7321	2137640.103
	V-RD-103	193767.3671	2137656.783
	V-RD-104	193783.0903	2137646.952
	V-RD-105	193779.1616	2137642.425

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Excavation Area No.	Control Point No./ Proposed Sampling Location ID	Northing	Easting
25A	V-RD-106	193790.6914	2137546.72
	V-RD-107	193768.0435	2137548.776
	V-RD-108	193773.7869	2137573.12
	V-RD-109	193792.6576	2137569.43
26A	V-RD-110	193759.4005	2137590.265
	V-RD-111	193782.4783	2137609.63
27A	V-RD-112	193754.7661	2137557.16
	V-RD-113	193737.4649	2137560.103
	V-RD-114	193738.1015	2137578.097
	V-RD-115	193755.9329	2137575.599
28A	V-RD-116	193800.6333	2137534.931
	V-RD-117	193783.3972	2137530.478
	V-RD-118	193807.9548	2137551.199
29A	V-RD-119	193818.4419	2137426.819
	V-RD-120	193793.6864	2137429.776
	V-RD-121	193774.4028	2137452.758
30A	V-RD-122	193776.1313	2137477.938
	V-RD-123	193754.778	2137476.146
	V-RD-124	193760.2184	2137496.836
31A	V-RD-125	193809.3813	2137477.136
	V-RD-126	193792.5944	2137497.113
	V-RD-127	193806.6651	2137491.921
32A	V-RD-128	193790.9391	2137403.741
	V-RD-129	193762.6106	2137408.192
	V-RD-130	193763.1462	2137436.863
33A	V-RD-131	193765.5416	2137382.43
	V-RD-132	193740.61	2137389.873
	V-RD-133	193737.7486	2137415.552
34A	V-RD-134	193972.0741	2137256.825
	V-RD-135	193950.4468	2137266.172
	V-RD-136	193930.964	2137288.985
	V-RD-137	193925.3591	2137311.776
	V-RD-138	193947.3662	2137302.96
	V-RD-139	193966.8222	2137280.124
35A	V-RD-140	194007.3128	2137182.407
	V-RD-141	193986.1803	2137184.256
	V-RD-142	193988.0292	2137205.389
	V-RD-143	194009.1617	2137203.54
	V-RD-144	193998.2701	2137199.653

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36A	V-RD-145	194027.6055	2137386.546
37A	V-RD-146	194056.9342	2137462.679
	V-RD-147	194050.8743	2137470.916
1B	V-RD-148	194568.7741	2137338.932
	V-RD-149	194552.1892	2137355.442
	V-RD-150	194571.6866	2137368.792
3B	V-RD-151	194435.0309	2137321.86
	V-RD-152	194416.5528	2137306.201
	V-RD-153	194391.2544	2137309.009
	V-RD-154	194393.6341	2137335.017
	V-RD-155	194412.4567	2137350.688
	V-RD-156	194435.8596	2137346.615
4B	V-RD-157	194425.3831	2137396.423
	V-RD-158	194404.2507	2137398.272
	V-RD-159	194406.0995	2137419.405
	V-RD-160	194427.232	2137417.556
5B	V-RD-161	194438.2021	2137546.147
	V-RD-162	194415.2208	2137526.863
	V-RD-163	194382.4008	2137525.12
	V-RD-164	194389.8163	2137557.139
	V-RD-165	194412.7976	2137576.423
	V-RD-166	194445.6176	2137578.166
2B	V-RD-167	194484.8269	2137581.111
	V-RD-168	194471.9558	2137599.731
	V-RD-169	194501.7416	2137596.153
Anticipated Cap Areas	V-RD-170	194423.5895	2137629.011
	V-RD-171	194401.0514	2137610.012
	V-RD-172	194378.4976	2137591.044
	V-RD-173	194355.943	2137572.075
	V-RD-174	194328.3359	2137559.206
	V-RD-175	194355.5444	2137657.648
	V-RD-176	194378.1995	2137655.225
	V-RD-177	194400.8546	2137652.801
	V-RD-178	194423.5097	2137650.378
7B	V-RD-179	194341.5805	2137441.243
	V-RD-180	194317.3502	2137442.2
	V-RD-181	194298.0665	2137465.181
	V-RD-182	194301.3313	2137489.21
	V-RD-183	194325.5616	2137488.252
	V-RD-184	194344.8452	2137465.271

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11B	V-RD-185	194247.7765	2137573.023
	V-RD-186	194226.644	2137574.871
	V-RD-187	194228.4929	2137596.004
	V-RD-188	194249.2606	2137594.303
10B	V-RD-189	194261.0589	2137488.137
	V-RD-190	194237.9643	2137486.736
	V-RD-191	194219.298	2137508.982
	V-RD-192	194225.3846	2137530.651
	V-RD-193	194248.2902	2137532.277
	V-RD-194	194266.1946	2137510.94
9B	V-RD-195	194269.7959	2137419.38
	V-RD-196	194246.8146	2137400.096
	V-RD-197	194219.1343	2137402.078
	V-RD-198	194221.9894	2137429.682
	V-RD-199	194244.9708	2137448.965
	V-RD-200	194272.651	2137446.984
6B	V-RD-201	194313.0482	2137368.639
	V-RD-202	194291.9157	2137370.488
	V-RD-203	194293.7646	2137391.62
	V-RD-204	194314.8971	2137389.771
8B	V-RD-205	194298.7891	2137569.136
	V-RD-206	194276.42	2137569.947
	V-RD-207	194279.6381	2137592.229
12B	V-RD-208	194145.4561	2137500.832
	V-RD-209	194147.7237	2137479.502
13B	V-RD-211	193986.6128	2137655.952
	V-RD-212	194008.5699	2137635.087
	V-RD-213	194027.8535	2137612.106
	V-RD-214	194048.0002	2137612.497
	V-RD-215	194070.0762	2137611.44
	V-RD-216	194067.2838	2137589.516
14B	V-RD-210	194096.4862	2137436.575
	V-RD-217	194092.608	2137381.88
	V-RD-218	194070.875	2137385.65
	V-RD-219	194049.8543	2137394.775
	V-RD-220	194001.2498	2137406.555
	V-RD-221	194091.4808	2137406.687

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Excavation Area No.	Control Point No./ Proposed Sampling Location ID	Northing	Easting
16B	V-RD-222	193807.5313	2137714.048
	V-RD-223	193844.3438	2137710.338
	V-RD-224	193857.8744	2137517.909
	V-RD-225	193830.2745	2137494.896
	V-RD-226	193715.6364	2137419.607
	V-RD-227	193655.9798	2137500.648
	V-RD-228	193631.8324	2137543.148
	V-RD-229	193618.2199	2137577.939
	V-RD-230	193624.255	2137626.636
	V-RD-231	193643.5463	2137647.289
	V-RD-232	193659.9526	2137630.651
	V-RD-233	193658.9395	2137603.54
	V-RD-234	193668.4003	2137578.954
	V-RD-235	193687.6839	2137555.972
	V-RD-236	193713.2442	2137557.239
17B	V-RD-237	193861.5089	2137387.178
	V-RD-238	193838.5275	2137367.895
	V-RD-239	193815.5462	2137348.611
	V-RD-240	193817.0626	2137330.302
	V-RD-241	193819.2669	2137312.571
	V-RD-242	193792.8439	2137328.286
	V-RD-243	193773.5506	2137351.259
18B	V-RD-244	193905.1289	2137319.489
	V-RD-245	193900.9864	2137340.7
19B	V-RD-246	194008.9655	2137216.537
	V-RD-247	193992.7772	2137223.066
	V-RD-248	193989.6812	2137239.518
20B	V-RD-249	193967.1513	2137187.87
	V-RD-250	193949.2658	2137190.121
	V-RD-251	193950.1548	2137208.126
	V-RD-252	193968.0403	2137205.875
21B	V-RD-253	194007.9109	2137088.585
	V-RD-254	193985.0441	2137102.28
	V-RD-255	193965.6349	2137125.157
	V-RD-256	193957.2432	2137150.999
	V-RD-257	193976.0335	2137144.661
	V-RD-258	193990.9827	2137126.845
	V-RD-259	194005.5733	2137109.457

TABLE 1
EXCAVATION AREAS, VERIFICATION SAMPLING LOCATIONS,
AND SURVEY COORDINATES

REMEDIAL DESIGN
BAYER MATERIALSCIENCE LLC
125 NEW SOUTH ROAD
HICKSVILLE, NEW YORK

Excavation Area No.	Control Point No./ Proposed Sampling Location ID	Northing	Easting
22B	V-RD-260	194086.5549	2137221.509
	V-RD-261	194070.2957	2137217.459
	V-RD-262	194093.3114	2137236.705
23B	V-RD-263	194158.1418	2137214.809
	V-RD-264	194137.0093	2137216.658
	V-RD-265	194138.8582	2137237.791
	V-RD-266	194159.9907	2137235.942
24B	V-RD-267	194335.9254	2137050.517
	V-RD-268	194337.7743	2137071.65
	V-RD-269	194358.9068	2137069.801
	V-RD-270	194357.0579	2137048.668

Note:

Northings and Eastings are relative to the New York State Plane Coordinate System, North American Datum of 1983 (NAD83).

TABLE 2
EXCAVATION/VERIFICATION SAMPLING RATIONALE AND EXCAVATION AREAS, DEPTHS, VOLUMES

REMEDIAL DESIGN
BAYER MATERIALSCIENCE LLC
125 NEW SOUTH ROAD
HICKSVILLE, NEW YORK

Excavation Area	Rationale	Boundaries	Proposed Verification Samples	Surface Area (sq ft)	Excavation Depth (ft)	Excavation Volume (CY)
1	Targets arsenic impacts detected at sampling locations M-S15 and M-S16.	North: fenceline South: midpoint East: 15 feet West: 15 feet	Sidewall: V-RD-1 thru V-RD-8 Bottom: None needed	4,431	1	165
2	Targets PCB impacts at sample location P1-S136, and metal impacts at sample locations M-S4 & M-S18.	North: fenceline South: 15 feet East: midpoint West: midpoint	Sidewall: V-RD-9 thru V-RD-15 Bottom: None needed	5,118	2	380
3	Targets arsenic impacts detected at sampling location M-S3.	North: fenceline South: 15 feet East: midpoint West: 15 feet	Sidewall: V-RD-16 thru V-RD-20 Bottom: None needed	3,736	1	139
4	Targets arsenic impacts detected at sampling location M-S20.	North: midpoint South: midpoint East: fenceline West: midpoint	Sidewall: V-RD-21 thru V-RD-26 Bottom: None needed	2,373	1	88
5	Targets arsenic impacts detected at sample location at M-S5.	Northeast: 15 feet Northwest: 15 feet Southeast: 15 feet Southwest: 15 feet	Sidewall: V-RD-27 thru V-RD-30 Bottom: None needed	900	1	34
6	Targets PCB impacts at sample location AOC31-2.	North: 15 feet South: midpoint East: fenceline West: former fence	Sidewall: V-RD-31 thru V-RD-38 Bottom: V-RD-39 thru V-RD-41	3,138	4	465
7	Targets arsenic impacts detected at sample location M-S22.	North: midpoint South: 15 feet East: fenceline West: 15 feet	Sidewall: V-RD-42 thru V-RD-45 Bottom: None needed	1,213	1	45
8	Targets PCB impacts at sample location P1-S146.	Northeast: aligns w/former excavation limit Northwest: cleanest point Southeast: previous excavation Southwest: cleanest point	Sidewall: V-RD-46 thru V-RD-47 Bottom: None needed	1,128	4	168
9	Targets PCB impacts at sampling locations P1-S141 and P1-S142A.	Northeast: cleanest point Northwest: 15 feet Southeast: aligns w/former excavation limit Southwest: previous excavation	Sidewall: V-RD-48 thru V-RD-49 Bottom: V-RD-50	1,453	4	216
10	Targets PCB impacts at sampling location P1-S134.	Northeast: 15 feet Northwest: previous excavation Southeast: 15 feet Southwest: midpoint	Sidewall: V-RD-51 thru V-RD-53 Bottom: V-RD-54	1,487	8	441
11	Targets PCB impacts at sampling location AOC 52-3.	Northeast: midpoint Northwest: cleanest point Southeast: aligns w/SE boundary of area Southwest: previous excavation	Sidewall: V-RD-55 Bottom: V-RD-56	1,208	4	179
12	Targets PCB impacts at sampling location AOC 11-2.	Northeast: midpoint Northwest: midpoint Southeast: midpoint Southwest: midpoint	Sidewall: V-RD-57 thru V-RD-58 Bottom: V-RD-59	782	2	58
13	Targets PCB impacts at sampling location P1-S34.	Northeast: midpoint Northwest: aligns w/NW boundary of area Southeast: former building limit Southwest: former building limit	Sidewall: V-RD-60 thru V-RD-64 Bottom: None needed	1,114	6	248
14	Targets PCB impacts at sampling location P1-S49 and metal impacts at P1-S35.	Northeast: previous excavation Northwest: SE limit of excavation area 12 Southeast: midpoint Southwest: former building limit	Sidewall: V-RD-65 thru V-RD-67 Bottom: None needed	1,714	4	254
15	Targets PCB impacts at sampling locations P1-S36 and P1-S50.	Northeast: previous excavation Northwest: midpoint Southeast: previous excavation Southwest: former building limit	Sidewall: V-RD-68 Bottom: None needed	801	2	60
16**	Targets PCB impacts at sampling location AOC 52-2. Soil from 0 to 1 feet is clean fill placed during 2009 ICM that can be reused as fill.	Northeast: previous excavation Northwest: 15 feet Southeast: 15 feet Southwest: previous excavation	Sidewall: V-RD-69 thru V-RD-72 Bottom: None needed	398	8.5	126

TABLE 2
EXCAVATION/VERIFICATION SAMPLING RATIONALE AND EXCAVATION AREAS, DEPTHS, VOLUMES

**REMEDIAL DESIGN
BAYER MATERIALSCIENCE LLC
125 NEW SOUTH ROAD
HICKSVILLE, NEW YORK**

Excavation Area	Rationale	Boundaries	Proposed Verification Samples	Surface Area (sq ft)	Excavation Depth (ft)	Excavation Volume (CY)
17	Targets PCB impacts at sampling locations P1-S51 and P1-S91.	North: cleanest point South: midpoint East: aligns w/E boundary or area 18 West: 15 feet	Sidewall: V-RD-73 thru V-RD-77 Bottom: V-RD-78	2,215	4	329
18	Targets PCB impacts at sampling locations P1-S38 and P1-S52.	North: midpoint South: 15 feet East: previous excavation West: previous excavation	Sidewall: V-RD-79 thru V-RD-81 Bottom: None needed	765	2	57
19	Targets PCB impacts at sampling location P1-S90.	North: 15 feet South: 15 feet East: 15 feet West: 15 feet	Sidewall: V-RD-82 thru V-RD-85 Bottom: None needed	900	6	200
20**	Targets PCB impacts at sampling location P1-S111. <i>Soil from 0 to 5 feet is clean fill placed during 2009 ICM that can be reused as fill.</i>	North: previous excavation South: cleanest point East: previous excavation West: previous excavation	Sidewall: V-RD-86 thru V-RD-89 Bottom (verif.): V-RD-90	1127	10	418
21	Targets PCB impacts at sampling locations P1-S85 and VS-P1-S9.	Northeast: 15 feet Northwest: aligns w/former excavation limit Southeast: previous excavation Southwest: previous excavation	Sidewall: V-RD-91 thru V-RD-93 Bottom: None needed	2,758	2	205
22**	Targets PCB impacts at sampling location P1-S109. <i>Soil from 0 to 5 feet is clean fill placed during 2009 ICM that can be reused as fill.</i>	Northeast: previous excavation Northwest: previous excavation Southeast: previous excavation Southwest: cleanest point	Sidewall: V-RD-94 thru V-RD-97 Bottom: None needed	578	10	215
23	Targets PCB impacts at sampling location P1-S127.	Northeast: 15 feet Northwest: previous excavation Southeast: aligns w/E point of capping area Southwest: cleanest point	Sidewall: V-RD-98 thru V-RD-100 Bottom: None needed	1,517	6	338
24	Targets PCB impacts at sampling location V-A7-S3B.	Northeast: previous excavation Northwest: previous excavation Southeast: previous excavation Southwest: contours	Sidewall: V-RD-101 thru V-RD-104 Bottom: V-RD-105	392	6	88
25**	Targets PCB impacts at sampling location P1-S84. <i>Soil from 0 to 3 feet is clean fill placed during 2009 ICM that can be reused as fill.</i>	Northeast: 15 feet Northwest: previous excavation Southeast: midpoint Southwest: previous excavation	Sidewall: V-RD-106 thru V-RD-109 Bottom: None needed	999	10	370
26	Targets PCB impacts at sampling location P1-S122.	Northeast: SW limit of excavation area 21 Northwest: midpoint Southeast: contours Southwest: midpoint/previous excavation	Sidewall: V-RD-110 thru V-RD-111 Bottom: None needed	1,025	4	152
27	Targets PCB impacts at sampling location P1-S124.	Northeast: midpoint Northwest: midpoint Southeast: 15 feet Southwest: 15 feet	Sidewall: V-RD-112 thru V-RD-115 Bottom: None needed	645	8	192
28	Targets SVOC impacts at sampling location P-S121.	Northeast: 15 feet Northwest: 15 feet Southeast: previous excavation Southwest: 15 feet	Sidewall: V-RD-116 thru V-RD-118 Bottom: None needed	496	1	19
29	Targets PCB impacts at sampling locations P-S64 and P-S65.	Northeast: former building limit Northwest: cleanest point Southeast: midpoint Southwest: midpoint	Sidewall: V-RD-119 thru V-RD-121 Bottom: None needed	2,325	4	345
30	Targets PCB impacts at sampling location P1-S63.	Northeast: aligns w/NE boundary of area Northwest: midpoint Southeast: 15 feet Southwest: aligns w/SW boundary of area	Sidewall: V-RD-122 thru V-RD-124 Bottom: None needed	864	6	192
31	Targets PCB impacts at sampling location P1-S48.	Northeast: 15 feet Northwest: former building limit Southeast: 15 feet Southwest: NE boundary of area 30	Sidewall: V-RD-125 thru V-RD-127 Bottom: None needed	388	2	29
32	Targets PCB impacts at sampling location P1-S82.	Northeast: midpoint Northwest: aligns w/NW boundary of area Southeast: 15 feet Southwest: midpoint	Sidewall: V-RD-128 thru V-RD-130 Bottom: None needed	1,629	2	121
33	Targets PCB impacts at sampling location P1-S103.	Northeast: midpoint Northwest: aligns w/NW boundary of area Southeast: aligns w/SE boundary of area Southwest: fenceline	Sidewall: V-RD-131 thru V-RD-133 Bottom: None needed	1,238	6	276

TABLE 2
EXCAVATION/VERIFICATION SAMPLING RATIONALE AND EXCAVATION AREAS, DEPTHS, VOLUMES

**REMEDIAL DESIGN
BAYER MATERIALSCIENCE LLC
125 NEW SOUTH ROAD
HICKSVILLE, NEW YORK**

Excavation Area	Rationale	Boundaries	Proposed Verification Samples	Surface Area (sq ft)	Excavation Depth (ft)	Excavation Volume (CY)
34	Targets PCB impacts at sampling locations P1-S66 and P1-S67.	Northeast: 15 feet Northwest: 15 feet Southeast: 15 feet Southwest: 15 feet	Sidewall: V-RD-134 thru V-RD-139 Bottom: None needed	1,509	6	336
35	Targets SVOC impacts at sampling location AOC48-1.	Northeast: former building limit Northwest: 15 feet Southeast: 15 feet Southwest: former building limit	Sidewall: V-RD-140 thru V-RD-143 Bottom: V-RD-144	900	2	67
36	Targets PCB impacts at sampling location AOC39-2S.	Northeast: previous excavation Northwest: former building limit Southeast: previous excavation Southwest: former building limit	Sidewall: None needed Bottom: V-RD-145	395	4	59
37	Targets PCB impacts at sampling location VS-45-4.	Northeast: previous excavation Northwest: 15 feet Southeast: previous excavation Southwest: aligns w/SW boundary of previous excavation	Sidewall: V-RD-146 Bottom: V-RD-147	443	4	66
					TOTAL	7,140

Note: ** = some of the soil from the excavation area is can be reused as subsurface fill.

TABLE 3
SUMMARY OF PROPOSED VERIFICATION SAMPLING LOCATIONS AND LABORATORY ANALYSES

REMEDIAL DESIGN
BAYER MATERIALSCIENCE LLC
125 NEW SOUTH ROAD
HICKSVILLE, NEW YORK

Proposed Sample ID	Sample Purpose (Conf / Doc)	Sample Location (SW / B)	Proposed Drilling Depth (ft bgs)	Proposed Sample Depth (ft bgs)	Proposed Laboratory Analyses		
					PCBs	Arsenic & Cadmium	PAHs
V-RD-1	Conf	SW	NA	0 - 0.5		X	
V-RD-2	Conf	SW	NA	0 - 0.5		X	
V-RD-3	Conf	SW	NA	0 - 0.5		X	
V-RD-4	Conf	SW	NA	0 - 0.5		X	
V-RD-5	Conf	SW	NA	0 - 0.5		X	
V-RD-6	Conf	SW	NA	0 - 0.5		X	
V-RD-7	Doc	SW	NA	0 - 0.5		X	
V-RD-8	Doc	SW	NA	0 - 0.5		X	
V-RD-9	Conf	SW	2	0.5 - 2	X	X	X
V-RD-10	Conf	SW	2	0.5 - 2	X	X	X
V-RD-11	Conf	SW	2	0.5 - 2	X	X	X
V-RD-12	Conf	SW	2	0.5 - 2	X	X	X
V-RD-13	Conf	SW	2	0.5 - 2	X	X	X
V-RD-14	Conf	SW	2	0.5 - 2	X	X	X
V-RD-15	Doc	SW	2	0.5 - 2	X	X	X
V-RD-16	Conf	SW	NA	0 - 0.5		X	
V-RD-17	Conf	SW	NA	0 - 0.5		X	
V-RD-18	Conf	SW	NA	0 - 0.5		X	
V-RD-19	Conf	SW	NA	0 - 0.5		X	
V-RD-20	Doc	SW	NA	0 - 0.5		X	
V-RD-21	Conf	SW	NA	0 - 0.5		X	
V-RD-22	Conf	SW	NA	0 - 0.5		X	
V-RD-23	Conf	SW	NA	0 - 0.5		X	
V-RD-24	Conf	SW	NA	0 - 0.5		X	
V-RD-25	Doc	SW	NA	0 - 0.5		X	
V-RD-26	Conf	SW	NA	0 - 0.5		X	
V-RD-27	Conf	SW	NA	0 - 0.5		X	
V-RD-28	Conf	SW	NA	0 - 0.5		X	
V-RD-29	Conf	SW	NA	0 - 0.5		X	
V-RD-30	Conf	SW	NA	0 - 0.5		X	
V-RD-31	Conf	SW	3.0	2 - 3	X		
V-RD-32	Conf	SW	3.0	2 - 3	X		
V-RD-33	Conf	SW	3.0	2 - 3	X		
V-RD-34	Conf	SW	3.0	2 - 3	X		
V-RD-35	Doc	SW	3.0	2 - 3	X		
V-RD-36	Conf	SW	3.0	2 - 3	X		
V-RD-37	Conf	SW	3.0	2 - 3	X		
V-RD-38	Conf	SW	3.0	2 - 3	X		

TABLE 3
SUMMARY OF PROPOSED VERIFICATION SAMPLING LOCATIONS AND LABORATORY ANALYSES

**REMEDIAL DESIGN
BAYER MATERIALSCIENCE LLC
125 NEW SOUTH ROAD
HICKSVILLE, NEW YORK**

Proposed Sample ID	Sample Purpose (Conf / Doc)	Sample Location (SW / B)	Proposed Drilling Depth (ft bgs)	Proposed Sample Depth (ft bgs)	Proposed Laboratory Analyses		
					PCBs	Arsenic & Cadmium	PAHs
V-RD-39	Conf	B	4.5	4 - 4.5	X		
V-RD-40	Conf	B	4.5	4 - 4.5	X		
V-RD-41	Conf	B	4.5	4 - 4.5	X		
V-RD-42	Conf	SW	NA	0 - 0.5		X	
V-RD-43	Conf	SW	NA	0 - 0.5		X	
V-RD-44	Conf	SW	NA	0 - 0.5		X	
V-RD-45	Doc	SW	NA	0 - 0.5		X	
V-RD-46	Conf	SW	2.5	2 - 2.5	X		
V-RD-47	Conf	SW	2.5	2 - 2.5	X		
V-RD-48	Conf	SW	2.5	2 - 2.5	X		
V-RD-49	Conf	SW	2.5	2 - 2.5	X		
V-RD-50	Conf	B	4.5	4 - 4.5	X		
V-RD-51	Conf	SW	6.5	6 - 6.5	X		
V-RD-52	Conf	SW	6.5	6 - 6.5	X		
V-RD-53	Conf	SW	6.5	6 - 6.5	X		
V-RD-54	Conf	B	8.5	8 - 8.5	X		
V-RD-55	Conf	SW	3.5	2.5 - 3.5	X		
V-RD-56	Conf	SW	4.5	4 - 4.5	X		
V-RD-57	Conf	SW	NA	0 - 1	X		
V-RD-58	Conf	SW	NA	0 - 1	X		
V-RD-59	Conf	B	2.5	2 - 2.5	X		
V-RD-60	Conf	SW	4.5	4 - 4.5	X		
V-RD-61	Conf	SW	4.5	4 - 4.5	X		
V-RD-62	Conf	SW	4.5	4 - 4.5	X		
V-RD-63	Conf	SW	4.5	4 - 4.5	X		
V-RD-64	Conf	SW	4.5	4 - 4.5	X		
V-RD-65	Conf	SW	NA	0 - 0.5	X		X
V-RD-66	Conf	SW	NA	0 - 0.5	X		X
V-RD-67	Conf	SW	NA	0 - 0.5	X		
V-RD-68	Conf	SW	NA	0 - 0.5	X		
V-RD-69	Conf	SW	6.5	6 - 6.5	X		
V-RD-70	Conf	SW	6.5	6 - 6.5	X		
V-RD-71	Conf	SW	6.5	6 - 6.5	X		
V-RD-72	Conf	SW	6.5	6 - 6.5	X		
V-RD-73	Conf	SW	2.5	2 - 2.5	X		
V-RD-74	Conf	SW	2.5	2 - 2.5	X		
V-RD-75	Conf	SW	2.5	2 - 2.5	X		
V-RD-76	Conf	SW	2.5	2 - 2.5	X		
V-RD-77	Conf	SW	2.5	2 - 2.5	X		
V-RD-78	Conf	B	4.5	4 - 4.5	X		
V-RD-79	Conf	SW	NA	0 - 0.5	X		
V-RD-80	Conf	SW	NA	0 - 0.5	X		
V-RD-81	Conf	SW	NA	0 - 0.5	X		

TABLE 3
SUMMARY OF PROPOSED VERIFICATION SAMPLING LOCATIONS AND LABORATORY ANALYSES

**REMEDIAL DESIGN
BAYER MATERIALSCIENCE LLC
125 NEW SOUTH ROAD
HICKSVILLE, NEW YORK**

Proposed Sample ID	Sample Purpose (Conf / Doc)	Sample Location (SW / B)	Proposed Drilling Depth (ft bgs)	Proposed Sample Depth (ft bgs)	Proposed Laboratory Analyses		
					PCBs	Arsenic & Cadmium	PAHs
V-RD-82	Conf	SW	2.5	2 - 2.5	X		
V-RD-83	Conf	SW	2.5	2 - 2.5	X		
V-RD-84	Conf	SW	2.5	2 - 2.5	X		
V-RD-85	Conf	SW	2.5	2 - 2.5	X		
V-RD-86	Conf	SW	6.5	6 - 6.5	X		
V-RD-87	Conf	SW	6.5	6 - 6.5	X		
V-RD-88	Conf	SW	6.5	6 - 6.5	X		
V-RD-89	Conf	SW	6.5	6 - 6.5	X		
V-RD-90	Doc	B	10.5	10 - 10.5	X		
V-RD-91	Conf	SW	2.0	1.5 - 2	X		
V-RD-92	Conf	SW	2.0	1.5 - 2	X		
V-RD-93	Conf	SW	2.0	1.5 - 2	X		
V-RD-94	Conf	SW	8.5	8 - 8.5	X		
V-RD-95	Conf	SW	8.5	8 - 8.5	X		
V-RD-96	Conf	SW	8.5	8 - 8.5	X		
V-RD-97	Conf	SW	8.5	8 - 8.5	X		
V-RD-98	Conf	SW	NA	0 - 0.5	X		
V-RD-99	Conf	SW	NA	0 - 0.5	X		
V-RD-100	Conf	SW	NA	0 - 0.5	X		
V-RD-101	Conf	SW	4.5	4 - 4.5	X		
V-RD-102	Conf	SW	4.5	4 - 4.5	X		
V-RD-103	Conf	SW	4.5	4 - 4.5	X		
V-RD-104	Conf	SW	4.5	4 - 4.5	X		
V-RD-105	Conf	B	6.5	6 - 6.5	X		
V-RD-106	Conf	SW	6.5	6 - 6.5	X		X
V-RD-107	Conf	SW	6.5	6 - 6.5	X		X
V-RD-108	Conf	SW	6.5	6 - 6.5	X		X
V-RD-109	Conf	SW	6.5	6 - 6.5	X		X
V-RD-110	Conf	SW	NA	0 - 0.5	X		
V-RD-111	Conf	SW	NA	0 - 0.5	X		
V-RD-112	Conf	SW	6.5	6 - 6.5	X		
V-RD-113	Conf	SW	6.5	6 - 6.5	X		
V-RD-114	Conf	SW	6.5	6 - 6.5	X		
V-RD-115	Conf	SW	6.5	6 - 6.5	X		
V-RD-116	Conf	SW	NA	0 - 0.5	X		X
V-RD-117	Conf	SW	NA	0 - 0.5	X		X
V-RD-118	Conf	SW	NA	0 - 0.5	X		X
V-RD-119	Conf	SW	NA	0 - 0.5	X		
V-RD-120	Conf	SW	NA	0 - 0.5	X		
V-RD-121	Conf	SW	NA	0 - 0.5	X		
V-RD-122	Conf	SW	4.5	4 - 4.5	X		
V-RD-123	Conf	SW	4.5	4 - 4.5	X		
V-RD-124	Conf	SW	4.5	4 - 4.5	X		

TABLE 3
SUMMARY OF PROPOSED VERIFICATION SAMPLING LOCATIONS AND LABORATORY ANALYSES

**REMEDIAL DESIGN
BAYER MATERIALSCIENCE LLC
125 NEW SOUTH ROAD
HICKSVILLE, NEW YORK**

Proposed Sample ID	Sample Purpose (Conf / Doc)	Sample Location (SW / B)	Proposed Drilling Depth (ft bgs)	Proposed Sample Depth (ft bgs)	Proposed Laboratory Analyses		
					PCBs	Arsenic & Cadmium	PAHs
V-RD-125	Conf	SW	NA	0 - 0.5	X		
V-RD-126	Conf	SW	NA	0 - 0.5	X		
V-RD-127	Conf	SW	NA	0 - 0.5	X		
V-RD-128	Conf	SW	NA	0 - 0.5	X		
V-RD-129	Conf	SW	NA	0 - 0.5	X		
V-RD-130	Conf	SW	NA	0 - 0.5	X		
V-RD-131	Conf	SW	NA	0 - 0.5	X		
V-RD-132	Doc	SW	NA	0 - 0.5	X		
V-RD-133	Conf	SW	NA	0 - 0.5	X		
V-RD-134	Conf	SW	NA	0 - 0.5	X		X
V-RD-135	Conf	SW	NA	0 - 0.5	X		X
V-RD-136	Conf	SW	NA	0 - 0.5	X		X
V-RD-137	Conf	SW	NA	0 - 0.5	X		X
V-RD-138	Conf	SW	NA	0 - 0.5	X		X
V-RD-139	Conf	SW	NA	0 - 0.5	X		X
V-RD-140	Conf	SW	NA	0 - 0.5			X
V-RD-141	Conf	SW	NA	0 - 0.5			X
V-RD-142	Conf	SW	NA	0 - 0.5			X
V-RD-143	Conf	SW	NA	0 - 0.5			X
V-RD-144	Conf	B	2.5	2 - 2.5			X
V-RD-145	Conf	B	6.5	6 - 6.5	X		
V-RD-146	Conf	SW	7.5	6.5 - 7.5	X		
V-RD-147	Conf	B	8.5	8 - 8.5	X		
V-RD-148	Conf	SW	NA	0 - 0.5			X
V-RD-149	Conf	SW	NA	0 - 0.5			X
V-RD-150	Conf	SW	NA	0 - 0.5			X
V-RD-151	Conf	SW	NA	0 - 0.5			X
V-RD-152	Conf	SW	NA	0 - 0.5			X
V-RD-153	Conf	SW	NA	0 - 0.5			X
V-RD-154	Conf	SW	NA	0 - 0.5			X
V-RD-155	Conf	SW	NA	0 - 0.5			X
V-RD-156	Conf	SW	NA	0 - 0.5			X
V-RD-157	Conf	SW	NA	0 - 0.5			X
V-RD-158	Conf	SW	NA	0 - 0.5			X
V-RD-159	Conf	SW	NA	0 - 0.5			X
V-RD-160	Conf	SW	NA	0 - 0.5			X
V-RD-161	Conf	SW	NA	0 - 0.5	X		
V-RD-162	Conf	SW	NA	0 - 0.5	X		
V-RD-163	Conf	SW	NA	0 - 0.5	X		
V-RD-164	Conf	SW	NA	0 - 0.5	X		
V-RD-165	Conf	SW	NA	0 - 0.5	X		
V-RD-166	Conf	SW	NA	0 - 0.5	X		
V-RD-167	Conf	SW	NA	0 - 0.5	X		

TABLE 3
SUMMARY OF PROPOSED VERIFICATION SAMPLING LOCATIONS AND LABORATORY ANALYSES

**REMEDIAL DESIGN
BAYER MATERIALSCIENCE LLC
125 NEW SOUTH ROAD
HICKSVILLE, NEW YORK**

Proposed Sample ID	Sample Purpose (Conf / Doc)	Sample Location (SW / B)	Proposed Drilling Depth (ft bgs)	Proposed Sample Depth (ft bgs)	Proposed Laboratory Analyses		
					PCBs	Arsenic & Cadmium	PAHs
V-RD-168	Conf	SW	NA	0 - 0.5	X		
V-RD-169	Conf	SW	NA	0 - 0.5	X		
V-RD-170	Conf	SW	NA	0 - 0.5	X		X
V-RD-171	Conf	SW	NA	0 - 0.5	X		X
V-RD-172	Conf	SW	NA	0 - 0.5	X		X
V-RD-173	Conf	SW	NA	0 - 0.5	X		X
V-RD-174	Conf	SW	NA	0 - 0.5	X		X
V-RD-175	Doc	SW	NA	0 - 0.5	X		X
V-RD-176	Doc	SW	NA	0 - 0.5	X		X
V-RD-177	Doc	SW	NA	0 - 0.5	X		X
V-RD-178	Doc	SW	NA	0 - 0.5	X		X
V-RD-179	Conf	SW	NA	0 - 0.5			X
V-RD-180	Conf	SW	NA	0 - 0.5			X
V-RD-181	Conf	SW	NA	0 - 0.5			X
V-RD-182	Conf	SW	NA	0 - 0.5			X
V-RD-183	Conf	SW	NA	0 - 0.5			X
V-RD-184	Conf	SW	NA	0 - 0.5			X
V-RD-185	Conf	SW	NA	0 - 0.5			X
V-RD-186	Conf	SW	NA	0 - 0.5			X
V-RD-187	Conf	SW	NA	0 - 0.5			X
V-RD-188	Conf	SW	NA	0 - 0.5			X
V-RD-189	Conf	SW	NA	0 - 0.5			X
V-RD-190	Conf	SW	NA	0 - 0.5			X
V-RD-191	Conf	SW	NA	0 - 0.5			X
V-RD-192	Conf	SW	NA	0 - 0.5			X
V-RD-193	Conf	SW	NA	0 - 0.5			X
V-RD-194	Conf	SW	NA	0 - 0.5			X
V-RD-195	Conf	SW	NA	0 - 0.5			X
V-RD-196	Conf	SW	NA	0 - 0.5			X
V-RD-197	Conf	SW	NA	0 - 0.5			X
V-RD-198	Conf	SW	NA	0 - 0.5			X
V-RD-199	Conf	SW	NA	0 - 0.5			X
V-RD-200	Conf	SW	NA	0 - 0.5			X
V-RD-201	Conf	SW	NA	0 - 0.5	X		
V-RD-202	Conf	SW	NA	0 - 0.5	X		
V-RD-203	Conf	SW	NA	0 - 0.5	X		
V-RD-204	Conf	SW	NA	0 - 0.5	X		
V-RD-205	Conf	SW	NA	0 - 0.5	X		
V-RD-206	Conf	SW	NA	0 - 0.5	X		
V-RD-207	Conf	SW	NA	0 - 0.5	X		
V-RD-208	Conf	SW	NA	0 - 0.5	X		
V-RD-209	Conf	SW	NA	0 - 0.5	X		
V-RD-210	Conf	SW	NA	0 - 0.5	X		

TABLE 3
SUMMARY OF PROPOSED VERIFICATION SAMPLING LOCATIONS AND LABORATORY ANALYSES

REMEDIAL DESIGN
BAYER MATERIALSCIENCE LLC
125 NEW SOUTH ROAD
HICKSVILLE, NEW YORK

Proposed Sample ID	Sample Purpose (Conf / Doc)	Sample Location (SW / B)	Proposed Drilling Depth (ft bgs)	Proposed Sample Depth (ft bgs)	Proposed Laboratory Analyses		
					PCBs	Arsenic & Cadmium	PAHs
V-RD-211	Conf	SW	NA	0 - 0.5	X		
V-RD-212	Conf	SW	NA	0 - 0.5	X		
V-RD-213	Conf	SW	NA	0 - 0.5	X		
V-RD-214	Conf	SW	NA	0 - 0.5	X		
V-RD-215	Conf	SW	NA	0 - 0.5	X		
V-RD-216	Conf	SW	NA	0 - 0.5	X		
V-RD-217	Conf	SW	NA	0 - 0.5	X		
V-RD-218	Conf	SW	NA	0 - 0.5	X		
V-RD-219	Conf	SW	NA	0 - 0.5	X		
V-RD-220	Conf	SW	NA	0 - 0.5	X		
V-RD-221	Conf	SW	NA	0 - 0.5	X		
V-RD-222	Doc	SW	NA	0 - 0.5	X		
V-RD-223	Doc	SW	NA	0 - 0.5	X		
V-RD-224	Conf	SW	NA	0 - 0.5	X		
V-RD-225	Conf	SW	NA	0 - 0.5	X		
V-RD-226	Doc	SW	NA	0 - 0.5	X		
V-RD-227	Doc	SW	NA	0 - 0.5	X		
V-RD-228	Doc	SW	NA	0 - 0.5	X		
V-RD-229	Doc	SW	NA	0 - 0.5	X		
V-RD-230	Doc	SW	NA	0 - 0.5	X		
V-RD-231	Conf	SW	NA	0 - 0.5	X		
V-RD-232	Conf	SW	NA	0 - 0.5	X		
V-RD-233	Conf	SW	NA	0 - 0.5	X		
V-RD-234	Conf	SW	NA	0 - 0.5	X		
V-RD-235	Conf	SW	NA	0 - 0.5	X		
V-RD-236	Conf	SW	NA	0 - 0.5	X		
V-RD-237	Conf	SW	NA	0 - 0.5	X		
V-RD-238	Conf	SW	NA	0 - 0.5	X		
V-RD-239	Conf	SW	NA	0 - 0.5	X		
V-RD-240	Conf	SW	NA	0 - 0.5	X		
V-RD-241	Conf	SW	NA	0 - 0.5	X		
V-RD-242	Doc	SW	NA	0 - 0.5	X		
V-RD-243	Doc	SW	NA	0 - 0.5	X		
V-RD-244	Conf	SW	NA	0 - 0.5	X		
V-RD-245	Conf	SW	NA	0 - 0.5	X		
V-RD-246	Conf	SW	NA	0 - 0.5	X		
V-RD-247	Conf	SW	NA	0 - 0.5	X		
V-RD-248	Conf	SW	NA	0 - 0.5	X		
V-RD-249	Conf	SW	NA	0 - 0.5	X		
V-RD-250	Conf	SW	NA	0 - 0.5	X		
V-RD-251	Conf	SW	NA	0 - 0.5	X		
V-RD-252	Conf	SW	NA	0 - 0.5	X		
V-RD-253	Conf	SW	NA	0 - 0.5	X		

TABLE 3
SUMMARY OF PROPOSED VERIFICATION SAMPLING LOCATIONS AND LABORATORY ANALYSES

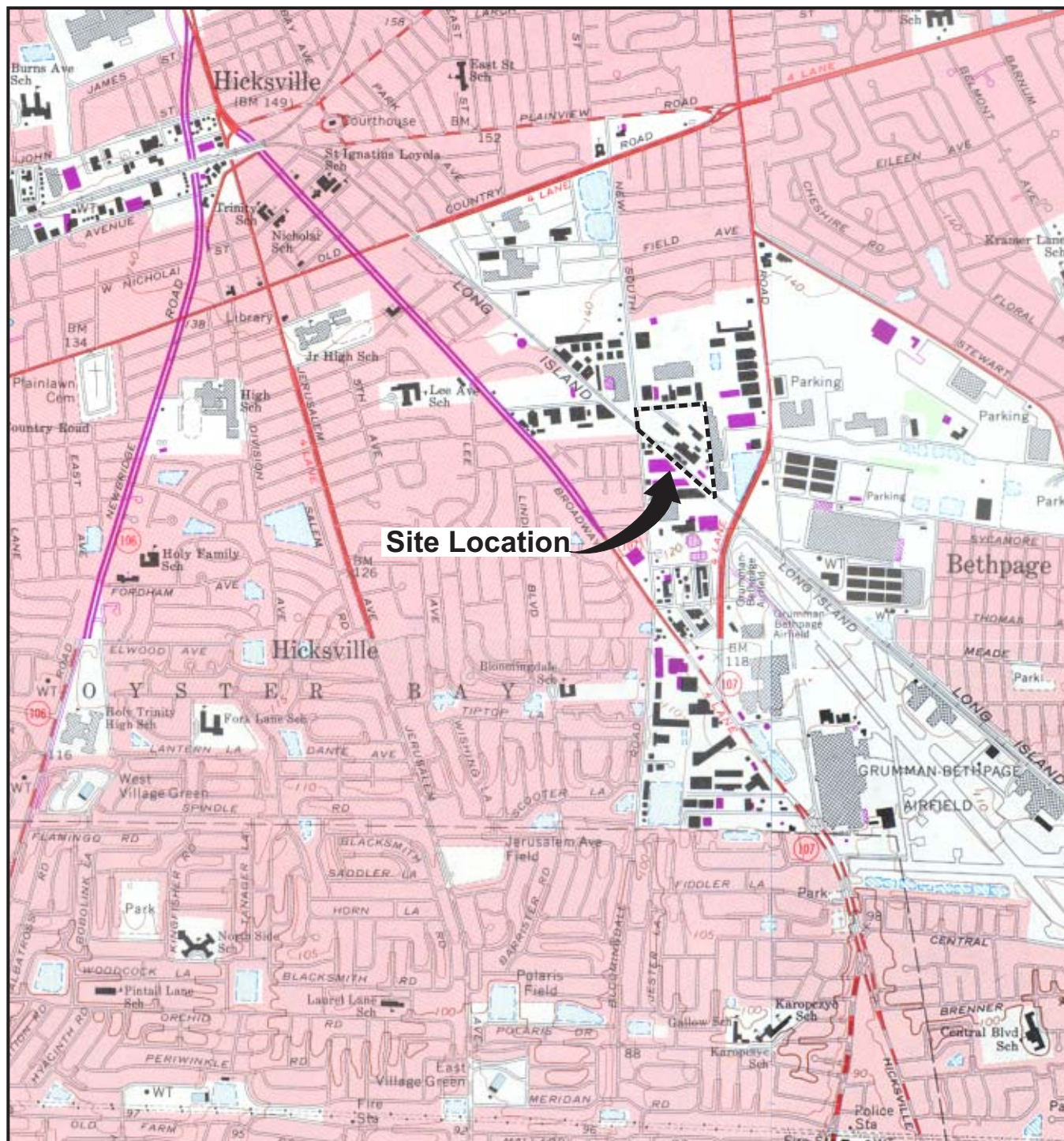
**REMEDIAL DESIGN
BAYER MATERIALSCIENCE LLC
125 NEW SOUTH ROAD
HICKSVILLE, NEW YORK**

Proposed Sample ID	Sample Purpose (Conf / Doc)	Sample Location (SW / B)	Proposed Drilling Depth (ft bgs)	Proposed Sample Depth (ft bgs)	Proposed Laboratory Analyses		
					PCBs	Arsenic & Cadmium	PAHs
V-RD-254	Doc	SW	NA	0 - 0.5	X		
V-RD-255	Doc	SW	NA	0 - 0.5	X		
V-RD-256	Conf	SW	NA	0 - 0.5	X		
V-RD-257	Conf	SW	NA	0 - 0.5	X		
V-RD-258	Conf	SW	NA	0 - 0.5	X		
V-RD-259	Conf	SW	NA	0 - 0.5	X		
V-RD-260	Conf	SW	NA	0 - 0.5	X		
V-RD-261	Conf	SW	NA	0 - 0.5	X		
V-RD-262	Conf	SW	NA	0 - 0.5	X		
V-RD-263	Conf	SW	NA	0 - 0.5	X		X
V-RD-264	Conf	SW	NA	0 - 0.5	X		X
V-RD-265	Conf	SW	NA	0 - 0.5	X		X
V-RD-266	Conf	SW	NA	0 - 0.5	X		X
V-RD-267	Conf	SW	NA	0 - 0.5	X		
V-RD-268	Conf	SW	NA	0 - 0.5	X		
V-RD-269	Conf	SW	NA	0 - 0.5	X		
V-RD-270	Conf	SW	NA	0 - 0.5	X		
Total Drilling Depth:			371.5				
Total Number of Sample Analyses:					203	34	75

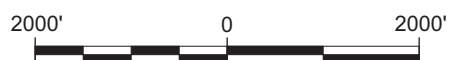
Notes:

1. RD = Remedial Design.
2. Conf = Confirmation sample.
3. Doc = Documentation sample.
4. SW = Sidewall sample.
5. B = Bottom sample.
6. Proposed sampling and boring depths are measured in feet below ground surface (ft bgs).
7. Samples to be submitted for laboratory analysis for one or more of the following constituents, as indicated above:
 - Polychlorinated biphenyls (PCBs) using United States Environmental Protection Agency (USEPA) SW-846 Method 8082.
 - Arsenic and cadmium using USEPA SW-846 Methods 6010.
 - Polycyclic aromatic hydrocarbons (PAHs) using USEPA SW-846 Method 8270.
8. Location and frequency of confirmation and documentation samples are in accordance with the New York State Department of Environmental Conservation's (NYSDEC's) document titled, DER-10/Technical Guidance for Site Investigation and Remediation, dated May 3, 2010.

Figures



REFERENCE: BASE MAP USGS 7.5 MIN. QUAD., HICKSVILLE, N.Y. 1967, PHOTOREVISED 1979.



Approximate Scale: 1" = 2000'



Area Location

BAYER MATERIALSCIENCE LLC
125 NEW SOUTH ROAD
HICKSVILLE, NEW YORK

SITE LOCATION MAP



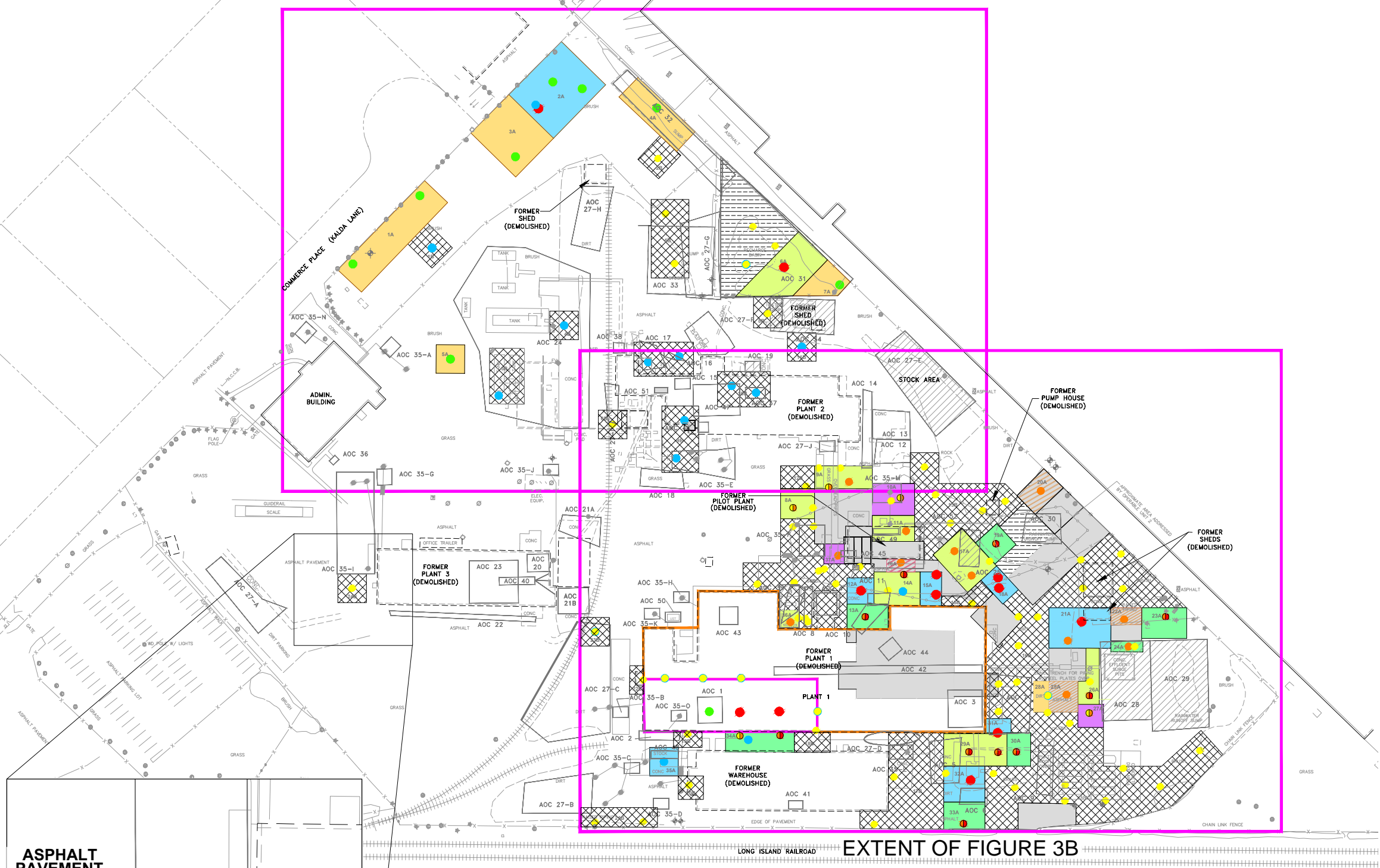
FIGURE

1

CITY: SYRACUSE NY DIV: GROUP: EN/IM-DV DR: R. BASSETT, A. SCHILLING, R. BASSETT, PM: J. BRUSSEL, TM: J. BRUSSEL, TR: R. HENSEL, LVR: ON-OFF-REF (FRZ)
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32305X01 32305X00 PROJECTNAME: -

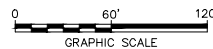
EXTENT OF FIGURE 3A



- LEGEND:**
- AREA OF PREVIOUS EXCAVATION
 - SURFACE SOIL EXCAVATION ANTICIPATED TO AVERAGE DEPTH OF 1 FOOT WHERE REMOVED SOIL IS ELIGIBLE FOR RE-USE AS SUBSURFACE FILL
 - ANTICIPATED CAP AREA (BACKFILLED TO SURROUNDING GRADE)
 - SOIL EXCAVATION ANTICIPATED TO AVERAGE DEPTH OF 1 FOOT
 - SOIL EXCAVATION ANTICIPATED TO AVERAGE DEPTH OF 2 FEET
 - SOIL EXCAVATION ANTICIPATED TO AVERAGE DEPTH OF 4 FEET
 - SOIL EXCAVATION ANTICIPATED TO AVERAGE DEPTH OF 6 FEET
 - SOIL EXCAVATION ANTICIPATED TO AVERAGE DEPTH OF 8 FEET
 - 1A SOIL EXCAVATION AREA
 - 1B SURFACE SOIL EXCAVATION AREA WHERE SOIL IS ELIGIBLE FOR RE-USE
 - AREA OF PREVIOUS EXCAVATION:**
 - ANTICIPATED ADDITIONAL EXCAVATION TO AVERAGE DEPTH TO 8.5 FEET
 - ANTICIPATED ADDITIONAL EXCAVATION TO AVERAGE DEPTH TO 10.0 FEET
 - FORMER MONITORING WELL (WELL DECOMMISSIONED)
 - AOC 1 AREA OF CONCERN
 - HISTORIC AND CLOSED AOC
 - COMPOSITE SOIL SAMPLING LOCATION (COLLECTED BY IMPACT ENVIRONMENTAL)
 - ICM INTERIM CORRECTIVE MEASURE
 - VOC VOLATILE ORGANIC COMPOUNDS
 - SVOC SEMI-VOLATILE ORGANIC COMPOUNDS
 - PCB POLYCHLORINATED BIPHENYLS
 - SCOs SOIL CLEANUP OBJECTIVES
 - PPM PARTS PER MILLION
 - RCRA RESOURCE CONSERVATION AND RECOVERY ACT
 - RFI RCRA FACILITY INVESTIGATION
 - LIMITS OF SOIL REMOVED FOR OFFSITE DISPOSAL AS PART OF 2009 ICM
 - LIMITS OF SOIL SCRAPED AND USED AS SUBSURFACE (SUMP) BACKFILL (SCRAPE AREA)-2009
 - MOUND AREA (EXISTING)

COLOR-CODING FOR SAMPLING LOCATIONS FOLLOWING ICM SOIL REMOVAL ACTIVITIES ARE AS FOLLOWS:

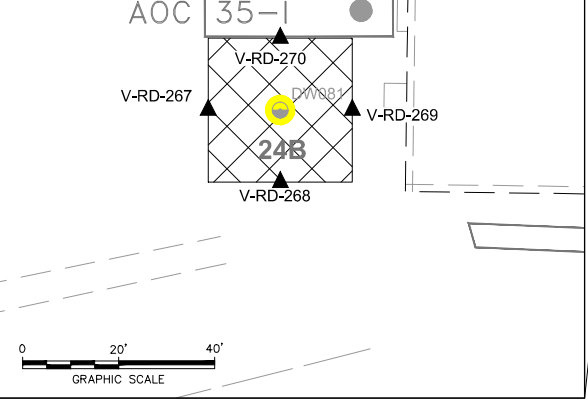
- SURFACE SAMPLING LOCATION WHERE PCB SOIL CONCENTRATION IS >1 ppm BUT ≤10 ppm
- SUBSURFACE SAMPLING LOCATION WHERE PCB SOIL CONCENTRATION IS >10 ppm
- SURFACE SOIL SAMPLING LOCATION WHERE PCB SOIL CONCENTRATION IS >10 ppm
- SAMPLING LOCATION WHERE SVOC SOIL CONCENTRATION IS GREATER THAN 6 NYCRR PART 375 COMMERCIAL USE SCOs
- SAMPLING LOCATION WHERE METALS SOIL CONCENTRATION IS GREATER THAN 6 NYCRR PART 375 COMMERCIAL USE SCOs



NOTES:

- BASE MAP ADAPTED FROM A DRAWING ENTITLED "AREA OF CONCERN MAP", FIGURE 1-2, BY ENSR CORPORATION, PISCATAWAY, NJ, AT A SCALE OF 1"=60', DATED 2/14/03.
- EXISTING SAMPLING LOCATIONS WERE SURVEYED BY ARCADIS, INC. BETWEEN FEBRUARY 2004 AND JULY 2011.
- NO CAP IS PROPOSED FOR AREAS WHERE SOIL WAS PREVIOUSLY REMOVED DURING REMEDIAL ACTIVITIES AT THE SITE.
- 6 NYCRR PART 375 COMMERCIAL AND INDUSTRIAL USE SCOs ARE FROM TITLE 6 OF THE OFFICIAL COMPILATION OF CODES, RULES, AND REGULATIONS OF THE STATE OF NEW YORK (6 NYCRR) PART 375-6.8 (b).
- COLOR-CODING FOR SAMPLING LOCATIONS REPRESENTS PCB, SVOC, OR METAL CONCENTRATIONS EXCEEDING COMMERCIAL USE SCOs IN SOILS AFTER PREVIOUS ICM EXCAVATION ACTIVITIES.
- THE LOCATION OF SAMPLES COLLECTED BY IMPACT ENVIRONMENTAL AS PART OF A PHASE II ENVIRONMENTAL SITE ASSESSMENT DATED NOVEMBER 3, 2006 EXHIBITING PCB, SVOC, AND METAL CONCENTRATIONS GREATER THAN COMMERCIAL USE SCO IN COMPOSITE SOIL SAMPLES ARE SHOWN ON THIS FIGURE.
- AREAS OF PREVIOUS EXCAVATION THAT REQUIRE ADDITIONAL EXCAVATION WILL REQUIRE CLEAN FILL REMOVAL TO DEPTHS INDICATED IN THE REMEDIAL DESIGN PRIOR TO ADDITIONAL REMOVAL. HANDLING AND REUSE OF THE CLEAN FILL IS ALSO DESCRIBED IN THE REMEDIAL DESIGN.
- APPROXIMATELY 3 FEET OF THE MOUND AREA WILL BE REMOVED FOR OFFSITE DISPOSAL DURING THE REMEDIAL ACTIVITIES LEAVING THE AREA AT GRADE WHEN COMPLETED.
- REMOVED SOIL IS NOT ELIGIBLE FOR RE-USE AS FILL UNLESS SPECIFIED IN THE REMEDIAL DESIGN.
- LOCATIONS SHOWN IN GRAY ARE FORMER SITE FEATURES.

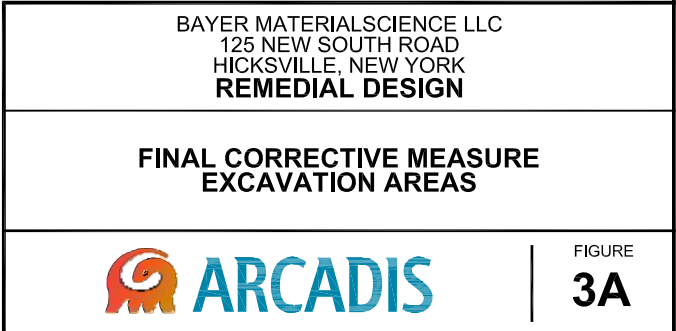
ASPHALT PAVEMENT



BAYER MATERIALSCIENCE LLC
125 NEW SOUTH ROAD
HICKSVILLE, NEW YORK
REMEDIAL DESIGN

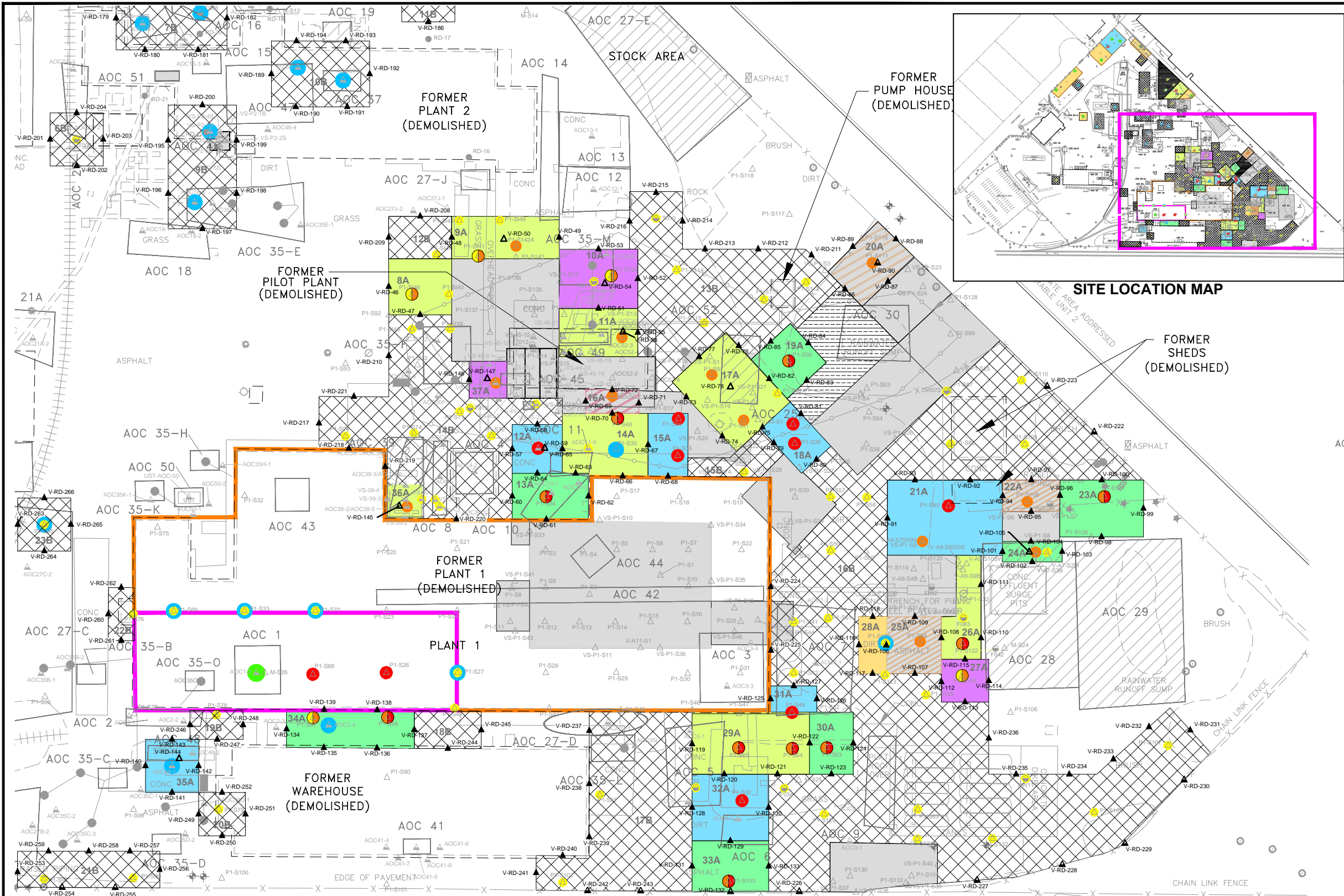
FINAL CORRECTIVE MEASURE EXCAVATION AREAS





CITY: SYRACUSE NY DIV: GROUP: ENV/IM-DV DB: R. BASSETT, A. SCHILLING, R. BASSETT, PM: J. BRUSSEL TM: J. BRUSSEL TR: R. HENSEL LVR: ON=OFF-REF (FRZ)
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PROJECTNAME: 32305X01 32305X00

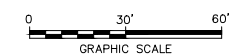


NOTES:

1. BASE MAP ADAPTED FROM A DRAWING ENTITLED "AREA OF CONCERN MAP", FIGURE 1-2, BY ENSR CORPORATION, PISCATAWAY, NJ, AT A SCALE OF 1"=60', DATED 2/14/03.
2. EXISTING SAMPLING LOCATIONS WERE SURVEYED BY ARCADIS, INC. BETWEEN FEBRUARY 2004 AND JULY 2011.
3. NO CAP IS PROPOSED FOR AREAS WHERE SOIL WAS PREVIOUSLY REMOVED DURING REMEDIAL ACTIVITIES AT THE SITE.
4. 6 NYCRR PART 375 COMMERCIAL AND INDUSTRIAL USE SCOs ARE FROM TITLE 6 OF THE OFFICIAL COMPILATION OF CODES, RULES, AND REGULATIONS OF THE STATE OF NEW YORK (6 NYCRR) PART 375-6.8 (b).
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7. AREAS OF PREVIOUS EXCAVATION THAT REQUIRE ADDITIONAL EXCAVATION WILL REQUIRE CLEAN FILL REMOVAL TO DEPTHS INDICATED IN THE REMEDIAL DESIGN PRIOR TO ADDITIONAL REMOVAL. HANDLING AND REUSE OF THE CLEAN FILL IS ALSO DESCRIBED IN THE REMEDIAL DESIGN.
8. APPROXIMATELY 3 FEET OF THE MOUND AREA WILL BE REMOVED FOR OFFSITE DISPOSAL DURING THE REMEDIAL ACTIVITIES LEAVING THE AREA AT GRADE WHEN COMPLETED.
9. REMOVED SOIL IS NOT ELIGIBLE FOR RE-USE AS FILL UNLESS SPECIFIED IN THE REMEDIAL DESIGN.

- LEGEND:**
- AREA OF PREVIOUS EXCAVATION
 - SURFACE SOIL EXCAVATION ANTICIPATED TO AVERAGE DEPTH OF 1 FOOT WHERE REMOVED SOIL IS ELIGIBLE FOR RE-USE AS SUBSURFACE FILL
 - ANTICIPATED CAP AREA (BACKFILLED TO SURROUNDING GRADE)
 - SOIL EXCAVATION ANTICIPATED TO AVERAGE DEPTH OF 1 FOOT
 - SOIL EXCAVATION ANTICIPATED TO AVERAGE DEPTH OF 2 FEET
 - SOIL EXCAVATION ANTICIPATED TO AVERAGE DEPTH OF 4 FEET
 - SOIL EXCAVATION ANTICIPATED TO AVERAGE DEPTH OF 6 FEET
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 - 1A SOIL EXCAVATION AREA
 - 1B SURFACE SOIL EXCAVATION AREA WHERE SOIL IS ELIGIBLE FOR RE-USE
 - AREA OF PREVIOUS EXCAVATION:**
 - ANTICIPATED ADDITIONAL EXCAVATION TO AVERAGE DEPTH TO 8.5 FEET
 - ANTICIPATED ADDITIONAL EXCAVATION TO AVERAGE DEPTH TO 10.0 FEET
 - REMEDIAL EXCAVATION SIDEWALL CONFIRMATION SAMPLE
 - REMEDIAL EXCAVATION BOTTOM CONFIRMATION SAMPLE
 - REMEDIAL DOCUMENTATION SAMPLE
 - FORMER MONITORING WELL (WELL DECOMMISSIONED)
 - FORMER RFI SOIL SAMPLING LOCATION
 - FORMER POST-RFI SOIL SAMPLE LOCATION
 - AOC 1 AREA OF CONCERN
 - HISTORIC AND CLOSED AOC
 - COMPOSITE SOIL SAMPLING LOCATION (COLLECTED BY IMPACT ENVIRONMENTAL)
 - ICM INTERIM CORRECTIVE MEASURE
 - VOC VOLATILE ORGANIC COMPOUNDS
 - SVOC SEMI-VOLATILE ORGANIC COMPOUNDS
 - PCB POLYCHLORINATED BIPHENYLS
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 - RCRA RESOURCE CONSERVATION AND RECOVERY ACT
 - RFI RCRA FACILITY INVESTIGATION
 - LIMITS OF SOIL REMOVED FOR OFFSITE DISPOSAL AS PART OF 2009 ICM
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 - MOUND AREA (EXISTING)

- COLOR-CODING FOR SAMPLING LOCATIONS FOLLOWING ICM SOIL REMOVAL ACTIVITIES ARE AS FOLLOWS:**
- SURFACE SAMPLING LOCATION WHERE PCB SOIL CONCENTRATION IS >1 ppm BUT ≤10 ppm
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 - SAMPLING LOCATION WHERE METALS SOIL CONCENTRATION IS GREATER THAN 6 NYCRR PART 375 COMMERCIAL USE SCOs



BAYER MATERIALSCIENCE LLC
125 NEW SOUTH ROAD
HICKSVILLE, NEW YORK
REMEDIAL DESIGN

**FINAL CORRECTIVE MEASURE
EXCAVATION AREAS**



FIGURE
3B



Design Drawings

DESIGN DRAWINGS

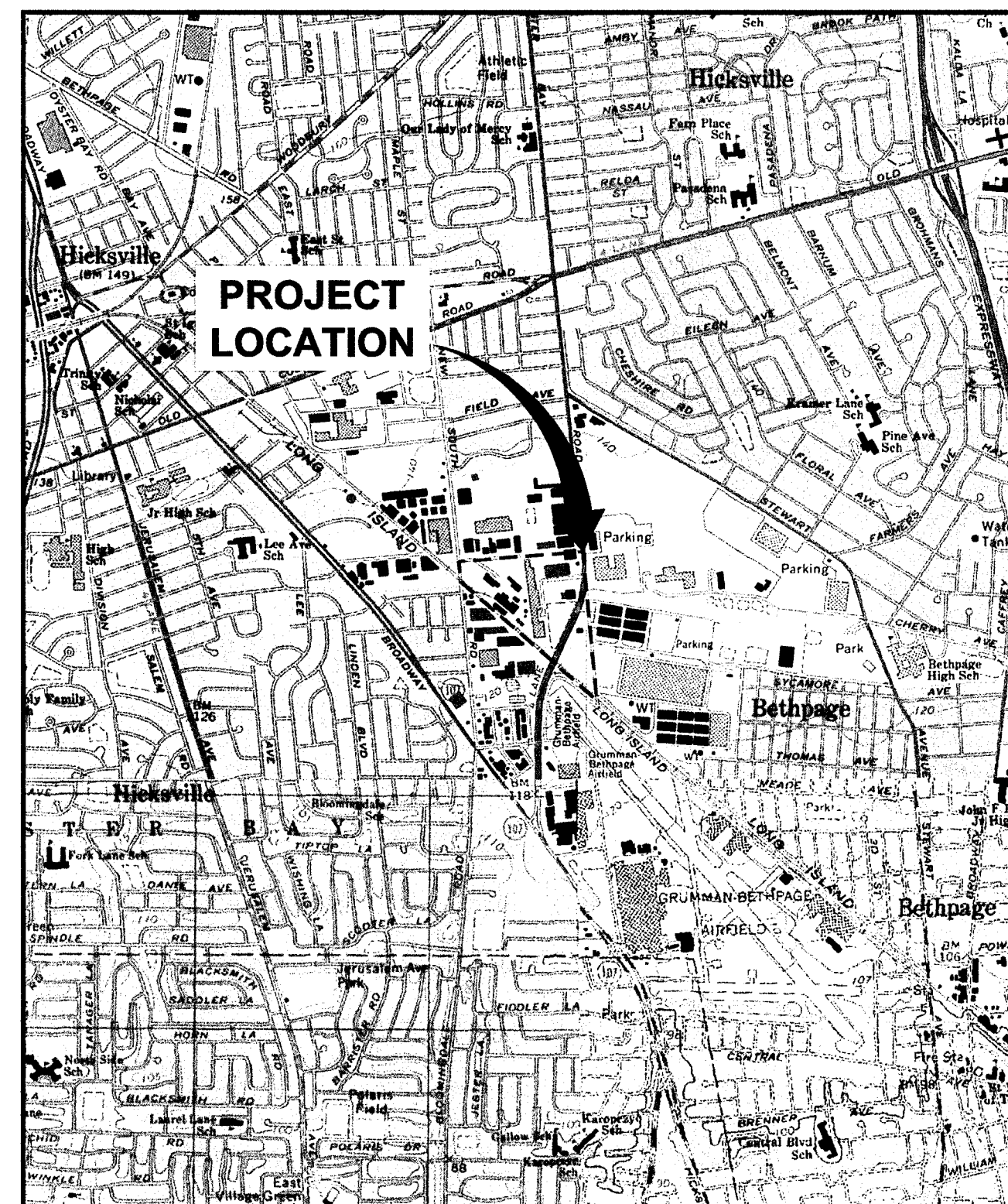
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FORMER HOOKER CHEMICAL/OXY/RUCO POLYMER CORPORATION

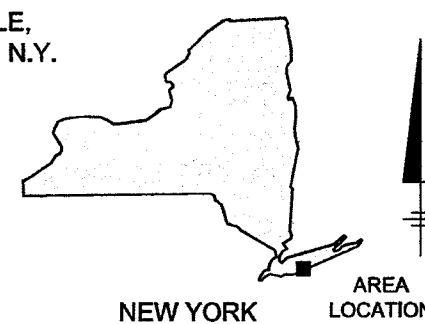
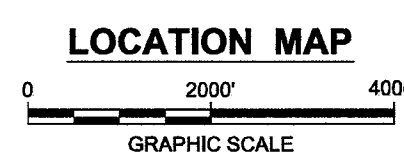
**125 NEW SOUTH ROAD
HICKSVILLE, NEW YORK**

DATE ISSUED
FEBRUARY 2013

BAYER MATERIALSCIENCE LLC



REFERENCE: BASE MAP USGS 7.5 MINUTE QUADRANGLE., HICKSVILLE,
N.Y. 1967. PHOTOREVISED 1979. HUNTINGTON, N.Y. 1967. FREEPORT, N.Y.
1994. AMITYVILLE, N.Y. 1969. PHOTOREVISED 1979.



ARCADIS OF NEW YORK, INC.

INDEX TO DRAWINGS

COVER

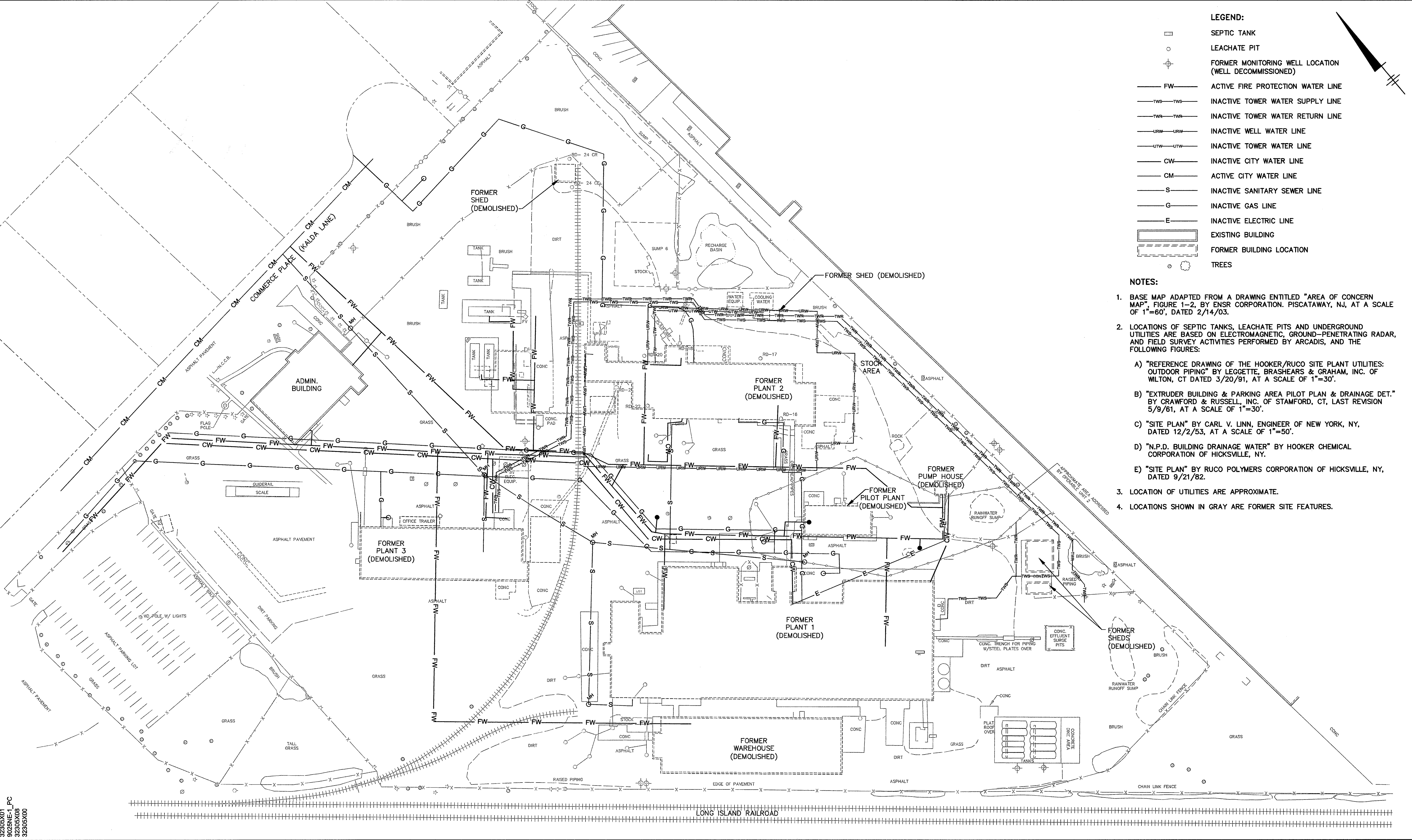
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2. SITE PREPARATION/EROSION AND SEDIMENTATION CONTROL PLAN
3. EXCAVATION AND CONFIRMATION / DOCUMENTATION SAMPLING PLAN
4. MISCELLANEOUS DETAILS

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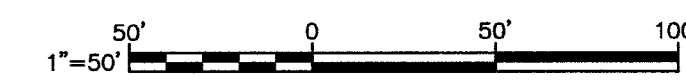
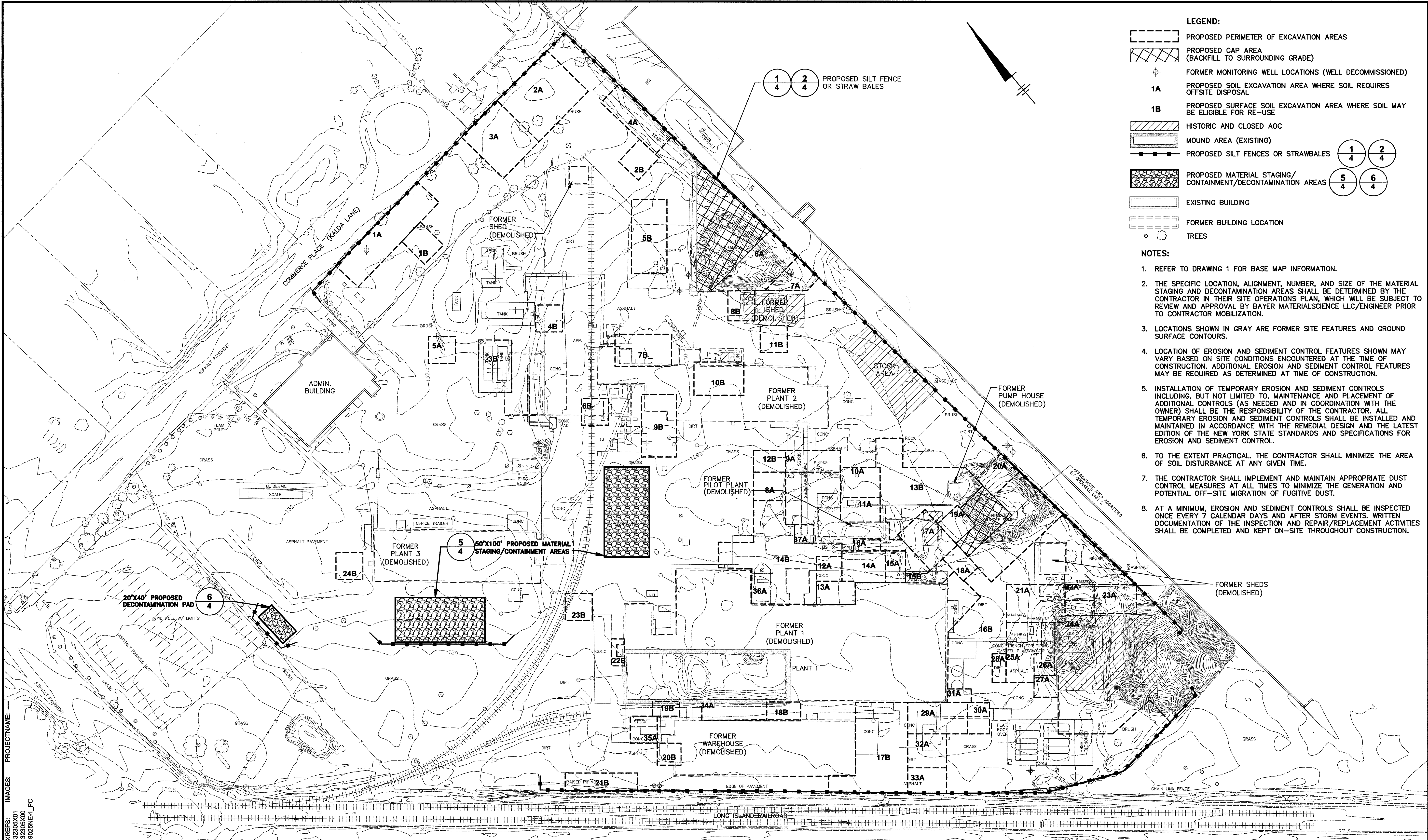


- LEGEND:**
- SEPTIC TANK
 - LEACHATE PIT
 - FORMER MONITORING WELL LOCATION (WELL DECOMMISSIONED)
 - FW — ACTIVE FIRE PROTECTION WATER LINE
 - TWS — INACTIVE TOWER WATER SUPPLY LINE
 - TWR — INACTIVE TOWER WATER RETURN LINE
 - URW — INACTIVE WELL WATER LINE
 - UTW — INACTIVE TOWER WATER LINE
 - CW — INACTIVE CITY WATER LINE
 - CM — ACTIVE CITY WATER LINE
 - S — INACTIVE SANITARY SEWER LINE
 - G — INACTIVE GAS LINE
 - E — INACTIVE ELECTRIC LINE
 - EXISTING BUILDING
 - FORMER BUILDING LOCATION
 - TREES

- NOTES:**
1. BASE MAP ADAPTED FROM A DRAWING ENTITLED "AREA OF CONCERN MAP", FIGURE 1-2, BY ENSR CORPORATION, PISCATAWAY, NJ, AT A SCALE OF 1"=60', DATED 2/14/03.
 2. LOCATIONS OF SEPTIC TANKS, LEACHATE PITS AND UNDERGROUND UTILITIES ARE BASED ON ELECTROMAGNETIC, GROUND-PENETRATING RADAR, AND FIELD SURVEY ACTIVITIES PERFORMED BY ARCADIS, AND THE FOLLOWING FIGURES:
 - A) "REFERENCE DRAWING OF THE HOOKER/RUCO SITE PLANT UTILITIES: OUTDOOR PIPING" BY LEGGETTE, BRASHEARS & GRAHAM, INC. OF WILTON, CT DATED 3/20/91, AT A SCALE OF 1"=30'.
 - B) "EXTRUDER BUILDING & PARKING AREA PILOT PLAN & DRAINAGE DET." BY CRAWFORD & RUSSELL, INC. OF STAMFORD, CT, LAST REVISION 5/9/61, AT A SCALE OF 1"=30'.
 - C) "SITE PLAN" BY CARL V. LINN, ENGINEER OF NEW YORK, NY, DATED 12/2/53, AT A SCALE OF 1"=50'.
 - D) "N.P.D. BUILDING DRAINAGE WATER" BY HOOKER CHEMICAL CORPORATION OF HICKSVILLE, NY.
 - E) "SITE PLAN" BY RUCO POLYMERS CORPORATION OF HICKSVILLE, NY, DATED 9/21/82.
 3. LOCATION OF UTILITIES ARE APPROXIMATE.
 4. LOCATIONS SHOWN IN GRAY ARE FORMER SITE FEATURES.

<p>THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING.</p> <p>USE TO VERIFY FIGURE REPRODUCTION SCALE</p>		<p>No. Date Revisions By Ckd</p> <p>THIS DRAWING IS THE PROPERTY OF THE ARCADIS ENTITY IDENTIFIED IN THE TITLE BLOCK AND MAY NOT BE REUSED OR ALTERED IN WHOLE OR IN PART WITHOUT THE EXPRESS WRITTEN PERMISSION OF SAME.</p>		<p>Professional Engineer's Name JOHN C. BRUSSEL P.E.</p> <p>Professional Engineer's No. 075208</p> <p>State NY</p> <p>Date Signed 02/13/13</p> <p>Project Mgr. JCB</p> <p>Designed by JCB</p> <p>Drawn by KLS</p> <p>Checked by (CHK)</p>		<p>STATE OF NEW YORK JOHN C. BRUSSEL Professional Engineer No. 075208</p>		<p>ARCADIS ARCADIS OF NEW YORK, INC.</p> <p>NO ALTERATIONS PERMITTED HEREON EXCEPT AS PROVIDED UNDER SECTION 7209 SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW</p>		<p>BAYER MATERIALSCIENCE LLC • HICKSVILLE, NEW YORK REMEDIAL DESIGN</p> <p>EXISTING UTILITIES AND SITE PLAN</p> <p>GENERAL</p>		<p>ARCADIS Project No. B0032305.0007.00001</p> <p>Date FEBRUARY 2013</p> <p>ARCADIS 6723 TOWPATH ROAD P.O. BOX 66 SYRACUSE, NEW YORK 13214 TEL. 315.446.9120</p>		<p>1</p>
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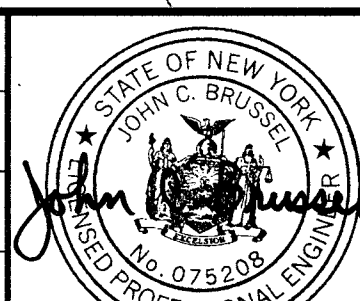
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USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

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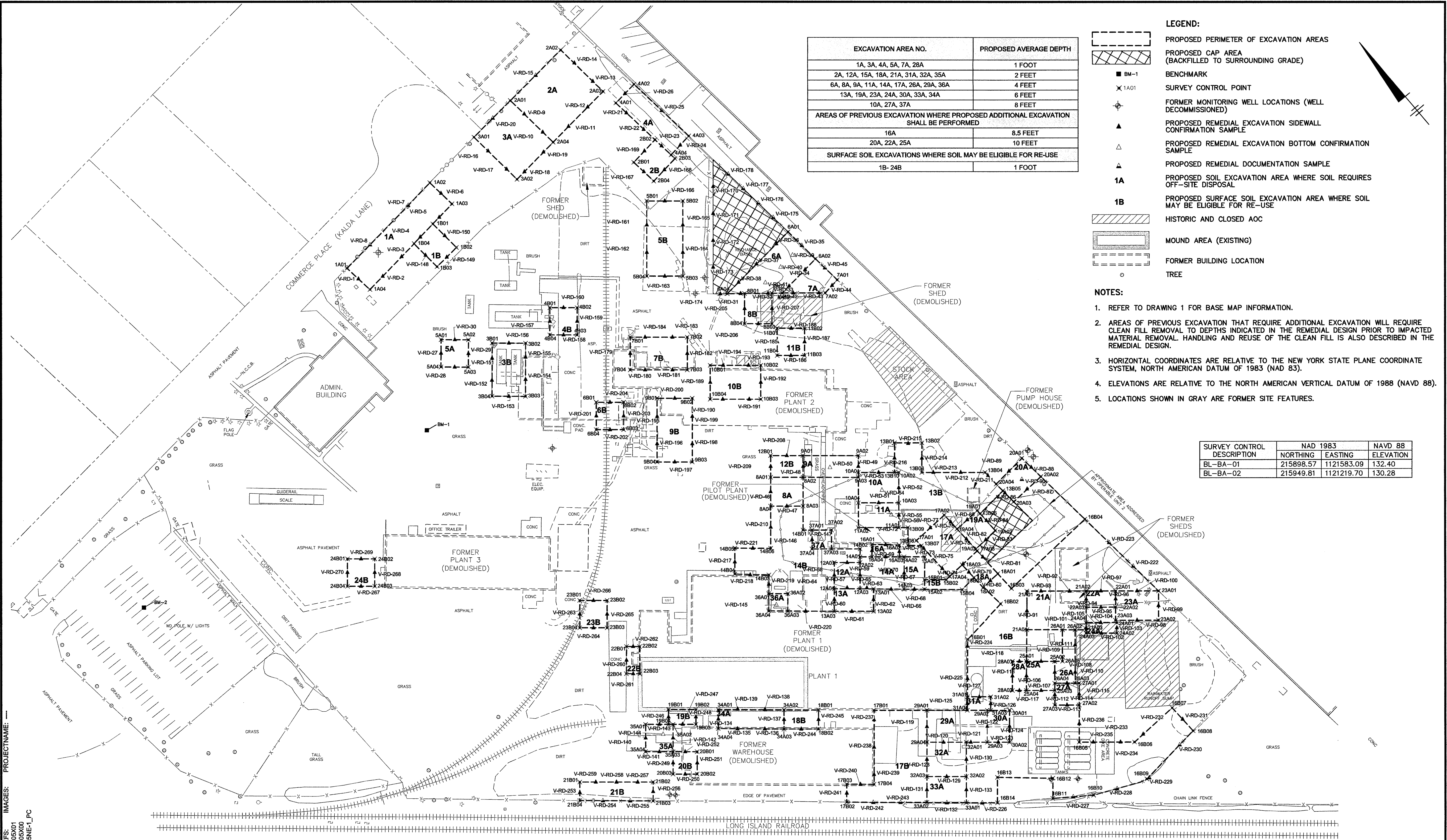
Professional Engineer's Name JOHN C. BRUSSEL P.E.			
Professional Engineer's No. 075208			
State NY	Date Signed 02/13/13	Project Mgr. JCB	
Designed by JCB	Drawn by KLS	Checked by (CHK)	



ARCADIS
ARCADIS OF NEW YORK, INC.
NO ALTERATIONS PERMITTED HEREON EXCEPT AS PROVIDED UNDER SECTION 2209 SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW

BAYER MATERIALSCIENCE LLC • HICKSVILLE, NEW YORK REMEDIAL DESIGN		ARCADIS Project No. 80032305.0007.00001
SITE PREPARATION/EROSION AND SEDIMENTATION CONTROL PLAN		Date FEBRUARY 2013
GENERAL		ARCADIS 6723 TOWPATH ROAD P.O. BOX 66 SYRACUSE, NEW YORK 13214 TEL: 315.446.9120
		2

CITY: SYRACUSE, NY DIV/GROUP: ENV/CADD DB: B.Bassett, P.Liester, A.Schilling, K.Sartori LD: K.Sartori PIC: T. RATCHFORD PM: TM: J. BRUSSEL LYRON="OFF-REF"
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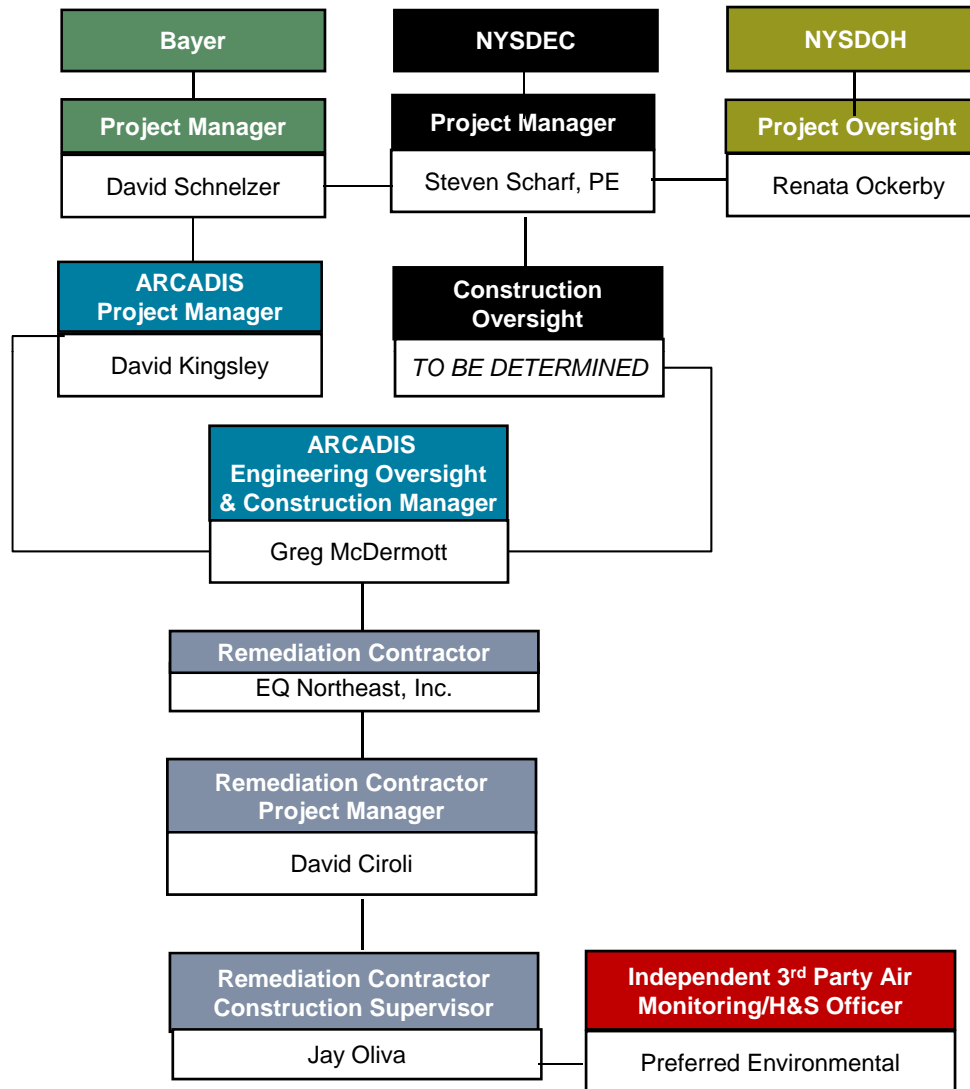




Attachments

**ATTACHMENT A
ORGANIZATION CHART FOR IMPLEMENTATION OF REMEDIAL ACTIVITIES**

**REMEDIAL DESIGN
BAYER MATERIALSCIENCE LLC
125 NEW SOUTH ROAD
HICKSVILLE, NEW YORK**





Attachment B

BioSolve[®] Product Information



VAPOR SUPPRESSION & ODOR CONTROL

BioSolve® is being utilized by environmental consultants and contractors to suppress vapors and odors. **BioSolve®** encapsulates the source of the vapor rather than temporally blanketing it like foam. Vapor reduction is so fast and effective that **BioSolve®** is used to comply with the tough emissions standards now regulated by the Clean Air Act as well as a myriad of State Statutes.

BioSolve® offers a relatively simple and cost effective method of suppressing Odors and VOC release from soils, during excavation, loading, stockpiling, etc. The following guidelines will apply to the most common situations encountered on site.

In most cases a 3% BSW solution (1 part **BioSolve®** concentrate to 33 parts water) will be adequate to keep vapor emissions within acceptable limits and control odour problems on contact. Although, some sites may only require a 2% solution, a 3%-6% solution is recommended depending upon contaminant types, concentrations and other site-specific environmental conditions such as temperature & soil porosity.

The **BioSolve®** solution should be applied evenly to the soil surface in sufficient quantity to saturate the surface area. As a general rule, 1 gallon of **BioSolve®** solution will cover approximately 4-sq. yd. of soil surface area (or 1 to 3 litres of **BioSolve®** solution to 1 square metre of surface area). **BioSolve®** is a water-based surfactant that will apply like water.

BioSolve®, in its concentrated form, is a viscous liquid material that must be diluted with water. A fluorescent red tracing dye is present in the formula allowing **BioSolve®** to be detected during application. Once diluted, **BioSolve®** can be applied with virtually any equipment that can spray water. **BioSolve®** will not harm equipment or clog pipes. For large sites, applicators such as water truck, portable agricultural sprayers, foam inductors & pressure equipment may be used. For smaller jobs, garden sprayers, water extinguishers or a garden hose with a fertilizer attachment on the nozzle can be used effectively. This characteristic makes **BioSolve®** very adaptable and much most convenient to use in almost any situation. **BioSolve®** is equally effective when used with all types of water (soft, hard, salt or potable).

On stockpiled soil or other soil that will be left undisturbed, a single application of **BioSolve®** to the exposed surfaces may last up to 10 to 12 days or more (depending on environmental conditions). **BioSolve®**, when applied, will form a "cap" of clean soil. If the soil is not disturbed, via weather, movement, etc. this "cap" will remain functional. During excavation, loading or other movement of the soil, it may be required to spray an additional amount of **BioSolve®** to the freshly exposed surface area to keep emissions at an acceptable level.

In case of an extremely high level of emissions, or if the soil is heavily contaminated, it may be necessary to increase the strength of the **BioSolve®** solution or apply more solution per square metre to reduce emissions adequately.

It is important that the site be monitored regularly and that the **BioSolve®** solution be reapplied if and when necessary to insure that VOC emissions and odours remain under control.

BioSolve® should only be used in accordance with all regulatory rules and regulations.

This material is made available for use by professionals or persons having technical skill to be used at the own discretion and risk. These protocols are guidelines only and may need to be modified to site specific conditions. Nothing included herein is a warrantee or to be taken as a license to use **BioSolve** without the proper permits, approvals, etc. of the appropriate regulatory agencies, nor are the protocols provided as instructions for any specific application of **BioSolve**.

MATERIAL SAFETY DATA SHEET

THE WESTFORD CHEMICAL CORPORATION®

P.O. Box 798

Westford, Massachusetts 01886 USA

Ref. No.: 2001

Date: 1/1/2008

Phone: (978) 392-0866/ (978) 392-0689

Alternate Phone: 1-866-838-3909

Emergency Phone-24 Hours: 1-800-225-3909

Fax: (978) 692-3487 / (978) 496-1108

Web Site: <http://www.biosolve.com>

E-Mail: info@biosolve.com

SECTION I - IDENTITY

Name: BioSolve®
CAS #: 138757-63-8
Formula: Proprietary
Chemical Family: Water Based, Biodegradable, Wetting Agents & Surfactants
HMIS Code: Health 1, Fire 0, Reactivity 0
HMIS Key: 4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Insignificant

SECTION II - HAZARDOUS INGREDIENTS

Massachusetts Right to Know Law or 29 C.F.R. (Code of Federal Regulations) 1910.1000 require listing of hazardous ingredients.

This product does not contain any hazardous ingredients as defined by CERCLA, Massachusetts Right to Know Law and California's Prop. 65.

DOT Class: Not Regulated/Non Hazardous

SECTION III - PHYSICAL - CHEMICAL CHARACTERISTICS

Boiling Point	: 265°F	Specific Gravity	: 1.00 +/-0.01
Melting Point	: 32°F	Vapor Pressure mm/Hg	: Not Applicable
Surface Tension- 6% Solution	: 29.1 Dyne/cm at 25°C	Vapor Density Air = 1	: Not Applicable
Reactivity with Water	: No	Viscosity - Concentrate	: 490 Centipoise
Evaporation Rate	: >1 as compared to Water	Viscosity - 6% Solution	: 15 Centipoise
Appearance	: Clear Liquid unless Dyed	Solubility in Water	: Complete
Odor	: Pleasant Fragrance	pH	: 9.1+/-0.3
Pounds per Gallon	: 8.38		

SECTION IV - FIRE AND EXPLOSION DATA

Special Fire Fighting Procedures	: None	Flammable Limit	: None
Unusual Fire and Explosion Hazards	: None	Auto Ignite Temperature	: None
Solvent for Clean-Up	: Water	Fire Extinguisher Media	: Not Applicable
Flash Point	: None		

SECTION V - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Precautions to be taken in Handling and Storage: Use good normal hygiene.

Precautions to be taken in case of Spill or Leak -

Small spills, in an undiluted form, contain. Soak up with absorbent materials.

Large spills, in an undiluted form, dike and contain. Remove with vacuum truck or pump to storage/salvage vessel. Soak up residue with absorbent materials.

Waste Disposal Procedures -

Dispose in an approved disposal area or in a manner which complies with all local, provincial, and federal regulations.

SECTION VI - HEALTH HAZARDS

Threshold Limit Values: Not applicable

Signs and Symptoms of Over Exposure-

Acute : Moderate eye irritation. Skin: Causes redness, edema, drying of skin.

Chronic: Pre-existing skin and eye disorders may be aggravated by contact with this product.

Medical Conditions Generally Aggravated by Exposure: Unknown

Carcinogen: No

Emergency First Aid Procedures -

Eyes: Flush thoroughly with water for 15 minutes. Get medical attention.

Skin: Remove contaminated clothing. Wash exposed areas with soap and water.

Wash clothing before reuse. Get medical attention if irritation develops.

Ingestion: Get medical attention.

Inhalation: None considered necessary.

SECTION VII - SPECIAL PROTECTION INFORMATION

Respiratory Protection	: Not necessary	Local Exhaust Required	: No
Ventilation	: Normal	Protective Clothing	: Gloves, safety glasses
Required			Wash clothing before reuse.

SECTION VIII - PHYSICAL HAZARDS

Stability	: Stable	Incompatible Substances	: None Known
Polymerization	: No	Hazardous Decomposition Products	: None Known

SECTION IX - TRANSPORT & STORAGE

DOT Class	: Not Regulated/Non Hazardous		
Freeze Temperature	: 28°F	Storage	: 35°F-120°F
Freeze Harm	: None (thaw & stir)	Shelf Life	: Unlimited Unopened

SECTION X - REGULATORY INFORMATION

The Information on this Material Safety Data Sheet reflects the latest information and data that we have on hazards, properties, and handling of this product under the recommended conditions of use. Any use of this product or method of application, which is not described on the Product label or in this Material Safety Data Sheet, is the sole responsibility of the user. This Material Safety Data Sheet was prepared to comply with the OSHA Hazardous Communication Regulation and Massachusetts Right to Know Law.



Attachment C

Project Schedule

REMEDIAL DESIGN
BAYER MATERIALSCIENCE LLC
125 NEW SOUTH ROAD
HICKSVILLE, NEW YORK

Assumption:
Schedule is dependent on and subject to change based on the timeframes of agency reviews, scope of agency comments, field conditions, final scope of remedial activities, and weather conditions.

Appendix A

Materials and Performance
Specifications

LIST OF MATERIALS AND PERFORMANCE SPECIFICATIONS

**REMEDIAL DESIGN
BAYER MATERIALSCIENCE LLC
125 NEW SOUTH ROAD
HICKSVILLE, NEW YORK**

Section 01010 – Summary of Work
Section 01046 – Control of Work
Section 01110 – Environmental Protection Procedures
Section 01160 – Survey Control
Section 01200 – Project Meetings
Section 01300 – Submittals
Section 01720 – Project Record Documents
Section 01901 – Field Office Trailer and Other Support
Section 01902 – Project Sign
Section 01906 – Project Schedule
Section 02201 – Earthwork
Section 02202 – Rock and Debris Removal
Section 02203 – Site Grading
Section 02206 – Fill Materials
Section 02210 – Topsoil and Seeding
Section 02270 – Geotextile Fabric
Section 02272 – Geomembrane – HDPE Liner

SUMMARY OF WORK

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. The Contractor shall perform all activities and furnish all labor, materials, equipment, subcontractor services, and incidentals necessary to implement the Remedial Design (RD) in accordance with the Contract between Bayer and the Contractor. In general, the Project involves: 1) excavating soil containing polychlorinated biphenyls (PCBs) at concentrations greater than 10 parts per million (ppm), metals (arsenic and cadmium) at concentrations greater than commercial use soil cleanup objectives (SCOs) as set forth in Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375-6.8(b), and polycyclic aromatic hydrocarbons (PAHs) at concentrations greater than the 500 ppm threshold described in Section H of NYSDEC's CP-51/Soil Cleanup Guidance; 2) excavating surface soil (top 1 foot of soil) at select locations with concentrations of PCBs greater than 1 ppm and semi-volatile organic compounds (SVOCs) impacts greater than commercial use SCOs for re-use onsite as subsurface fill (greater than 1 foot bgs); 3) transporting soil for offsite disposal; 4) backfilling the excavated areas; 5) restoring the remaining areas; and 6) performing various other restoration activities.

The work shall also include all activities required of the Contractor to plan, organize, monitor, and coordinate the logical and timely sequence of site activities, in accordance with all applicable regulatory requirements. This includes (but is not limited to) activities such as preparation of technical and operational submittals, construction-related permits, attendance at project meetings, incidental expenses, and administrative activities.

- B. The Project scope includes, but is not limited to, the following:

1. General

General activities include mobilizing and demobilizing all equipment, materials, and labor; setting up the Contractor's temporary facilities and services (office space/trailers and sanitary facilities); performing site monitoring and protection; implementing health and safety equipment and practices; performing site security during the Project; and performing a community air monitoring program.

In addition, general activities include technical/Project submittals, ancillary support services and activities throughout the performance of site activities, as well as post-construction activities (e.g., as-built survey documentation).

2. Site Preparation

Site preparation generally includes: obtaining all necessary construction-related permits; providing erosion and environmental controls; providing traffic controls (as necessary); setting up work zones (including staging, containment, and

MATERIALS AND PERFORMANCE – SECTION 01010

SUMMARY OF WORK

decontamination areas); and protecting site features within the vicinity of the Project Work Limits as indicated in the RD.

3. Utility Identification, Protection, and Removal Plan.

Subsurface utilities will be identified and protected (waterlines that comprise the fire water loop through the interior of the Site) and removed (historical/abandoned lines and leachate pits encountered in the excavations), as identified on the Design Drawings. Details associated with the subsurface utility handling activities shall be provided in the Contractor's Operations Plan.

4. Water Collection/Management

Water is anticipated to be encountered primarily from precipitation and overland sheet flow during the performance of excavation activities within the remedial area shown on the Design Drawings. Accordingly, the Contractor shall be responsible for the dewatering of the area, as needed, in accordance with Materials and Performance (M&P) – Section 02201 (Earthwork). Water will be temporarily stored onsite. Pending the results of characterization sampling, the water will be transported to an industrial wastewater treatment facility for offsite treatment/discharge.

5. Earthwork and Material Disposition

Earthwork involves excavation and backfilling to the limits shown on the Design Drawings and offsite disposal of excavated materials.

6. Site Restoration

Site restoration generally includes grading and surface restoration within the excavation areas; repairing and replacing any damaged or temporarily relocated site features; restoration of disturbed areas to pre-remediation conditions; revegetation activities; and removing temporary construction and erosion and sediment control practices (e.g., decontamination pads, containment areas, material staging areas, silt fencing, hay bales, etc.), in accordance with the RD.

C. The technical work and Contractor requirements are described in several components that collectively represent the RD. These components include the following:

1. RD Text.
2. Design Drawings.
3. Appendices:
 - a. Material and Performance Specifications.

MATERIALS AND PERFORMANCE – SECTION 01010

SUMMARY OF WORK

- b. Construction Quality Assurance Plan.
- c. Citizen Participation Plan.
- d. Community Air Monitoring Plan (CAMP).
- e. Contingency Plan.
- f. Minimum Requirements for Waste Transportation.

The above components should be thoroughly reviewed by the Contractor. Nothing presented in one of the above documents should relieve the Contractor's obligations to satisfy the components specified in the other documents. In addition, in the event that there are discrepancies in the information contained in the above-listed documents, the Contractor shall identify such discrepancies in writing for Bayer and Engineer review.

As part of the Contractor selection process, and to provide an opportunity for the Contractor to familiarize himself with the Project scope, site conditions, physical setting, etc., a mandatory pre-bid meeting and site visit will be conducted. In addition, the Contractor will be provided with various site information related to environmental investigations and investigation results. Such information is provided on compact disc (CD) as supplemental information to assist the Contractor in understanding site conditions and preparing certain of the required technical and operational submittals. The information on the CD will not be part of the Contract.

1.02 WORK SEQUENCE/WORK HOURS

- A. In accordance with, and as part of the Request for Quotation (RFQ), the Contractor shall prepare and submit a proposed Work Schedule. The schedule shall be included in the Operations Plan for review and approval. The Work Schedule should include all elements of the Project and be neatly prepared and labeled as a bar graph indicating all anticipated start and completion dates. Additional requirements are provided below.
 - 1. Submit a horizontal bar chart with separate lines for each section of work.
 - 2. At a minimum, the following major work items should be included, with appropriate subtasks provided as necessary:
 - a. Technical submittals/recordkeeping.
 - b. Mobilization.
 - c. Site preparation.
 - d. Stormwater pollution prevention.

MATERIALS AND PERFORMANCE – SECTION 01010

SUMMARY OF WORK

- e. Site security and control.
 - f. Subsurface utility identification, protection, and removal.
 - g. Excavation.
 - h. Excavation and material dewatering.
 - i. Offsite disposal of waste materials.
 - j. Decontamination
 - k. Excavation backfilling.
 - l. Site restoration.
 - m. Demobilization.
3. Show complete sequence of construction by activity (including work by subcontractors, if any). Indicate the early and late start, early and late finish, float dates, and duration. The work schedule provided by the Contractor to Bayer and Engineer and shall show seasonal considerations and planned shutdown durations (if any).
4. At a minimum, the Contractor shall update and re-submit its work schedule to Bayer/Engineer on a bi-weekly basis during the project. As updated, the schedule shall (separately) identify the projected and actual duration for each work activity.
- B. Bayer anticipates that work activities can be conducted between the hours of 7:00 a.m. and 7:00 p.m. on non-holiday Monday through Friday.
- C. Project implementation shall be in accordance with the approved construction schedule submitted by the Contractor.
- D. For planning purposes, the Contractor shall assume three months (total) Project duration.

1.03 CONTRACTOR'S USE OF PREMISES

- A. Contractor shall limit its activities to the Project Work Limits shown on the Design Drawings. All conflicts over use of the premises shall be resolved without additional cost to Bayer. Costs related to the Contractor's use of the property (e.g., telephone, electric, etc.) shall be borne by the Contractor. Bayer will pay costs for electricity, natural gas, water supply, and sewer associated with Contractor use of the Administration Building as an office.

MATERIALS AND PERFORMANCE – SECTION 01010

SUMMARY OF WORK

- B. Contractor shall assume full responsibility for security of all of its and its subcontractors' materials and equipment stored within the Project Work Limits.
- C. At all times, Contractor shall maintain the Project in a neat, orderly, and safe manner. In addition, safe and clean access shall be available to areas of the property that are not specifically part of the Project.

1.04 CARE AND PROTECTION OF WORK

The Contractor shall be responsible for the care and protection of materials, supplies and equipment delivered at the Site intended to be used for the Project (whether provided by the Contractor or Bayer); and all injury or damage to the same from whatever cause, shall be the responsibility of the Contractor. The Contractor shall provide suitable means of protection for and shall protect all materials intended to be used. The Contractor shall take all necessary precautions to prevent injury or damage by flood, fire, freezing, or from other inclemencies of the weather.

1.05 MONITORING OF WORK

A. Engineer

1. The Engineer will provide onsite and office-based assistance to Bayer for the duration of the Project. The Engineer will observe the progress and quality of the Project and determine, in general, if the Project is proceeding in substantial compliance with the RD. The Engineer may disapprove Project Components as failing to conform to the RD.
2. The Engineer will not be required to make exhaustive or continuous work area inspections to check the quality or quantity of the Work. On the basis of Engineer work area observations, he/she will keep Bayer informed of the progress of the Work and will endeavor to identify defects and deficiencies in the Work of Contractors. The Engineer may disapprove Work as failing to conform to the RD. Whenever the Engineer considers it necessary or advisable to ensure the proper carrying out of the intent of the RD, the Engineer shall have authority to require the Contractor to make special examination or testing of the work (whether or not fabricated, installed or completed).

No matter how extensive or intensive the Engineer's inspection, the Engineer will not be responsible for construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, and he/she will not be responsible for the Contractor's failure to carry out the Work in accordance with the RD. The Engineer's duties, services, and work shall in no way supersede or dilute the Contractor's obligation to perform the Work in conformance with all Project requirements.

MATERIALS AND PERFORMANCE – SECTION 01010

SUMMARY OF WORK

The Engineer is empowered to determine the amount, quality, acceptability and fitness of all parts of the Work, but this authority shall not give rise to any duty or responsibility to the Contractor, the subcontractor or any of their agents or employees to do so.

5. The Engineer's duties, services, and work shall in no way supersede or dilute the Contractor's obligation to implement the Project.

B. Access to Work

1. All parties contracted to do work for Bayer at the Site shall, for all purposes that may be required by their contracts, and representatives of State and Federal regulatory agencies shall, for any purpose, have access to the Project and the premises used by the Contractor, and the Contractor shall provide safe and proper facilities.

1.06 MATERIALS AND EQUIPMENT

A. Quality and Workmanship

1. All materials furnished or incorporated in the Project shall be of the best quality, and especially adapted for the service required; whenever the characteristics of any material are not particularly specified, such material shall be utilized as is customary in first class work of a nature for which the material is employed.
2. All materials and workmanship shall be subject to inspection, examination, and tests by the Engineer and other representatives of Bayer at any and all times during manufacture or construction and at any and all places where such manufacture or construction are carried on.
3. The Contractor's selection and use of organizations for the inspection and tests of supplies, materials, and equipment shall be subject to the approval of Bayer and the Engineer. Satisfactory documentary evidence that the material has passed the required inspection and tests shall be furnished by the Contractor prior to the incorporation of the material in the Project.
4. The costs for all laboratory and field testing shall be borne by the Contractor unless specifically stated otherwise in the RD.

B. Equivalent Products and Changes to RD

1. The words "similar and equal to," "or equal," "equivalent," and such other words of similar content and meaning (hereinafter, "or equal") shall, for the purposes of this work, be deemed to mean similar and equivalent to one of the named products or RD elements.

MATERIALS AND PERFORMANCE – SECTION 01010

SUMMARY OF WORK

2. Whenever any product/design element is specified in the RD by a reference to the name, trade name, make or catalog number of any manufacturer or supplier, the intent shall not be to limit competition, but to establish a standard of quality which the Engineer has determined is necessary for the Project. If any product/design element other than that specified is proposed for use by the Contractor, it shall submit to the Engineer either its certification that the “or equal” strictly conforms to the RD, or a statement specifically identifying all differences between the “or equal” and the RD.
3. Any variation of a proposed “or equal” from the RD which is not specifically noted in the Contractor’s submittal shall be at the sole risk and expense of the Contractor. In addition, the Contractor shall provide all the information that the Engineer requests concerning the product/design element. The proposed product shall not be used until it is accepted by the Engineer. Any “or equal” product incorporated into the Project without the Engineer’s written acceptance shall be at the Contractor’s sole risk, and the Engineer may require the removal and replacement of any unaccepted “or equal” product.
4. In all cases, the Engineer will determine whether a proposed “or equal” is acceptable, and the Contractor shall have the burden of proving, at its expense, to the satisfaction of the Engineer that the proposed “or equal” is similar and equal to the named product/design element. In making such determination the Engineer may establish such criteria as it deems proper for acceptance of the “or equal.”
5. Any requested change in the RD not pertaining to an “or equal” must be submitted to the Engineer in writing and must be stated with sufficient clarity and detail to permit proper consideration by the Engineer. Unless accepted by the Engineer after submission as herein provided, any deviation from the RD, or the use of any product/design element which varies from the RD, shall be at the Contractor’s sole risk and expense.
6. The Contractor’s use of “or equal” products or design elements is at his/her own risk. In preparing a cost proposal, the Contractor may elect to include products/design elements that differ from those included in the RD. Such “or equals” shall be clearly identified in the Contractor’s submittals. In the event that the Engineer subsequently determines that the “or equal” is not suitable, the Contractor shall utilize products/design elements established in the RD without any adjustment to the Contract price.

C. Suppliers

1. All supplies and equipment shall be furnished by manufacturers who shall have at least three years of experience in the design, production, assembly, and field service of equipment of like type, size, and capacity. Where required by the

MATERIALS AND PERFORMANCE – SECTION 01010

SUMMARY OF WORK

Engineer, the Contractor shall supply a list of at least three successful installations.

PART 2 – PROJECT PLANNING

Notwithstanding the required submittals related to several technical aspects of the Project, the Contractor shall prepare three (3) Project-specific documents related to the overall implementation of the Project: Operations Plan, Health and Safety Plan (HASP), and Contingency Plan. The information to be addressed in these submittals is provided below. In addition, the technical submittals required as part of the RD are included as an attachment to this Section.

Once approved by the Engineer, certain of the submittals will be provided to the NYSDEC for review and comment prior to finalization. These submittals are anticipated to include, but not be limited to: Operations Plan; HASP; Contingency Plan; Construction Schedule (to be included in the Operations Plan); proposed backfill source(s); and analytical data associated with the proposed source(s). The specific submittals will be identified based on consultation with NYSDEC.

2.01 OPERATIONS PLAN

To gauge the Contractor's understanding of the RD and its construction, objectives, procedures, and outcomes, and to address misunderstandings, clarifications, or modifications prior to Project implementation, the Contractor shall prepare and submit an Operations Plan for review by the Engineer.

The plan shall address, but not be limited to, the following items:

- A. List/schedule of equipment.
- B. Identification of key personnel that will be onsite for the duration of the Project.
- C. Site security/property protection procedures.
- D. Work schedule.
- E. List of subcontractors with proof of qualifications and licensing requirements.
- F. Vehicular and pedestrian traffic plan.
- G. Onsite traffic plan, including truck routes to and from various points in the site (e.g., excavation areas, material staging areas, decontamination areas, etc.).
- H. Stormwater pollution prevention plan.
- I. Site clearing plan.
- J. Survey control plan.

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SUMMARY OF WORK

- K. Excavation and material dewatering plan.
- L. Location, alignment, number, and size of material staging, containment, and decontamination areas.
- M. Description of water collection/staging system, including start-up activities.
- N. Utility identification, protection, and removal plan.
- O. Excavation and backfill sequence/technique.
- P. Material handling and staging approach.
- Q. Dust, odor, and noise control/suppression plan.
- R. List of disposal facilities for offsite disposition.
- S. Equipment cleaning procedures.
- T. Environmental protection plan.

Further information regarding the required components and content of the Operations Plan is contained within the RD.

2.02 HEALTH AND SAFETY PLAN

The Contractor will prepare a Project-specific HASP that identifies the health and safety procedures, methods, and requirements to be implemented by a third party subcontractor (subcontracted to the Contractor) on behalf of the Contractor during the performance of work activities. The Contractor's HASP shall be prepared and signed by a Certified Industrial Hygienist (CIH) and cover all personnel who will be employed by the Contractor to perform the Project, including direct employees as well as subcontractors. If the Contractor does not include subcontractors under its HASP, then each subcontractor will be responsible for developing, implementing, and submitting to the Contractor a HASP that meets the requirements outlined herein. The Contractor will be responsible for ensuring that all of its subcontractors have adequate HASPs prior to onsite work by the subcontractor and are adhering to the HASPs during the work activities. If a subcontractor agrees to be included under the Contractor's HASP, then a statement to this effect shall be submitted by the Contractor.

Prior to commencement of field activities, the Contractor must certify (and demonstrate in a submittal to Bayer) that personnel employed at the work site who are directly involved with remedial activities, including employees and subcontractors, have completed a 40-hour health and safety training course (and annual refresher training) in accordance with 29 CFR 1910.120 and 29 CFR 1926.65. The Contractor must also certify that any individuals who later become employed by the Contractor also receive such training prior to performing work at the work site.

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SUMMARY OF WORK

The Contractor must certify that all personnel who will be employed by the Contractor to perform work at the work site, including direct employees as well as subcontractors, have received the initial and annual (if applicable) medical examinations and are enrolled in an on-going medical surveillance program as required by 29 CFR 1910 and 29 CFR 1926. The Contractor must also comply with the Department of Labor Safety and Health Regulations for construction promulgated under the Occupational Safety and Health Act of 1970 (PL 91-596) and under Section 107 of the Contract Work Hours and Safety Standards Act (PL 91-54).

The Contractor will be responsible for the safety of his/her employees, subcontractors, suppliers, and other parties at the work site as a result of the Contractor's direction.

The Contractor must prepare, submit, and implement a HASP in accordance with 29 CFR 1910.120 and 29 CFR 1926.65. The plan must address, but not be limited to, the following components:

- A. Identification of Key Personnel - Identify, by name and by title, the onsite and offsite health and safety personnel responsible for the implementation of health and safety procedures. All onsite personnel involved in the measures must have OSHA 40-hour Hazardous Waste Training (29 CFR 1910.120 and 1926.65) and the corresponding 8-hour refresher course update.
- B. Training - Describe and provide certification of all supervisory and onsite personnel having received appropriate health and safety training. This requirement also includes all other relevant training certificates (e.g., crane operator license, welder certification, electrician certification, etc.).
- C. Medical Surveillance - Certify that all supervisory and onsite personnel have received appropriate medical examinations and are able to conduct the tasks required for this Project.
- D. Task-specific Hazard/Risk Analysis - Identify and provide a means of mitigating all foreseeable biological, chemical, and physical hazards associated with the Project including, but not limited to, hazards associated with exposure to constituents of concern, heavy equipment operation, site conditions, weather, material handling, work around the excavation/ISS area, and work near water.
- E. Work Zones - Provide a site plan that depicts the designation of zones, including: Exclusion Zone(s), Decontamination Zone(s), and Support Zone(s). The level of personal protection required for each zone must be included.
- F. Personal Safety Equipment and Protective Clothing - Identify personal safety equipment and protective clothing to be available at the work site and used by Project personnel. This shall include identifying expected levels of protection (EPA Protection Levels A, B, C, and D) for each task and the action levels for personal protective equipment (PPE) upgrades. A respiratory protection program that meets the requirements of 29 CFR 1910.134 and establishes specific requirements for respirator use shall be included.

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SUMMARY OF WORK

- G. Work Zone Air Monitoring - Identify protocols and criteria associated with work zone air monitoring.
- H. Personnel Decontamination - Describe methods and procedures to be used for personnel decontamination.
- I. Confined Space Entry - Describe procedures for confined space entry in accordance with OSHA's Confined Space Standard.
- J. Material Safety Data Sheets - Provide Material Safety Data Sheets (MSDSs) for all materials to be brought on site, as well as constituents which are expected to be encountered during the course of the Project.
- K. Construction Safety Procedures (OSHA 1926.1 - 1926.652, Subparts A-P) to address excavation shoring and trenching safety, as well as a daily site safety inspection checklist to evaluate these items.
- L. Standard Operating Procedures (SOPs) and Safety Programs as required by applicable sections of 29 CFR 1910 and 1926.

2.03 CONTINGENCY PLAN

The Contractor must prepare, submit, and implement a Contingency Plan that includes, at a minimum, the following items:

- A. A pollution prevention plan for all materials brought to the work site. This plan should also include methods to address spills (should they occur).
- B. Emergency vehicular access/egress.
- C. Evacuation procedures of personnel from the work site.
- D. A list of all contact personnel with phone numbers, including: the Contractor; Hicksville fire official(s); ambulance service; local, county, and State Police; and local hospitals, including routes to local hospitals and procedures for notifying each.
- E. Identification of responsible personnel who will be in a position at all times to receive incoming phone calls and to dispatch Contractor personnel and equipment in the event of an emergency situation.

– END OF SECTION –

CONTROL OF WORK

PART 1 – GENERAL

1.01 LAND AVAILABLE TO CONTRACTOR

- A. The Contractor shall confine its operations to the Site.
- B. All work shall be conducted (to the extent practicable) in such manner as will cause the minimum inconvenience and disturbance to the surrounding community. No excavated materials or supplies of any kind shall be stored on private or public premises without prior approval from Bayer/Engineer.
- C. The Contractor shall erect new and/or maintain existing fencing along roadways and grounds occupied by the Contractor within the Project Work Limits.

1.02 PROTECTION OF EXISTING STRUCTURES AND FACILITIES

- A. Except where noted or as otherwise indicated in the Remedial Design (RD), the Contractor shall protect from damage any and all pavements, sidewalks, curbs, buildings, trees, poles, drainage features, utilities, and other property in and around the Site.
- B. The Contractor is responsible for the repair/restoration of damage sustained by any structure during or as a result of the work, including settlement or lateral movement of excavations, whether settlement/movement occurs during or after excavation or backfilling activities.
- C. The Contractor shall have available onsite equipment and suitable and sufficient material for sustaining and supporting any and all existing structures that are uncovered, undermined, weakened, endangered, threatened, or otherwise materially affected during the work.
- D. If damage occurs to any portion of an existing structure, or to the material surrounding or supporting the same, the Contractor shall immediately notify Bayer and Engineer. The Contractor shall also immediately proceed with appropriate and safe response actions to (as necessary): 1) collect, containerize, characterize, and appropriately dispose of any materials released from the damaged structure; 2) provide provisions for alternate/temporary service; and 3) furnish necessary materials and repair or replace the damaged structure. In the case of utilities, the Contractor shall immediately notify the appropriate utility company and provide assistance to the utility company during repairs unless authorized by the utility company to undertake such repairs directly. Any damage to existing structures shall be promptly and completely repaired by the Contractor at no additional cost to Bayer and to the satisfaction of Bayer, utility company, and/or affected party.

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CONTROL OF WORK

1.03 EXISTING SUBSURFACE STRUCTURES

A. General

1. Subsurface structures may be present that are either not identified or not accurately shown on the Design Drawings. The Contractor is responsible for verifying the accuracy and completeness of the information shown on the Design Drawings (as necessary to perform the work). The Contractor agrees that it shall neither have nor assert against Bayer or Engineer any claim for damages by reason of the inaccuracy, inadequacy, incompleteness, or other deficiency of the information given, or the failure to furnish additional or further information in the possession of Bayer or Engineer.
2. The Contractor shall use due care to avoid damage to existing subsurface structures identified, not identified, or inaccurately depicted on the Design Drawings.
3. The Contractor shall locate all existing subsurface structures within/adjacent to the excavation area in advance of the specific work activities that may encounter such structures (e.g., test trenching to confirm the locations of utilities, foundations, or other subsurface structures). Such activities shall be performed in a safe manner, consistent with all applicable provisions of the RD. The Contractor shall immediately backfill any such exploratory excavations, unless otherwise directed by Bayer/Engineer.
4. If subsurface structures (e.g., pipelines, foundations, vaults, etc.) related to former (historic) manufacturing operations are encountered during the work, the Contractor shall consult Bayer/Engineer regarding the need for and scope of activities necessary to remove, protect, or otherwise address such structures to accommodate the work. Free liquids (if encountered within such structures) shall be handled/managed in accordance with the RD.
5. Where the size, location, or depth of an existing subsurface structure has been anticipated and the RD specifies removal, realignment, or change, all work shall be performed in mutual cooperation with the utility company or other parties concerned.
6. Where an existing subsurface structure (e.g., utility, foundation, etc.) is encountered that is not anticipated or is found to be materially different in size, location, or depth from that shown on the Design Drawings, the Contractor shall immediately notify Bayer and the Engineer. Any work required by the Contractor to remove, realign, or change the structure shall be performed as mutually agreed upon by Bayer, the Engineer, the Contractor, and utility company or other parties concerned.

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CONTROL OF WORK

B. Utilities

1. Certain existing subsurface utilities (e.g., waterlines that comprise the fire water loop through the interior of the Site, etc.), which may be encountered during the work or are located in close proximity to the Project Work Limits, will require special precautions and methods for their protection. The Contractor shall locate all subsurface utilities in advance of the specific work activities that may encounter such utilities (e.g., test trenching). Such activities shall be performed in a safe manner; consistent with all applicable provisions of the RD. The Contractor shall immediately backfill any such exploratory excavations unless otherwise directed by Bayer/Engineer. Subsurface utilities that are known to Bayer/Engineer, together with appurtenances, are shown on the Design Drawings. The sizes, locations, alignments, and depths shown (if any) are approximate.
2. All utilities whose facilities may be affected by the work shall be notified at least 72 hours in advance of the start of any operations that might affect such facilities.
3. The removal, protection, replacement, relocation, or other handling of private and public utilities at the Site shall be performed by the Contractor or the utility owner in accordance with arrangements satisfactory to Bayer or operator of the utility involved. The Contractor shall remove, protect, replace, or relocate all utilities as identified in the RD.
4. The Contractor shall not permit nor cause any hindrance to or interference with any individual, municipal department, public service corporation, or other company in protecting its poles, posts, or other structures, nor in shifting, removing, or replacing the same. The Contractor shall allow said individual, department, corporation, or company to take all such measures as they may deem prudent to protect their structures.

C. Existing Subsurface Structures Requiring Changes to the RD

1. Bayer/Engineer (in consultation with the New York State Department of Environmental Conservation) will determine if: 1) changes should be made to the RD to avoid a subsurface structure; 2) the work can proceed without changes to the RD; or 3) the structure should be removed, realigned, or changed.
2. Any increase or decrease in Project cost resulting from changes to the RD shall be prepared by the Contractor for review by Bayer in advance of the work.

1.04 OPEN EXCAVATIONS

All open excavations shall be adequately safeguarded by providing temporary barricades, caution signs, lights, and other means to prevent unwanted/unknowing access, accidents to persons, and

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CONTROL OF WORK

damage to property. Such measures shall be installed and maintained pursuant to all applicable regulations. The length or size of excavations will be controlled by the particular surrounding conditions.

1.05 REPLACEMENT OF PROPERTY

The Contractor shall replace all pavements, driveways, sidewalks, fences, shrubs, lawns, trees, and any other public or private property damaged during the work. In all cases said replacement shall be new or replaced with the materials removed during site preparations, with Bayer/Engineer approval, and to the satisfaction of the property owner or affected party.

1.06 HOUSEKEEPING

- A. As work progresses, the Contractor shall remove all unused tools and equipment, surplus materials, waste materials, rubbish, refuse, and other debris from the site in a timely manner and ensure that the site is at all times maintained in a neat and orderly condition.
- B. At the completion of the Project, the Contractor shall promptly remove all construction tools and equipment, surplus materials, waste materials, rubbish, refuse, and other debris from the site and leave the site in a neat and orderly condition.
- C. If it is observed that the Contractor neglects his responsibilities as set forth above, or neglects the repairing of streets, sidewalks, fences, or other damages, Bayer/Engineer will notify the Contractor to that effect. If the Contractor does not take reasonable steps after notification to correct the neglected situation, Bayer may do so, and the expense thereby incurred shall be deducted from any monies due or that may become due to the Contractor.

- END OF SECTION -

MATERIALS AND PERFORMANCE – SECTION 01110

ENVIRONMENTAL PROTECTION PROCEDURES

PART 1 – GENERAL

1.01 DESCRIPTION

A. Work Specified

1. The control and management of potential environmental impacts in conformance with applicable laws and regulations, during and as the result of the work.
2. The control of environmental impacts requires consideration of water, land, and air resources, and includes the management of noise, solid/liquid waste, and other pollutants.
3. Schedule and conduct all work in a manner that will minimize the erosion of soils and accumulation of sediments in the area of the work. Provide and maintain erosion and sediment control measures as required to prevent silting and muddying of existing and new drainage systems, creeks, streams, rivers, impoundments, or other water bodies.
4. Mitigate potential disturbance to the existing ecological balance between water resources and their surroundings.

B. Related Work Specified Elsewhere

1. Remedial Design Sections 1 through 6
2. Section 02210 – Topsoil and Seeding
3. Community Air Monitoring Plan (CAMP)

C. Definitions

1. For the purpose of this Section, environmental impacts are defined as chemical, physical, or biological elements or agents that adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to man; or degrade the utility of the environment for aesthetic and/or recreational purposes.

1.02 APPLICABLE CODES, STANDARDS, AND SPECIFICATIONS

- ###### A. American Association of State Highway and Transportation Officials (AASHTO). The following AASHTO specification is referenced in this Section and is to be considered a part of this Section:

M 288 Standard Specification for Geotextile Specification for Highway Applications

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ENVIRONMENTAL PROTECTION PROCEDURES

- B. ASTM International (ASTM). The following ASTM specifications are referenced in this Section and are to be considered a part of this Section:

D4491 Standard Test Methods for Water Permeability of Geotextiles by Permittivity

D4751 Standard Test Method for Determining Apparent Opening Size of a Geotextile

- C. Applicable federal, state, and local laws and regulations concerning environmental pollution control and abatement.

- D. New York State Standards and Specifications for Erosion and Sediment Control.

1.03 SUBMITTALS

- A. Product information for temporary seed mix, silt fencing, filter fabric, temporary erosion control matting, and oil absorbent booms.
- B. Weekly inspection reports for erosion and sediment control measures.

1.04 NOTIFICATIONS

- A. Bayer/Engineer will notify the Contractor of any instances of non-compliance with the foregoing provisions or of any environmentally objectionable acts and corrective actions to be taken. State or local agencies responsible for verification of certain aspects of the environmental protection requirements may also provide notification of any non-compliance with state or local requirements. Upon receipt of such notice, the Contractor shall immediately take corrective action. If the Contractor fails or refuses to comply promptly, Bayer/Engineer may direct the Contractor to stop all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such stop orders shall be made the subject of a claim for extension of time or for excess costs or damages by the Contractor unless it is later determined that the Contractor was in compliance.

PART 2 – PRODUCTS

2.01 EROSION AND SEDIMENT CONTROLS

- A. Temporary Seeding
1. If temporary seeding occurs in spring, summer, or early fall, annual ryegrass shall be applied at a rate of 30 lbs. per acre.
 2. If temporary seeding occurs in late fall or early winter, certified Aroostook winter rye shall be applied at a rate of 100 lbs. per acre.
 3. Straw or hay mulch shall be hand-spread over seeded areas at a rate of 2 tons

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ENVIRONMENTAL PROTECTION PROCEDURES

per acre or hydromulched in accordance with the seed supplier's recommendations.

B. Permanent Seeding

1. Refer to Materials and Performance (M&P) – Section 02210 (Topsoil and Seeding) for permanent seeding requirements.

C. Temporary Silt Fence

1. Silt fence fabric shall be a woven geotextile meeting the geotextile survivability requirements of AASHTO M 288-96 Class 1 or Class 2 with a minimum permeability of 0.2 centimeters per second (cm/sec) as tested by ASTM D4491 and a maximum apparent opening size (AOS) of 0.25 millimeter (mm) as tested by ASTM D4751.

D. Straw Bale Dike

1. Straw bales shall be sound with bale ties intact.
2. Straw bales shall be anchored in place with two re-bars, steel pickets, or 2" x 2" wooden stakes driven 18 inches (minimum) into the ground and flush with the top of the bale.

E. Temporary Erosion Control Mat

1. Temporary erosion control mat shall consist of a 100% straw fiber matrix sewn between two lightweight, photodegradable polypropylene nets, such as North American Green S-150, or equivalent, and shall be installed in accordance with the manufacturer's installation guidelines.

F. Oil Absorbent Boom

1. Oil absorbent booms shall be a minimum of eight inches in diameter.
2. Oil absorbent booms shall be anchored/secured in place and installed such that there are no gaps to allow the potential migration of oils/sheens beyond the boom.
3. The Contractor shall maintain and replace oil absorbent booms as necessary to prevent the potential migration of oils/sheens beyond the boom.

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ENVIRONMENTAL PROTECTION PROCEDURES

PART 3 – EXECUTION

3.01 EROSION AND SEDIMENT CONTROL

- A. The Contractor is responsible for the installation, inspection, maintenance, and removal of erosion and sediment control measures during the work.
- B. All temporary erosion and sediment control measures shall be installed and maintained in accordance with the latest edition of the New York State Standards and Specifications for Erosion and Sediment Control.
- C. At a minimum, erosion and sediment control measures shall be inspected once every seven calendar days and after storm events. Inspection results shall be summarized in weekly inspection reports and submitted to the Engineer for review within 48 hours of the inspection. Weekly inspection reports shall include (at a minimum) the following information:
 - 1. Date and time of inspection.
 - 2. Name and title of person(s) performing inspection.
 - 3. Weather and soil conditions (e.g., dry, wet, saturated, etc.) at the time of the inspection.
 - 4. Condition of the storm water runoff at all points of discharge from the construction site, including discharges from conveyance systems (e.g., pipes, culverts, ditches, etc.) and over-land flow.
 - 5. Identification of any erosion and sediment control measures that require repair or maintenance.
 - 6. Identification of any erosion and sediment control measures that were not installed properly or are not functioning as designed.
 - 7. Description and sketch of areas that are disturbed at the time of the inspection and any areas that have been stabilized (temporary and/or final) since the last inspection.
 - 8. Corrective action(s) to be taken to install, repair, replace, or maintain erosion and sediment control measures.

3.02 PROTECTION OF WATER RESOURCES

- A. The Contractor shall take all precautions to prevent, or reduce to a minimum, any damage to surface water from pollution by debris, sediment, or other material, or from the manipulation of equipment and/or materials within or adjacent to existing and new

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ENVIRONMENTAL PROTECTION PROCEDURES

drainage systems, creeks, streams, rivers, impoundments, or other water bodies.

- B. All water generated during the Project (e.g., from excavation/material dewatering, decontamination of equipment, etc.) shall be collected, conveyed, containerized, treated, and disposed of in accordance with the RD.
- C. The Contractor shall not discharge water from excavation/material dewatering operations directly into any live or intermittent stream, channel, wetlands, surface water or any sanitary or storm sewer unless authorized by Bayer/Engineer.

3.03 PROTECTION OF LAND RESOURCES

- A. The Contractor shall confine its operations to the Project Work Limits or other areas authorized by Bayer/Engineer.
- B. All scars made on trees by equipment, construction operations, or by the removal of limbs larger than one inch in diameter shall be coated as soon as possible with an approved tree wound dressing. All trimming or pruning shall be performed in an approved manner by experienced workmen.
- C. The Contractor shall remove all evidence of temporary construction facilities such as work areas, structures, stockpiles of excess or waste materials, or any other vestiges of construction as directed by Bayer/Engineer. Disturbed areas shall be restored as described in 02210 (Topsoil and Seeding) or as approved by Bayer/Engineer.
- D. All debris and excess material shall be disposed of in an environmentally sound manner.

3.04 PROTECTION OF AIR RESOURCES

- A. Dust Control
 - 1. The Contractor shall maintain all excavations, embankments, stockpiles, access roads, and other work areas to minimize airborne releases of dust.
 - 2. The Contractor shall provide sufficient equipment and personnel to control dust generated during the work.
 - 3. Appropriate methods of controlling dust include the following:
 - a. Excavating, loading, handling, and backfilling materials in a manner that minimizes dust generation.
 - b. Periodic removal of dirt/debris from access roads and active vehicle transportation routes.
 - c. Spraying water on active vehicle transportation routes.

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- d. Spraying water and/or BioSolve® (or approved equivalent) on excavation faces, material stockpiles, buckets during excavation, and excavated material when loading transport vehicles.
 - e. Hauling excavated materials and clean backfill materials in properly tarped/covered vehicles.
 - f. Restricting vehicle speeds on vehicle transportation.
 - g. Covering excavation area and stockpiles with a layer of polyethylene sheeting (anchored appropriately to resist wind forces) after remedial activities cease for the day.
- 4. The Contractor shall make a source of water (e.g., water tank truck) available at the site. The Contractor is responsible for maintaining, in the immediate vicinity of the work, a supply of water and means of dispersion (e.g., a water tank and sprayer) such that water may be immediately applied for dust control. Under no circumstances shall treated water be used for dust suppression.
 - 5. If the Contractor's methods of controlling dust do not reduce particulate concentrations to acceptable levels, based on visual observations and/or the results of airborne particulate monitoring, all dust generating activities shall be suspended until the Contractor develops the appropriate corrective measure(s) to remedy the situation.
- B. Odor Control
- 1. Odors shall be controlled to the satisfaction of Bayer/Engineer and New York State Department of Environmental Conservation (NYSDEC).
 - 2. The Contractor shall provide sufficient equipment and personnel to control odors generated during the work.
 - 3. The Contractor shall provide and maintain onsite an adequate supply of BioSolve®, vapor-suppressant foam, and application equipment for the duration of the Project. BioSolve®, vapor-suppressant foam, and application equipment shall be mobilized to the site prior to initiating any intrusive activities.
 - 4. Vapor-suppressant foam (short- or long-duration, as appropriate) shall be applied to excavation faces/ISS surfaces and stockpiles of excavated materials prior to extended work breaks and at the end of each work day.
- C. The Contractor shall implement and adhere to the requirements of the CAMP and M&P – Section 02508 (Air Monitoring Program).

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ENVIRONMENTAL PROTECTION PROCEDURES

3.05 NOISE CONTROL

- A. The Contractor shall make every effort to minimize noises caused by the construction operations. Equipment shall be equipped with silencers or mufflers designed to operate with the least possible noise in compliance with federal, state, and local noise ordinances.

3.06 PROHIBITED CONSTRUCTION PROCEDURES

- A. Prohibited construction procedures include, but are not limited to, the following:
 - 1. Dumping or disposing of spoil material, cleared trees/brush, debris, or other waste material in any surface waters, drainage ways, wetlands, or at unspecified locations.
 - 2. Indiscriminate, arbitrary, or capricious operation of equipment in any existing or new drainage system, creek, stream, wetland, or other water body.
 - 3. Pumping of silt-laden water from trenches or other excavations to any surface waters, drainage ways, wetlands, or sewers.
 - 4. Damaging vegetation beyond the extent necessary for construction.

- END OF SECTION –

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ENVIRONMENTAL PROTECTION PROCEDURES

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MATERIALS AND PERFORMANCE – SECTION 01160

SURVEY CONTROL

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The Contractor shall provide survey control sufficient to support the overall Project and document the performance of the Remedial Design. For each excavation area, survey control must be performed to establish pre-excavation topographic conditions; the initial and final (if different) horizontal extent of removal; the vertical extent of removal; the location and elevations of demarcation layers between clean fill and underlying materials; the elevation of confirmation and documentation samples, the elevation of backfill placement; and the final restored surface elevations.
- B. The Contractor shall be responsible for the layout of survey controls, removal elevation tracking locations, lines, grades, and elevations necessary for the proper construction, documentation, and testing of the work. For each excavation area, survey activities shall include, but not be limited to, establishing removal elevation tracking locations across the excavation area for the purpose of documenting pre- and post-excavation elevations and demonstrating that the vertical removal limits specified in the Remedial Design or identified by Bayer/Engineer have been achieved.
- C. The Contractor shall perform an as-built survey of all constructed site features (e.g., final grades, locations and elevations of any discovered site utilities, etc.).
- D. Vertical survey tolerance to be maintained during construction is 0.15 foot for general site grading and 0.05 foot for structural features (e.g., pipes, manholes, etc.) unless otherwise specified in the Remedial Design or approved by the Engineer.
- E. The Contractor shall employ a New York State-licensed land surveyor to provide the surveying functions necessary for the proper construction and documentation of the Project. All survey-related work products shall be sealed and signed by a registered New York State Professional Engineer or Licensed Land Surveyor.
- F. Within each excavation area, the Contractor shall prepare a tabular summary of pre- and post-excavation elevations for each of the remedial tracking locations, and submit the completed table (as appropriate) to the Engineer for review prior to the placement of any backfill material. The Contractor shall not proceed with backfill placement until directed to do so by the Engineer.
- G. The survey documentation shall be consistent with and comply with the requirements of Materials and Performance (M&P) - Section 01720, titled Project Record Documents.
- H. The Contractor shall establish a 15-foot grid containing remedial tracking locations to be used for the duration of the Project to record the information specified above for the remedial excavations. Pre-existing, ongoing construction, and post-construction survey locations shall be co-located (i.e., one 15-foot grid will be used for the Project). The Contractor shall submit a figure illustrating the proposed location of the 15-foot grid as

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SURVEY CONTROL

part of his/her Survey Control Plan (described below).

1.02 SUBMITTALS

- A. The Contractor shall submit a Survey Control Plan (as part of the Contractor's Operations Plan). The Survey Control Plan shall include the Contractor's proposed method of recording survey data within each excavation cell and a drawing showing the removal elevation tracking locations on a 15-foot grid to be used for each excavation cell during the remedial action.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

- END OF SECTION -

MATERIALS AND PERFORMANCE – SECTION 01200

PROJECT MEETINGS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. A pre-mobilization meeting, periodic project coordination meetings, and daily project coordination meetings will occur throughout progress of the Project. For each meeting, the Bayer and/or the Engineer shall:
 - 1. Prepare agendas for meetings.
 - 2. Make physical arrangements for meetings.
 - 3. Preside at meetings.
 - 4. Record the minutes and include significant proceedings and decisions.
 - 5. Reproduce and distribute copies of minutes after each meeting to attendees and other parties affected by decisions made at the meeting.
- B. Representatives of Contractors, Subcontractors, and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.
- C. Contractor attendance at all meetings is mandatory.

1.02 RELATED REQUIREMENTS

- A. Section 01300 – Submittals

1.03 PRE-MOBILIZATION MEETING

- A. Bayer and/or the Engineer will schedule a pre-mobilization meeting no later than 15 days after date of Notice to Proceed.
- B. Location: A central site, convenient for all parties, designated by Bayer.
- C. Attendance:
 - 1. Bayer.
 - 2. New York State Department of Environmental Conservation (NYSDEC).
 - 3. New York State Department of Health (NYSDOH).
 - 4. Town of Oyster Bay.

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PROJECT MEETINGS

5. Engineer.
 6. Contractor.
 7. Major Subcontractors.
 8. Others, as appropriate.
- D. Anticipated Agenda Items:
1. Safety moment.
 2. Safety/safe work practices.
 3. Distribution and discussion of:
 - a. List of major subcontractors and suppliers.
 - b. Construction schedule.
 - c. Contractor submittals.
 4. Major equipment deliveries and priorities.
 5. Project Coordination:
 - a. Designation of responsible personnel.
 - b. Chain of communication.
 6. Procedures and processing of:
 - a. Field decisions.
 - b. Proposal requests.
 - c. Submittals.
 - d. Change Orders.
 - e. Applications for payment.
 7. Procedures for maintaining Record Documents.
 8. Use of premises:

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PROJECT MEETINGS

- a. Office, work, and storage areas.
- b. Bayer's requirements.
- 9. Construction facilities, controls, and construction aids.
- 10. Temporary utilities.
- 11. Housekeeping procedures.
- 12. Other.

1.04 PROGRESS AND COORDINATION MEETINGS

- A. Bayer and/or the Engineer will schedule regular (weekly) progress and coordination meetings at the site, as necessary and appropriate. Certain project team members from Bayer and/or the Engineer may participate by conference call.
- B. Attendance:
 - 1. Owner, as appropriate.
 - 2. NYSDEC.
 - 3. NYSDOH, as appropriate.
 - 4. Town of Oyster Bay, as appropriate.
 - 5. Engineer.
 - 6. Contractor/subcontractors.
 - 7. Suppliers.
 - 8. Others, as appropriate.
- C. Potential Agenda Items:
 - 1. Safety moment.
 - 2. Safety/safe work practices.
 - 3. Review/approval of prior meeting minutes.
 - 4. Review of work progress since previous meeting.

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PROJECT MEETINGS

5. Field observations, problems, and conflicts.
 6. Problems that potentially impede construction schedule.
 7. Corrective measures and procedures to regain projected schedule.
 8. Revisions to construction schedule.
 9. Review submittal status and schedules.
 10. Maintenance of quality standards.
 11. Pending changes and substitutions.
 12. Other.
- D. The Contractor is to attend progress meetings and be prepared to discuss pertinent topics.
- E. Representatives of the Contractor who have decision-making authority shall be in attendance at all progress and coordination meetings.

1.05 SUBMITTALS

- A. Electronic copies (in Adobe® PDF format) of the project meeting minutes.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

- END OF SECTION -

SUBMITTALS

PART 1 – GENERAL

1.01 DESCRIPTION

- A. This Section specifies the general methods and requirements of submissions applicable to Contractor submittals, including plans, shop drawings, product data, samples, mock-ups, and schedules. Detailed and specific submittal requirements are specified elsewhere in the Remedial Design (RD).
- B. All submittals shall be clearly identified by reference to section number, paragraph, drawing number, or detail as applicable. Submittals shall be clear and legible and of sufficient size for presentation of data.
- C. Each submittal shall be prepared and transmitted to the Engineer a minimum of two weeks in advance of the Contractor's intended performance of the related work or other applicable activities, or within the time specified in the individual work of other related sections, so that work will not be delayed by processing times (including rejections and resubmittals, if required), coordination with other submittals, testing, purchasing, fabrication, delivery, and similar sequenced activities. Bayer/Engineer will not be liable for any project costs and/or schedule delays resulting from the Contractor's failure to provide submittals in a timely manner.

1.02 SHOP DRAWINGS, PRODUCT DATA, SAMPLES

- A. Shop Drawings – Shop drawings include work plans, samples, supporting vendor information, calculations, test reports, custom-prepared data such as fabrication and erection/installation (working) drawings, schedules for carrying out the work, setting diagrams, actual shop work manufacturing instructions, custom templates, coordination drawings, individual system or equipment inspection and test reports (including performance curves and certifications) as applicable to the work.
 - 1. Shop drawings shall not be submitted by subcontractors and shall only be submitted to the Engineer once the Contractor has verified that they are complete. The Contractor is responsible for their submission at the proper time so as to prevent work delays.
 - 2. Details on shop drawings shall clearly show the relation of the various parts to the main members and lines of the structure and where correct fabrication of the work depends upon field measurements. Such measurements shall be made and noted on the shop drawings before being submitted.
- B. Product Data – Product data include standard prepared data for manufactured products (sometimes referred to as catalog data), such as manufacturer's product specifications and installation instructions, manufacturer's printed statements of compliances and applicability, roughing-in diagrams and templates, catalog cuts, product photographs, standard wiring diagrams, printed performance curves and operational-range diagrams,

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SUBMITTALS

production or quality control inspection/test reports and certifications, mill reports, product operating and maintenance instructions and recommended spare-parts listing and printed product warranties, as applicable to the work.

- C. Samples – Samples include physical examples of the work, such as sections of manufactured or fabricated work, small cuts or containers of materials, complete units of repetitively-used products, and units of work to be used by Bayer/Engineer for independent inspection and testing, as applicable to the work.

1.03 CONTRACTOR'S RESPONSIBILITIES

- A. Review shop drawings, product data, and samples (including those prepared by subcontractors) prior to submission to determine and verify the following:
 - 1. Field measurements.
 - 2. Field construction criteria.
 - 3. Catalog numbers and similar data.
 - 4. Conformance with related sections.
- B. Make submittals promptly in accordance with approved schedules and in such sequence as to cause no delay in the Project.
- C. Notify the Engineer in writing, at the time of submittal, of any deviations in the submittal from the RD.

1.04 SUBMISSION REQUIREMENTS

- A. Submittals shall be identified with a 10-character numbering system in the following manner:
 - 1. The first character shall be a D, S, or P, representing shop/working drawing and other product data (D), sample (S), or preliminary submittal (P).
 - 2. The next five digits shall be the applicable section number.
 - 3. The next three digits shall be the numbers 001 to 999 to sequentially number each initial separate item or drawing submitted under each specific section number.
 - 4. The last character shall be a letter, A to Z, indicating the submission, or resubmission of the same item (e.g., A=1st submission, B=2nd submission, C=3rd submission, etc). A typical submittal identification number would be as follows:

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SUBMITTALS

D-02270-008-B

D = Shop/working drawing or other product data

02270 = Section for geotextile fabric

008 = The eighth initial submittal under this section

B = The second submission (first resubmission) of that particular item

B. Except where noted or as otherwise indicated in the RD, all submittals shall be provided electronically (in Adobe® PDF or other mutually agreeable format) to the Engineer. Where hard copies are required, the following shall be provided:

1. Shop Drawings and Product Data – Six copies. Shop drawings and product data sheets 11 by 17 inches and smaller shall be bound together in an orderly fashion.
2. Samples – Number and/or size stated in the respective sections.

C. Submittals shall include:

1. The date of submission and the dates of any previous submissions.
2. The project title and number.
3. Submittal identification number.
4. Identification of any subcontractors, suppliers, and/or manufacturers.
5. Identification of the product, with reference to the appropriate section number, page, and paragraph(s).
6. Field dimensions, clearly identified as such.
7. Relation to adjacent or critical features of the work or materials.
8. Applicable standards, such as ASTM International (ASTM) or Federal Standards numbers.
9. Identification of deviations (if any) from the RD.
10. Identification of revisions on resubmittals.
11. A blank space suitably sized for Contractor and Engineer stamps.
12. Where calculations are required to be submitted by the Contractor or

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SUBMITTALS

Subcontractor, the calculations shall have been checked by a qualified individual other than the preparer. The submitted calculations shall clearly show the names of the preparer and of the checker.

- D. Each submittal shall be signed by the Contractor and have affixed to it the following Certification Statement: "Certification Statement: by this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data and I have checked and coordinated each item with other applicable shop drawings and all project requirements."
- E. Submittals shall be accompanied by a cover sheet or letter of transmittal that fully describes the packaged data and includes a listing of all items within the package.

1.05 REVIEW OF SUBMITTALS

- A. Submittals will be reviewed by the Engineer for general conformance with the RD. All risks of error and omission are assumed by the Contractor and the Engineer will have no responsibility therefore. Engineer corrections/comments to Contractor submittals shall not be construed as:
 - 1. Permitting any departure from the RD.
 - 2. Relieving the Contractor of responsibility for any errors, including details, dimensions, and materials.
 - 3. Approving departure from details furnished by the Engineer, except as otherwise provided herein.
- B. If the Contractor considers any correction/comment on a shop drawing to constitute a change to the RD, the Contractor shall give written notice thereof to Bayer/Engineer at least seven (7) working days prior to release for manufacture.
- C. The Contractor shall remain responsible for details and accuracy, coordinating the work with all other associated work and trades, selecting fabrication processes, techniques of assembly, and performing work in a safe manner.
- D. Project work, materials, fabrication, and installation shall conform to the RD unless otherwise approved by Bayer/Engineer.
- E. If the shop drawings, data, or samples as submitted describe variations and show a departure from the RD which the Engineer finds to be in the interest of Bayer and to be so minor as not to involve a change in project cost or schedule, the Engineer may return the reviewed shop drawings without noting an exception.
- F. Following review by the Engineer, each submittal will be returned to the Contractor under one of the following codes:

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SUBMITTALS

- “R” “REVIEWED” is assigned when there are no notations or comments on the submittal. When returned under this code the Contractor may release the equipment and/or material for manufacture.
- “N” “REVIEWED AND NOTED” is assigned when a confirmation of the notations and comments IS NOT required by the Contractor. The Contractor may release the equipment or material for manufacture; however, all notations and comments must be incorporated into the final product.
- “S” “RESUBMIT” is assigned when notations and comments are extensive enough to require a resubmittal of the package. This resubmittal is to address all comments, omissions, and non-conforming items that were noted. The resubmittal is to be provided to the Engineer within 15 calendar days of the date of the Engineer's transmittal requiring the resubmittal.
- “J” “REJECTED” is assigned when the submittal does not meet the intent of the RD. The Contractor must resubmit the entire package revised to bring the submittal into conformance with the RD. It may be necessary to resubmit using a different manufacturer/vendor to meet the intent of the RD.
- “I” “FOR YOUR INFORMATION” is assigned to acknowledge receipt of a submittal that does not require the Engineer's review and is being filed for informational purposes only. This code is generally used in acknowledging receipt of field conformance test reports and Health and Safety Plans.
- G. Resubmittals shall be handled in the same manner as first submittals. On resubmittals the Contractor shall identify all revisions made to the submittals, either in writing on the letter of transmittal or on the shop drawings by use of revision triangles or other similar methods. The resubmittal shall clearly respond to each comment made by the Engineer on the previous submission. Additionally, the Contractor shall direct specific attention to any revisions made other than the corrections requested by the Engineer on previous submissions.
- H. Partial submittals may not be reviewed by the Engineer. Incomplete submittals shall be returned to the Contractor and considered "Rejected" until resubmitted as a complete submittal. The Engineer may at its option provide a list or mark the submittal directing the Contractor to the areas that are incomplete.
- I. When shop drawings have been completed to the satisfaction of the Engineer, the Contractor shall carry out the construction in accordance therewith and shall make no further changes therein except upon written instruction from the Engineer.
- J. Work started, or materials fabricated or installed, prior to review of the applicable submittal items by the Engineer shall be at the sole risk of the Contractor. Fabrication performed, materials purchased, or onsite construction accomplished that does not conform to the RD shall be corrected at the Contractor's expense. Bayer will not be liable

MATERIALS AND PERFORMANCE – SECTION 01300

SUBMITTALS

for any expense or delay due to corrections or remedies required to accomplish conformity with the RD.

- K. Certain submittals may be subject to review/approval by the New York State Department of Environmental Conservation, United States Environmental Protection Agency, property owner (Bayer), Town of Oyster Bay, and/or other Agencies or interested parties.

1.06 DISTRIBUTION

- A. Distribute reproductions of reviewed submittals, where required, to the job site file and elsewhere as directed by the Engineer. Number of copies shall be as directed by the Engineer but shall not exceed six.

1.07 SCHEDULES

- A. Schedules shall be updated as needed (minimum of bi-weekly), and resubmitted to the Engineer.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

- END OF SECTION -

MATERIALS AND PERFORMANCE – SECTION 01720

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Contractor shall maintain at the site (in an organized manner) one record copy of:

1. Remedial Design (RD):
 - a. Design Drawings.
 - b. Materials and Performance (M&P) Specifications.
 - c. Construction Quality Assurance Plan.
 - d. Citizen Participation Plan.
 - e. Community Air Monitoring Plan
 - f. Waste Management Plan.
2. Addenda.
3. Change Orders and other modifications to the RD.
4. Engineer's Field Orders or written instructions.
5. Approved shop drawings, working drawings, and samples.
6. Field test records.
7. Contractor's updated work schedule.
8. Meeting minutes.
9. As-Built Survey Drawings.

1.02 CHANGES TO RAWP

A. No additions to, deletions from, or alterations in the RD shall be made unless first authorized in writing by the Engineer. If the RD bearing the seal of an Engineer or Land Surveyor is altered, the altering Engineer or Land Surveyor shall affix to it his or her seal and the notation "Altered By" followed by his or her signature and the date of such alteration, and a specific description of the alteration.

MATERIALS AND PERFORMANCE – SECTION 01720

PROJECT RECORD DOCUMENTS

1.03 MAINTENANCE OF DOCUMENTS AND SAMPLES

- A. Store record documents and samples in Contractor's field office apart from documents used for construction.
- B. File record documents and samples in accordance with Construction Specification Institute (CSI) format.
- C. Maintain record documents in a clean, dry, legible, condition and in good order. Do not use record documents for construction purposes.
- D. Make record documents and samples available at all times for inspection by the Engineer.
- E. The Contractor is to exhibit up-to-date record documents for review by the Engineer and Bayer.

1.04 RECORDING

- A. Label each document "PROJECT RECORD" in neat large printed letters.
- B. Record information concurrently with construction progress. Do not conceal any work until required information is recorded.
- C. Design drawings and approved shop/working drawings: legibly mark to record actual construction:
 - 1. Depths to elevations of various structure elements in relation to grade.
 - 2. Horizontal and vertical locations of underground utilities, structures, and appurtenances (if encountered) referenced to permanent surface structures.
 - 3. Field changes of dimension and detail.
 - 4. Changes made by Field Order or by Change Order.
 - 5. Details not in original RD.
- D. Map specifications and Addenda; legibly mark each Section to record:
 - 1. Manufacturer, trade name, catalog number, and Supplier of each Product and item of equipment actually installed.
 - 2. Changes made by Field Order or by Change Order.

MATERIALS AND PERFORMANCE – SECTION 01720

PROJECT RECORD DOCUMENTS

- E. Maintain a complete, accurate log of all control and survey work as it progresses.
- F. Update record documents on a weekly basis to reflect work performed during the previous week.
- G. Maintain an accurate record of all changes, revisions, and modifications to the RD (if any).

1.05 AS-BUILT SURVEY DRAWINGS

- A. Within 21 days following the completion of the Project, and prior to final payment, the Contractor shall provide one complete, accurate, and legible set of as-built survey drawings to the Engineer depicting and documenting the following:
 - 1. Existing (pre-construction) conditions, including surface topography and grade breaks (minimum 1-foot contours), limits of paved/unpaved areas, site features (e.g., buildings, fencing, roads, curbs, sidewalks, etc.), and subsurface features (e.g., utilities, foundations, etc.) encountered during the work.
 - 2. Excavation limits and elevations, documenting that the required horizontal and vertical limits/elevations were achieved.
 - 3. Final (post-construction) conditions, including surface topography and grade breaks (minimum 1-foot contours), limits of paved/unpaved areas, site features (e.g., buildings, fencing, roads, curbs, sidewalks, etc.), and subsurface features (e.g., utilities, manholes, etc.) installed/realigned during the work.
- B. As-built survey drawings will be reviewed by the Engineer for accuracy and completeness.
- C. Once reviewed and accepted by the Engineer, provide finalized as-built survey drawings stamped and signed by a Professional Engineer or Professional Land Surveyor licensed in the State of New York.
 - 1. Provide six (6) complete sets of finalized, stamped/signed as-built survey drawings on 24- by 36-inch sheets.
 - 2. Provide electronic copies (in Adobe® PDF format) of finalized, stamped/signed as-built survey drawings.
 - 3. Provide AutoCAD files (Release 2000 or newer) of finalized as-built survey drawings.

MATERIALS AND PERFORMANCE – SECTION 01720

PROJECT RECORD DOCUMENTS

1.06 SUBMITTALS

- A. Name and address of registered land surveyor or professional engineer to the Engineer.
- B. Four (4) complete sets of finalized, stamped/signed as-built survey drawings on 24- by 36-inch sheets.
- C. Electronic copies (in Adobe® PDF format) of finalized, stamped/signed as-built survey drawings.
- D. AutoCAD files (Release 2000 or newer) of finalized as-built survey drawings.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

- END OF SECTION -

MATERIALS AND PERFORMANCE – SECTION 01901

TEMPORARY FACILITIES AND OFFICE SUPPORT

PART 1 – GENERAL

1.01 DESCRIPTION

A. Work Specified

1. The Contractor is required to supply a field trailer with an operational telephone, wireless internet, and facsimile and office-related equipment for Contractor, Bayer, and Engineer personnel. Bayer and the Engineer shall be provided with a separate, secure area within this trailer.
2. The Contractor is required to supply a second field trailer with an operational telephone, wireless internet, and facsimile for New York State Department of Environmental Conservation (NYSDEC) personnel.
3. The field office trailers shall be ready for occupancy within 10 days following Engineer review of the associated submittal and shall be provided and maintained until final acceptance of the work conducted under this Project.
4. Following final acceptance of the work, the Contractor shall remove the field office trailers from the site.
5. In lieu of providing office trailers, the Contractor may elect to equip the Administration Building to serve as office and meeting space during the remedial activities. This would include, but not be limited to, the following: (1) repairing and providing electrical service to the series of offices bordering the south and west sides of the building (adjacent to the garage area served by the overhead bay door); (2) activating phone lines and providing high-speed wireless internet service inside the building to meet the minimum requirements outlined in this specification; (3) making any needed repairs to the heating and ventilation system to maintain indoor temperatures of between 65 and 75 degrees Fahrenheit for the duration of the Project; and (4) providing needed furniture and appurtenances as listed and described below in Part 2 of this Specification. Costs for equipping the Administration Building for use as the field office and all costs associated with providing and maintaining telephone and internet service would be borne by the Contractor. Monthly costs for electricity, natural gas, water supply, and sewer associated with Contractor use of the building for field office space would be paid for by Bayer.

1.02 SUBMITTALS

- ###### A.
- The Contractor shall submit to the Engineer drawings showing the layout, furnishings, and facilities of each field office trailer, and information concerning how the Contractor proposes to furnish the required utilities.

MATERIALS AND PERFORMANCE – SECTION 01901

FIELD OFFICE TRAILER AND OTHER SUPPORT

PART 2 – PRODUCTS

2.01 FIELD OFFICES

- A. The field office trailer utilized by the Contractor and Bayer/Engineer shall provide a minimum of 400 square feet of floor space and shall be partitioned to provide two separate office spaces. A total of two outside doors will be required.
- B. The field office trailer utilized by the NYSDEC shall provide a minimum of 160 square feet of floor space.
- C. The Contractor shall install and maintain, in accordance with all applicable codes and regulations, the electric and heat services for each office trailer.
- D. The field office trailer utilized by the Contractor and Bayer/Engineer shall have the following built-in items:
 - 1. One drafting table (48 inches x 89 inches minimum) with double storage cabinets underneath.
 - 2. Forced air heat.
 - 3. Two 5,000 BTU (min.) air conditioners.
 - 4. Sufficient supply of electrical outlets and a minimum of two telephone outlets.
- E. The field office trailer utilized by the Contractor and Bayer/Engineer shall have the following movable items:
 - 1. Three desks and chairs with filing and lockable storage drawers.
 - 2. Filing cabinets with locks.
 - 3. Three folding tables, measuring 30 inches x 60 inches each, with eight folding or stacking chairs.
 - 4. One 10-pound Class ABC fire extinguisher, (Protectoseal) Model No. 2A10SA, or approved equivalent.
 - 5. One first aid kit meeting the minimum requirements of ANSI/ISEA Z308.1 (10 Person ANSI First Aid Kit by Genuine First Aid® or equivalent).
 - 6. One refrigerator (minimum 2.5-cubic-foot capacity).
 - 7. One large waste basket and one large bin for recyclables.

MATERIALS AND PERFORMANCE – SECTION 01901

TEMPORARY FACILITIES AND OFFICE SUPPORT

8. Two telephones (Panasonic KX-TG4024N DECT 6.0 Plus Cordless Phone with Digital Answering System or equivalent).
 9. Two combination printer/scanner/copier/facsimile machines (HP Office Jet 4315 or similar).
- F. The field office trailer utilized by the NYSDEC shall have the following items:
1. Forced air heat.
 2. One 5,000 BTU (minimum) air conditioner.
 3. Sufficient supply of electrical outlets.
 4. One flat-top movable desk (44" x 30") with filing and lockable storage drawers.
 5. Two office chairs.
 6. One large waste basket and one large bin for recyclables.
 7. One filing cabinet with lock.
 8. One 10-pound Class ABC fire extinguisher, (Protectoseal) Model N0. 2A10SA or approved equivalent.
 9. One first aid kit meeting the minimum requirements of ANSI/ISEA Z308.1 (10 Person ANSI First Aid Kit by Genuine First Aid® or equivalent).
 10. One refrigerator (minimum 2.5-cubic-feet capacity).
 11. One telephone (Panasonic KX-TG4024N DECT 6.0 Plus Cordless Phone with Digital Answering System or equivalent).
 12. One combination printer/scanner/copier/facsimile machine (HP Office Jet 4315 or similar).
- G. Maintenance of the trailers shall include adequate heating and cooling; electric, internet, printing/copying, and telephone services; lighting; portable sanitary facilities; snow removal as required; and janitorial services not less than weekly. All garbage, dust, and miscellaneous material collected during clean-up of the facilities shall be disposed of at a sanitary landfill.

MATERIALS AND PERFORMANCE – SECTION 01901

FIELD OFFICE TRAILER AND OTHER SUPPORT

2.02 TEMPORARY FACILITIES

- A. Upon mobilization to the Site and initiation of construction activities, the Contractor shall provide, but shall not be limited to, the following temporary facilities for use during remedial activities:
1. Telephone Service: The Contractor shall provide and maintain separate telephone service and equipment for Bayer/Engineer, Contractor personnel, and the NYSDEC (3 phone lines total). The Contractor is responsible for local and long distance telephone charges originating from each phone line.
 2. Internet Service: The Contractor shall provide and maintain high-speed wireless internet service, 6 megabytes per second (Mbps) or faster, capable of supporting a minimum of 10 users simultaneously.
 3. Facsimile Service: The Contractor shall provide and maintain facsimile service. The Contractor will be responsible for local and long distance charges made originating from each facsimile.
 4. Temporary Water Service: The Contractor shall provide and maintain suitable bottled drinking water service including one 5-gallon capacity bottled drinking water cooler for each field office trailer. It is the Contractor's responsibility to provide potable water service as deemed necessary for construction activities.
 5. Temporary Sanitary Facilities: The Contractor shall provide and maintain temporary sanitary facilities and enclosures as required by the Occupational Safety and Health Administration (OSHA).
 6. Portable Toilets: The Contractor shall provide a minimum of two portable sanitary toilets and/or shall perform necessary upgrades to the restrooms in the Administration Building (repairing plumbing and lighting and performing needed cleaning to remove existing dust, dirt, grime and other material accumulation) to make them useable for the Project. The Contractor will be responsible for the removal and disposal/treatment of sanitary wastes offsite on a periodic basis as required and in accordance with applicable laws and regulations.
 7. Portable Hand Wash Stations: The Contractor shall provide a minimum of two portable hand wash stations. The Contractor will be responsible for the removal and disposal/treatment of waste water offsite on a periodic basis as required and in accordance with applicable laws and regulations.
 8. Temporary Lighting for Construction Purposes: The Contractor shall provide and maintain lighting for construction operations.

MATERIALS AND PERFORMANCE – SECTION 01901

TEMPORARY FACILITIES AND OFFICE SUPPORT

9. Health and Safety Equipment (including equipment and personnel).
10. Eye Wash Station and Other First-Aid Equipment.

PART 3 – EXECUTION (NOT USED)

- END OF SECTION -

MATERIALS AND PERFORMANCE – SECTION 01902

PROJECT SIGN

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

1. The furnishing, installation, and maintenance of a project sign.
2. The project sign shall be constructed as specified herein.
3. The project sign shall be posted in a prominent location at the Site following the notice to proceed and shall be maintained throughout the course of the Project.
4. On completion of the Project, the Contractor shall remove the sign and it shall become his property.

1.02 SUBMITTALS

- ###### A.
- The Contractor shall submit a sketch of the project sign (including dimensions and materials) and a figure showing the proposed location and orientation for the project sign at the site.

PART 2 - PRODUCTS

2.01 MATERIAL AND EQUIPMENT

A. General

1. All lumber shall be structural quality and exterior grade (pressure treated).
2. All bolts, nuts, and washers shall be plated or galvanized steel.
3. The sign shall be rectangular in shape with minimum dimensions of 6 feet wide by 3 feet high.

B. Painting

1. Paint shall be weather resistant, suitable for exterior sign applications and compatible with exterior grade plywood and primer.
2. The sign face background shall be white.
3. All lettering shall be black in color and a minimum of 2 inches in height.
4. The back of the sign and all supports, bracing and trim, shall be painted white.

MATERIALS AND PERFORMANCE – SECTION 01902

PROJECT SIGN

PART 3 - EXECUTION

3.01 GENERAL

- A. The project sign shall read as follows:

Remedial Action

Bayer MaterialScience LLC
(Former Hooker Chemical/Occidental Chemical Corporation/
OXY/RUCO Polymer Corp)
Operable Unit 04
NYSDEC Site No. 130004
Hicksville, New York

New York State Department of Environmental Conservation

Andrew M. Cuomo, Governor

Joseph Martens, NYSDEC Commissioner

John Venditto, Town of Oyster Bay Supervisor

Contacts:

NYSDEC – Steven Scharf (518.402.9620)
NYSDEC - Bill Fonda (531.444.0350)
NYSDOH – Renata Ockerby of Fay Navratil (518.402.7880)
Bayer – David Schnelzer (412.777.7603)

- B. The sign shall be adequately supported and braced and properly positioned and aligned.
- C. The sign shall be posted in a prominent location at the site following notice to proceed.

3.02 MAINTENANCE

- A. The Contractor shall provide any and all patching, painting, lettering, and bracing required to maintain the sign in good condition throughout the course of the Project.

3.03 CLOSURE

- A. The sign is to remain onsite until Project completion, and notification from the Engineer. At that time the sign is to be dismantled and shall become the Contractor's property.

- END OF SECTION -

MATERIALS AND PERFORMANCE - SECTION 01906

PROJECT SCHEDULE

PART 1 - GENERAL

1.01 DESCRIPTION

- A. A Critical Path Method (CPM) schedule shall be provided, updated, and maintained by the Contractor throughout the project.
- B. The Contractor shall prepare and submit to the Engineer with the Contractor's Site Management Plan, the CPM schedule clearly identifying the date prepared. The schedule shall be updated and submitted, with appropriate revision date noted, twice per month for the duration of the project or as may be required to maintain an accurate and effective schedule. The Contractor shall also assume that no standby time is necessary during the project.

PART 2 - PRODUCTS

2.01 SCOPE OF CRITICAL PATH METHOD SCHEDULE

- A. The Work Schedule should include all elements of the Project and be neatly prepared and labeled as a bar graph indicating all anticipated start and completion dates. Additional requirements are provided below.
 - 1. Submit a horizontal bar chart with separate lines for each section of work.
 - 2. At a minimum, the following major work items should be included, with appropriate subtasks included as necessary:
 - a. Technical Submittals.
 - b. Mobilization.
 - c. Site Preparation.
 - d. Installation of excavation support, if appropriate.
 - e. Excavation and material dewatering.
 - f. Material Excavation/Disposal.
 - g. Site Restoration.
 - h. Demobilization/Recordkeeping.

Items e through h should be provided for each excavation area.

MATERIALS AND PERFORMANCE - SECTION 01906

PROJECT SCHEDULE

3. Show complete sequence of construction by activity (including work by subcontractors). The Construction schedule provided by the Contractor shall show seasonal considerations and planned shutdown durations (if any).
4. The schedule shall also indicate the following:
 - a. Activity description.
 - b. Duration required to perform each activity expressed in calendar days.
 - c. Earliest date on which activity may be started based on sequences depicted in the schedule.
 - d. Latest date on which activity can be completed without delaying project completion.
- B. The Owner anticipates that work activities can be conducted between the hours of 7:00 a.m. and 7:00 p.m. on non-holiday Monday through Friday except in cases of emergency or unless prior approval has been obtained from Bayer and the Town of Oyster Bay.
- C. Project implementation shall be in accordance with the approved construction schedule submitted by the Contractor.
- D. Once every two weeks, the Contractor shall report project progress, based upon scheduled performance. The reporting procedure will include a listing of activities which are completed or partially completed during the period and the effect of progress on the original schedule.
- E. If, in the opinion of the Engineer, the Contractor fails to comply with obligations set forth in preceding paragraphs, the Engineer may require the Contractor to submit, for the Engineer's review, a revised schedule indicating the manner in which rate of progress will be improved to ensure completion.
- F. The revised schedule shall be similar to the original schedule and the Engineer shall have the right to require modifications therein in the same manner and to the same extent. Any costs incurred in preparing such a revised schedule shall be borne entirely by the Contractor.
- G. Failure of the Contractor to meet his obligations, as set forth above, shall be grounds for determination by the Engineer that Contractor is not prosecuting work with such diligence as will ensure completion within the time specified. On such determination, Bayer may terminate the Contractor's right to proceed with work or any separate part thereof in accordance with the appropriate articles in the general clauses. Should the Contractor fail to submit required schedule to the Engineer as specified above, or updates within seven calendar days after the 1st or 15th of each month, the Engineer shall have the right to postpone approval of the Contractor's requisitions for payment until said schedule is received and approved.

MATERIALS AND PERFORMANCE - SECTION 01906

PROJECT SCHEDULE

- H. None of the foregoing paragraphs shall operate to relieve the Contractor of his obligation of completing this Contract in accordance with the terms and within the time limit prescribed hereunder.

- END OF SECTION -

MATERIALS AND PERFORMANCE – SECTION 02201

EARTHWORK

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

1. Excavation and backfilling of excavation areas, including the loosening, removing, refilling, storage, reuse, and off-site transportation and disposal of all materials classified as “earth” necessary to be removed for the construction and completion of the Remedial Design (RD).
2. Excavation to the horizontal and vertical limits shown on the Design Drawings, including the demolition and removal of subsurface structures (e.g., subsurface concrete slabs, foundations, piping, etc.).

B. Related Work Specified Elsewhere

1. Section 02202 – Rock and Debris Removal
2. Section 02206 – Fill Materials

C. Definitions

1. Earthwork - Earthwork is defined to include, but not be limited to: clearing, topsoil removal, asphalt and concrete pavement removal, gravel removal, roadbase removal, classified and unclassified excavation for structures, handling and disposal of surplus materials, maintenance of excavations, removal of water, temporary excavation support, sloping, sheeting and bracing, backfilling operations, rough grading, fills, compaction, and protection of existing structures and facilities.
2. Earth - All materials, such as sand, gravel, sediment, clay, loam, ashes, cinders, pavements, muck, roots, pieces of timber, soft or disintegrated rock, not requiring blasting, barring, or wedging from their original beds, and specifically excluding all ledge or bedrock and individual boulders, masonry, or debris larger than ½-cubic yard in volume.
3. Backfill - The refilling of excavation areas to the elevations indicated in the RD or as directed using specified materials for refilling of excavation areas; and the compacting of all materials used in filling or refilling by rolling, ramming, or as may be required and approved by the Bayer.

1.02 APPLICABLE CODES, STANDARDS, AND SPECIFICATIONS

- ###### A. ASTM International (ASTM).
- The following ASTM specifications are referred to in this Section and are to be considered a part of this Section:

MATERIALS AND PERFORMANCE – SECTION 02201

EARTHWORK

D698 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf³/ft³ [600 kN-m/m³])

D1556 Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method

D2487 Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System)

D2922 Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

D4491 Standard Test Methods for Water Permeability of Geotextiles by Permittivity

D4751 Standard Test Method for Determining Apparent Opening Size of a Geotextile

B. American Association of State Highway and Transportation Officials (AASHTO). The following AASHTO specification is referred to in this Section and is to be considered a part of this Section:

M 288 Standard Specification for Geotextile Specification for Highway Applications

1.03 SUBMITTALS

- A. Results of moisture/density tests for each fill material type delivered to the site.
- B. Results of in-place density tests performed on backfill materials (determined by ASTM D1556 or ASTM D2922).

PART 2 - PRODUCTS

2.01 SOIL MATERIALS

- A. Satisfactory Soils: ASTM D2487 Soil Classification Groups GW, GP, GM, SW, SP, and SM, or a combination of these groups; free of rock or gravel larger than three inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
- B. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CD, MH, OM, and PT according to ASTM D2487, or a combination of these groups, unless otherwise required in the RD. Where soils of these groups are specifically required in the RD, the soils shall be considered satisfactory only for the specific use for which they are specified. Unsatisfactory soils also include satisfactory soils not maintained within two percent of optimum moisture content at time of compaction.

MATERIALS AND PERFORMANCE – SECTION 02201

EARTHWORK

- C. Fill Materials: See Materials and Performance (M&P) – Section 02206, titled Selected Fill, for a complete listing and description of the fill materials identified in the RD.

2.02 EROSION AND SEDIMENT CONTROLS

- A. Refer to the RD for erosion and sediment control requirements.

PART 3 - EXECUTION

3.01 UNAUTHORIZED EXCAVATION

- B. Description

1. Whenever excavations are carried beyond or below the lines and grades shown on the Design Drawings, or directed by the Engineer, all such excavated space shall be backfilled as directed by the Engineer. All refilling of unauthorized excavations, as determined by the Engineer, shall be at the Contractor's expense.
2. All material that slides, falls, or caves into the established limits of excavation areas due to any cause whatsoever, shall be removed. The material will be evaluated for potential on-site reuse (in accordance with the RD) or off-site disposal at the Contractor's expense, and no extra compensation will be paid the Contractor for any materials ordered for refilling the void areas left by the slide, fall, or cave-in.

3.02 EXCAVATION DEWATERING

- A. General

1. The Contractor shall, at all times, provide and maintain proper and satisfactory means and devices for the removal of all water currently present within and/or entering the excavation areas, and shall remove all such water as it may collect, in such manner as shall not interfere with the prosecution of the work.
2. Water pumped or drained from excavation areas shall be treated in a suitable manner approved by the Engineer and without injury to adjacent property, the work under construction, or to pavement, roads, drives and water courses. Water shall be collected, conveyed, containerized, treated, and discharged in accordance with the Minimum Requirements for Waste Transportation included as Appendix F to the RD.

- B. Work Included

1. The construction and removal of dewatering systems.

MATERIALS AND PERFORMANCE – SECTION 02201

EARTHWORK

3.03 STORAGE OF MATERIALS

A. Excavated Materials

1. All excavated materials shall be stored in locations approved by Bayer so as not to endanger the work, and so that easy access may be had at all times to all parts of the excavation areas. Stored materials shall be kept neatly piled and trimmed, so as to cause as little inconvenience as possible to public traveler or adjoining property holders.
2. All stockpiled excavated materials shall be securely covered with 10-mil polyethylene sheeting when no materials are being placed or removed during the work. All stockpiled excavated materials shall be securely covered with same material during non-work hours.
3. The Contractor shall supply an adequate supply of BioSolve® (or approved equivalent), sprayers, vapor-suppressant foam, and a foaming unit for the duration of the Project. These items will be used accordingly to suppress dust/vapors/odors in accordance with the RD.
4. Based on Site conditions, Bayer may elect to limit the maximum allowable stockpile size. Limitations to stockpile size shall be performed at no additional expense to Bayer.
5. Stockpiled impacted materials shall be removed from the site within 7 days of placement, unless a longer duration is approved by Bayer.
6. Special precautions must be taken to permit access at all times to fire hydrants, fire alarm boxes, police and fire department driveways, and other points where access may involve the safety and welfare of the general public.
7. In the event that materials are encountered that are unsuitable for stockpiling (based on appearance, contents, etc.), as determined by Bayer or Engineer, the Contractor shall include provisions/measures to be able to appropriately direct-load those materials into vehicles for direct transport to Bayer-approved treatment/disposal facility(ies).

3.04 DISPOSAL OF MATERIALS

A. Spoil Material

1. Spoil material consisting of impacted soil that doesn't meet reuse, criteria or concrete/brick debris/piping/asphalt pavement shall be disposed of offsite at a location approved by Bayer. Offsite transportation of such material shall be the responsibility of the Contractor.

MATERIALS AND PERFORMANCE – SECTION 02201

EARTHWORK

3.05 REUSE OF MATERIALS

- A. Clean backfill that was placed as part of previous interim corrective measures and extends no closer than 1 foot from the impacted soil to be removed as part of the remedial action, shall be stockpiled separately for later use as backfill, as indicated in the RD and shown on the Design Drawings.

3.06 BACKFILLING

A. General

- 1. All excavation areas shall be backfilled to the original surface of the ground or to such other grades as shown on the Design Drawings, or directed by the Engineer.
- 2. Backfilling shall be done with satisfactory soils or specified materials, as appropriate.
- 3. The top 6 inches of excavations (from six inches below grade to the ground surface) shall be backfilled with topsoil as specified in M&P – Section 02210, titled Topsoil and Seeding.
- 4. Any settlement occurring in the backfilled excavation areas shall be refilled and compacted at the expense of the Contractor.

B. Compaction Requirements

- 1. Unless otherwise specified in the RD, the degree of material compaction specified for the items listed in Table 1 below, shall be the minimum required.
- 2. Unless the Contractor can successfully demonstrate that his methods will produce the required degree of compaction throughout the entirety of each lift, materials to be compacted shall be placed in layers not exceeding the uncompacted thicknesses listed in Table 1 below.
- 3. Moisture/density tests shall be performed, at the Contractor's expense, on all soil materials by a certified geotechnical testing laboratory, in accordance with ASTM Standard D698 (Method to be determined based on material gradation), prior to placement. Laboratory moisture/density testing shall be performed on at least one sample of each fill material type delivered to the Site. Additional tests shall be performed if requested by the Engineer.
- 4. Prior to backfilling, the Contractor will establish a test pad area adjacent to the excavation area. A maximum lift of 18 inches loose backfill will be placed and compacted on the test pad in accordance with Table 1 (Item 1) with the same equipment to be used within the excavation area. The total number of compaction passes and moisture content of the material will be recorded, Page:

MATERIALS AND PERFORMANCE – SECTION 02201

EARTHWORK

along with the in-place density of the test pad. A minimum number of compaction passes will be established to achieve the desired soil compaction standard.

5. Backfill materials shall be placed in horizontal lifts no greater than 18 inches in loose thickness within the excavation area. Following confirmation of the moisture content being within $\pm 2\%$ of the moisture content from the test pad work by the Contractor's test laboratory, the Contractor shall make the minimum number of passes on the entire lift as developed from the test pad work described above. This procedure shall be followed until the backfill depth reaches approximately six feet below original grade. From six feet below original grade to the ground surface, in-place density testing shall be performed on each lift as described below.
6. In-place density shall be determined by ASTM D1556 or ASTM D2922 and shall be expressed as a percentage of maximum dry density. In-place density testing shall be performed at an approximate frequency of one per 2,500 square feet (sf) of lift area and at various elevations within the backfill area or other frequencies deemed necessary by the Engineer to reliably and consistently determine the compaction level being achieved.
7. Where required to obtain the optimum moisture content, sufficient water shall be added during placement and compaction activities to achieve the specified minimum density of the material. If, due to rain or other causes, the material becomes too wet and cannot be compacted as specified, the Contractor shall mechanically adjust (reduce) the moisture content of the material as required to achieve the required degree of compaction.
8. Minimum field compaction requirements listed in Table 1 (below) are expressed as a percentage of the maximum dry unit weight of the material as determined by the geotechnical testing laboratory.

MATERIALS AND PERFORMANCE – SECTION 02201

EARTHWORK

Table 1 – Minimum Compaction Requirements

Type of Backfill	Maximum Uncompacted Fill Layer Thickness	Minimum Compaction	Per ASTM Method
1. General/Select/Re-Use Fill Above Prepared Existing Sub-grade	18"	95%	D698
2. Type "E" Run-of-Bank Gravel Sub-base	12"	95%	D698

The Contractor shall be responsible for all damage or injury done to pipes, structures, any other existing or new site features, property, or persons due to improper placement and/or compaction activities.

3.07 OTHER REQUIREMENTS

A. Hauling Material on Streets

1. When it is necessary to haul material over the streets or pavement, the Contractor shall provide suitable tight vehicles so as to prevent deposits on the street or pavements. In all cases where any materials are dropped from the vehicles, the Contractor shall clean up the same as often as required to keep the crosswalks, streets, and pavements clean and free from dirt, mud, stone and other hauled material.

B. Dust Control

1. It shall be the sole responsibility of the Contractor to control dust in accordance with the RD sections related to dust suppression, to such a degree that it will not endanger the safety and welfare of the general public.
2. Community air monitoring shall be conducted in accordance with the *Community Air Monitoring Plan*, included as Appendix D to the RD.

- END OF SECTION -

MATERIALS AND PERFORMANCE – SECTION 02202

ROCK AND DEBRIS REMOVAL

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

1. Rock and debris removal to facilitate excavation to the vertical and horizontal limits shown on the Design Drawings or as directed by the Engineer.
2. Backfill (with acceptable materials) of areas from which rock and/or debris have been removed.

B. Related Work Specified Elsewhere

1. Section 02201 – Earthwork

C. Definitions

1. Rock - All pieces of ledge or bedrock, boulders, or masonry larger than ½-cubic yard in volume.
2. Debris - Man-placed buried material, including brick, concrete slabs, concrete foundations, metal, wood demolition debris, and miscellaneous fill materials.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 REMOVAL

A. General

1. All existing pipes or structures to remain that are exposed during excavation activities shall be adequately protected from damage before proceeding with material removal.
2. Bayer/Engineer reserve the right to alter rock and debris removal techniques and activities, as required.
3. Bayer/Engineer reserve the right to discontinue rock and debris removal techniques and activities at any time.

B. Repair of Damages Due to Removal

1. Any injury or damage to the work or to existing utilities or structures shall be repaired or rebuilt at the Contractor's expense. If damage occurs to any

MATERIALS AND PERFORMANCE – SECTION 02202

ROCK AND DEBRIS REMOVAL

portion of a utility or structure, or to the material surrounding or supporting the same, the Contractor shall immediately notify Bayer and Engineer and proceed with appropriate and safe response actions to (as necessary): 1) collect, containerize, characterize, and appropriately dispose of any materials released from the damaged utility or structure; 2) provide provisions for alternate/temporary service; and 3) furnish necessary materials and repair or replace the damaged utility/structure. In the case of utilities, the Contractor shall immediately notify the appropriate utility company and provide assistance to the utility company during repairs unless authorized by the utility company to undertake such repairs directly. Any damage to existing structures shall be promptly and completely repaired by the Contractor at no additional cost to Bayer and to the satisfaction of Bayer, utility company, and/or affected party.

C. Explosives

1. At no time shall explosives be used at the site.

3.02 MATERIAL CRUSHING

- A. The Contractor shall provide all equipment necessary to sufficiently crush/downsize excavated rock and debris for offsite disposal. Such equipment shall be mobilized to the site at the beginning of the Project (prior to initiating excavation activities) and remain onsite until Project completion.
- B. Excavated rock and debris shall be crushed/downsized as required by the waste transportation and disposition vendors and sufficient for offsite disposal at an appropriate Bayer-approved facility.
- C. The Contractor shall account for the crushing/downsizing of excavated rock and debris (including former structures) in its work schedule.

3.03 EXCAVATION AND BACKFILL

- A. Rock and debris removal and backfilling shall be performed in accordance with the applicable provisions of Materials and Performance (M&P) – Section 02201, titled Earthwork.
- B. Excavated rock and debris, as specified, shall be disposed of in accordance with the RD, and shall be replaced with the quantity of acceptable material required for backfilling.

- END OF SECTION -

MATERIALS AND PERFORMANCE – SECTION 02203

SITE GRADING

PART 1 – GENERAL

1.01 DESCRIPTION

A. Work Specified

1. The Contractor shall complete all rough and final grading to the elevations presented on the Design Drawings or as directed by the Engineer.
2. The Contractor shall provide survey verification and certification of existing (pre-construction) surfaces, intermediate backfill elevations, prepared sub-grade elevations, subsequent topsoil thickness, and final grade elevations as depicted on the Design Drawings or as directed by the Engineer, and in accordance with Materials and Performance (M&P) – Section 01160 (Survey Control).
3. The Contractor is responsible for all excavation, backfilling, compaction, slope protection, and erosion control required to complete site grading, as specified herein.

B. Related Work Specified Elsewhere

1. Section 01160 – Survey Control
2. Section 01720 – Project Record Documents
3. Section 02201 – Earthwork

1.02 SUBMITTALS

- ###### A.
- As-built plans shall be stamped and signed by a New York State-licensed Land Surveyor or Professional Engineer.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 PLACEMENT

- ###### A.
- Fill materials shall be moisture conditioned as necessary to meet the compaction requirements specified in M&P – Section 02201 (Earthwork).

MATERIALS AND PERFORMANCE – SECTION 02203

SITE GRADING

- B. The Contractor shall establish and maintain survey control throughout the work. Sub-grades and final surface elevations shall be verified by a New York State-licensed Land Surveyor or Professional Engineer.

- END OF SECTION -

MATERIALS AND PERFORMANCE – SECTION 02206

FILL MATERIALS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

1. Select fill materials shall be used for backfill as described in the Remedial Design (RD), as specified herein, or as directed by the Engineer.

B. Related Work Specified Elsewhere

1. Section 02201 – Earthwork
2. Section 02202 – Rock and Debris Removal
3. Section 02203 – Site Grading

C. Definitions

1. Any of the materials listed in Part 2.01 or other materials ordered by the Engineer.

1.02 APPLICABLE CODES, STANDARDS, AND SPECS

A. New York State Department of Transportation (NYSDOT) Standard Specifications

B. ASTM International (ASTM). The following ASTM specification is referred to in this Section and is to be considered a part of this Section:

D422 Standard Test Method for Particle-Size Analysis of Soils

C. New York State Department of Environmental Conservation (NYSDEC) Title 6 of the Official Compilation of Codes, Rules, and Regulations (6 NYCRR) Part 375 (Environmental Remediation Programs)

1.03 SUBMITTALS

A. Identification of proposed fill sources (names, addresses, and any state or local approval as fill sources). If no prior state or local approval is available for the source, the Contractor shall provide a brief history of the use of the property which is the source of the fill.

B. Sieve analysis (ASTM D422) reports for the proposed fill materials.

MATERIALS AND PERFORMANCE – SECTION 02206

FILL MATERIALS

- C. Chemical testing results (including laboratory data packages and electronic data deliverables) for the proposed fill materials.

PART 2 - PRODUCTS

2.01 LISTING OF MATERIALS

- A. Surface Soil Reused as Fill

Surface soil (top one foot) from select areas (Excavation Areas B1-B-24) may be used as subsurface backfill for excavation areas provided that upon excavation, it exhibits no visible staining and can be compacted to achieve minimum compaction requirements.

- B. General Fill

Clean soil must be suitable for sustaining vegetative growth and free of lumps and rocks larger than three inches, and free of loam organic matter, very soft clays, swelling clays, and fine uniform sands that may be difficult to compact.

- C. Select Fill

Same material description as General Fill except that compacted surface of material shall be smooth and free of any loose stones, protrusions, and other sharp objects or foreign matter.

- D. Type "B"

1. Crushed Stone

Thoroughly washed clean, sound, tough, hard crushed limestone or approved equal free from coatings.

Crushed stone shall have the following gradation by weight:

<u>Percent Passing</u>	<u>Sieve</u>
100%	1 1/2 inch
0 - 25	3/4 inch
0 - 5	1/2 inch

2. Type "E"

Run-of-Bank Gravel

MATERIALS AND PERFORMANCE – SECTION 02206

FILL MATERIALS

Run-of-bank gravel or other acceptable granular material, free from organic matter, having the following gradation by weight:

<u>Percent Passing</u>	<u>Sieve</u>
100%	1 1/2 inch
30 - 65	1/4 inch
0 - 10	#200 sieve

- 2.02 Any imported fill materials brought onsite for use as General Fill or Select Fill, shall be sampled by the Contractor and analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), pesticides/herbicides, and metals to demonstrate that the offsite materials meet the lower of the protection of groundwater or the protection of public health soil cleanup objectives for commercial use outlined in Table 375-6.8(b) of 6 NYCRR Part 375 (Environmental Remediation Programs). Sampling/analysis protocols and procedures shall conform to Subdivision 5.4(e) of DER-10. Analytical results shall be accompanied by Analytical Services Protocol (ASP) Category B deliverables. Electronic data deliverables shall also be submitted in the NYSDEC-approved format. The laboratory used to analyze offsite fill materials shall be certified by the New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) for the parameters being analyzed. The laboratory shall be capable of providing detection limits at or below the soil cleanup objectives for restricted-commercial use and groundwater protection outlined in 6 NYCRR Part 375 to allow for comparison of the analytical results to those objectives by the Contractor.
- 2.03 Prior to importing select fill materials to the Site, Contractor shall submit a laboratory test report for each material type that indicates the grain-size profile of the material in accordance with ASTM D422.
- 2.04 The Contractor will provide the analytical data to the Engineer at least three weeks prior to bringing any select fill material onsite. If sample results show that the material does not meet the requirements, the Contractor must identify a new source for the material and provide the required data report for the new source of material prior to the use of such material onsite.

PART 3 - EXECUTION

3.01 GENERAL

- A. Select Fill materials shall be placed and compacted in accordance with M&P Specification – Section 02201, titled Earthwork.

MATERIALS AND PERFORMANCE – SECTION 02206

FILL MATERIALS

- B. Any settlements in the finished work shall be restored to design grade by the Contractor at no additional cost to Bayer.

- END OF SECTION -

MATERIALS AND PERFORMANCE – SECTION 02210

TOPSOIL AND SEEDING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

1. The furnishing of topsoil, fertilizer, seed, and mulch; the preparation of the sub-grade and the placing of the topsoil, fertilizer, seed, and mulch.
2. The maintenance required until acceptance.

B. Related Work Specified Elsewhere

1. Section 02201 – Earthwork
2. Section 02206 – Fill Materials

1.02 APPLICABLE CODES, STANDARDS, AND SPECIFICATIONS

- ###### A.
- New York State Department of Transportation (NYSDOT) Standard Specifications.

1.03 SUBMITTALS

- ###### A.
- The Contractor shall submit the source location and associated data (including pH and organic content) for offsite topsoil.
- ###### B.
- Analytical results for the proposed topsoil material. Refer to Materials and Performance (M&P) – Section 02206 (Fill Materials) for laboratory and analytical testing requirements.
- ###### C.
- Seed Certificates: At least 14 days prior to seeding, submit certificates from seed vendors for each seed mixture required, stating botanical and common name, percentage by weight and percentages of purity, germination, and weed seed for each species.
- ###### D.
- Mulch Information: At least 14 days prior to mulching, submit a description of the mulch material, the proposed mulching methods, and application rates.
- ###### E.
- Fertilizer Information: At least 14 days prior to fertilizing, submit a description of the fertilizer material (including the chemical make-up), the proposed fertilizing methods, and application rates.

MATERIALS AND PERFORMANCE – SECTION 02210

TOPSOIL AND SEEDING

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Topsoil shall be unfrozen friable clayey loam free from clay lumps, stones, roots, sticks, stumps, brush, and foreign objects. The topsoil will have a pH ranging between 5.0 and 7.5 and an organic content between 5 and 20%, as determined by laboratory testing of representative samples.
- B. Fertilizer shall be a standard-quality, commercial carrier of available plant food elements (a complete, prepared, and packaged material containing a minimum of 5% nitrogen, 10% phosphoric acid, and 10% potash, or as recommended by the seed supplier).
1. Each bag of fertilizer shall bear the manufacturer's guaranteed statement of analysis.
- C. Seed mixture shall be of commercial stock of the current season's crop and shall be delivered in unopened containers bearing the guaranteed analysis of the mix.
1. All seed shall meet the NYSDOT Standard Specifications for germination and purity.

2. Seed mixture:

<u>Species</u>	<u>Pounds/Acre</u>
Creeping Red Fescue	20
Tall fescue	20
Perennial ryegrass	5
Birdsfoot trefoil	10

- E. Mulch shall be stalks of oats, wheat, rye, or other approved crops free from noxious weeds.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. The area to receive topsoil shall be graded to a depth of not less than six inches below the proposed finished grades shown on the Design Drawings or as directed by the Engineer.

MATERIALS AND PERFORMANCE – SECTION 02210

TOPSOIL AND SEEDING

1. All debris and inorganic material shall be removed and the surface loosened for a depth of 2 inches prior to the placing of the topsoil.
 2. The topsoil shall not be placed until the sub-grade is in suitable condition and shall be free of excessive moisture and frost.
- B. The fertilizer shall be applied uniformly at the rate of 20 pounds per 1,000 square feet, unless otherwise specified by the seed supplier.
- C. After the topsoil surface has been fine graded, the seed mixture shall be uniformly applied upon the prepared surface with a mechanical spreader at a rate of not less than 1 pound per 1,000 square feet.
1. Seeding and mulching shall not be done during windy weather.
 2. The seed shall be raked lightly into the surface and rolled with a light lawn roller to incorporate seed into the uppermost ½-inch of soil.
- D. The mulch shall be hand or machine spread to form a continuous blanket over the seed bed, approximately two inches uniform thickness at loose measurement. Excessive amounts or bunching of mulch will not be permitted.
1. Mulch shall be anchored by an acceptable method.
 2. Unless otherwise specified, mulch shall be left in place and allowed to disintegrate.
 3. Any anchorage or mulch that has not disintegrated at time of first mowing shall be removed. Anchors may be removed or driven flush with ground surface.
- E. Seeded areas shall be watered as often as required to obtain germination and to obtain and maintain a satisfactory sod growth. Watering shall be in such a manner as to prevent washing out of seed.
- F. Hydroseeding may be accepted as an alternative method of applying fertilizer, seed, and mulch. If hydroseeding is the selected method of planting, the following shall also apply:
1. Mulch materials shall be free of weeds and other foreign materials; free of growth or germination inhibiting ingredients; manufactured in such a manner that after addition and agitation in slurry tanks with water, the fibers in the material will become uniformly suspended to form a homogeneous slurry; dyed a suitable color to facilitate inspection of the placement of the material; and capable of forming an absorptive mat, which will allow moisture to percolate into the underlying soil.
 2. Seeding and mulching shall be a one-step process in which seed, fertilizer,

MATERIALS AND PERFORMANCE – SECTION 02210

TOPSOIL AND SEEDING

hydraulic mulch, and mulch adhesive are applied simultaneously in a homogeneous water slurry via hydraulic seeder/mulcher.

3. Hydraulic Seeder/Mulcher: Apply seed, fertilizer, hydraulic mulch, and temporary cover adhesive using an acceptable hydraulic seeder/mulcher. The hydraulic seeder/mulcher shall be equipped with mechanical agitation equipment capable of mixing the materials into a homogeneous water slurry and maintaining the slurry in a homogeneous state until it is applied. The discharge pumps and gun nozzles shall be capable of applying the materials uniformly.
4. Volume Certification: Hydraulic seeding/mulching equipment shall have the tank volume certified by a plate affixed by the manufacturer and confirmed by the Engineer by means of measurements or tests prior to the commencement work. This plate shall be affixed in plain view on the hydraulic seeder/mulcher and shall not be removed or altered. The plate shall certify tank volume only, and shall imply equipment conformance to other requirements of this Section.
5. Application of Materials: Measure the quantity of each material to be charged into the hydraulic seeder/mulcher tank either by mass or by a system of mass-calibrated volume measurements acceptable to the Engineer. Add the materials to the tank while it is being loaded with water. Thoroughly mix the materials into a homogeneous water slurry and distribute uniformly over the designated surface area via the hydraulic seeder/mulcher. Apply seed, fertilizer, and where applicable, hydraulic mulch adhesive within 2 hours of being charged into the hydraulic seeder/mulcher tank. During loading of the hydraulic seeder/mulcher tank, add materials in the following sequence: seed, then fertilizer, then, where applicable, hydraulic mulch and adhesive.
6. Blend into existing adjacent grass areas to bond new growth to existing adjacent areas or to previous applications to form uniform surfaces.
7. Seed mixture shall be applied in accordance with the manufacturer's written instructions and Part 2.01 of this Section.

3.02 MAINTENANCE

- A. All lawn areas shall be mowed by the Contractor before the new grass reaches a height of approximately 4 to 6 inches.

MATERIALS AND PERFORMANCE – SECTION 02210

TOPSOIL AND SEEDING

- B. Contractor shall maintain the newly seeded areas in good condition until seeded areas have established a minimum uniform 80-percent density of native perennial vegetation and until acceptance by the Engineer, including regular mowing to a height of approximately two inches. The Contractor shall be required to repair any areas of erosion and reseed as necessary until complete coverage and satisfactory sod growth is achieved.

- END OF SECTION -

MATERIALS AND PERFORMANCE – SECTION 02270

GEOTEXTILE FABRIC

PART 1 - GENERAL

1.01 DESCRIPTION

- A. All labor, materials, equipment, and services necessary for furnishing and installing the geotextile fabric required for completion of the Project.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Non-woven Geotextile: For use as an erosion control filter layer or as a separation layer underneath stone fill materials (e.g., washed gravel, riprap) shall meet the AASHTO M 288-05 requirements for Class 1 permanent erosion control geotextile, such as Mirafi 180N, or approved equivalent.
- B. Bright Yellow or Orange Non-woven Geotextile: For use as a demarcation layer shall have a minimum nominal weight of 6 ounces per square foot (e.g., Mirafi 160N, or approved equivalent). Bright yellow or orange plastic mesh/construction fencing made of polypropylene or HDPE may also be used.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Site Preparation
 - 1. Sub-grade shall be cleared of all sharp objects, tree stumps, and large stones.
 - 2. Sub-grade shall be graded and compacted as required to provide a uniform and stable surface.
- B. Material Placement
 - 1. Geotextile material shall be placed (rolled out) in the direction of most frequent vehicular travel.
 - 2. Adjoining edges shall have a 2- to 3-foot overlap and shingled in a manner that prevents material rollup during aggregate placement.

MATERIALS AND PERFORMANCE – SECTION 02270

GEOTEXTILE FABRIC

3. Aggregate shall be as specified in Materials and Performance (M&P) – Section 02206 (Fill Materials) and placed in a manner which prevents damage to or dislodgement of underlying geosynthetics.

- END OF SECTION -

MATERIALS AND PERFORMANCE – SECTION 02272

GEOMEMBRANE – HDPE LINER

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

1. All labor, materials, equipment, and services necessary to furnish and install 40-mil High Density Polyethylene (HDPE) liner systems within the material staging, containment, and decontamination areas as indicated in the Remedial Design (RD) and to complete the associated quality control/quality assurance (QC/QA) activities.

1.02 SUBMITTALS

- A. The manufacturer shall provide the necessary shop drawings showing all details required to ensure a water-tight installation to the Engineer a minimum of one week prior to liner installation. The Contractor shall not proceed with installation until the Engineer provides a “Reviewed” or “Reviewed and Noted” response to the submittal.
- B. The manufacturer shall submit a separate QC/QA manual to the Contractor covering all phases of manufacturing and installation. The Contractor shall submit a copy of the QC/QA manual to the Engineer prior to liner installation.
- C. The manufacturer shall furnish complete and detailed written instructions for the storage, handling, installation, seaming, inspection, repair, and QC/QA testing procedures of the liner to the Engineer prior to delivery of the liner material to the site.
- D. Results of all QC/QA testing shall be provided to the Engineer immediately upon completion of testing.
- E. The Contractor shall provide a written warranty stating that the liner materials and workmanship provided shall be free from defects for the duration of the Project. Such written warranty shall provide for the complete repair or replacement including all incidental costs associated with the defect at no cost to Bayer. All repairs or replacements shall be performed within a reasonable period of time as determined by Bayer/Engineer.
- F. The manufacturer/fabricator shall submit documentation to the Contractor (and Engineer) stating that the delivered liner material meets physical property requirements for the intended application. Said documentation shall be provided prior to delivery of the liner material to the site.

MATERIALS AND PERFORMANCE – SECTION 02272

GEOMEMBRANE – HDPE LINER

PART 2 - PRODUCTS

2.01 MATERIALS

A. HDPE Liner

1. The geomembrane liner shall be made of HDPE, have minimum average thickness of 40 mil, and shall be manufactured from resin provided from one resin supplier. The resin used in the liner material shall be identical to the HDPE material used in seam welding of the liner. The liner material shall be free of defects such as holes or blisters, or any contamination by foreign matter.
2. The delivered liner material shall meet the specification values according to the manufacturer's/fabricator's specification sheet. The manufacturer/fabricator shall submit written certification that the delivered liner material meets the material specifications and complies with the Geosynthetic Research Institute's minimum requirements for that material.

PART 3 - EXECUTION

3.01 INSTALLATION

- ###### A.
- All materials shall be placed, seemed, and tested in accordance with the manufacturer's recommendations and specifications.

- END OF SECTION -



Appendix B

Construction Quality Assurance Plan



Bayer MaterialScience LLC

Construction Quality Assurance Plan

125 New South Road
Hicksville, New York
USEPA ID No. NYD002920312

February 2013



**Construction Quality
Assurance Plan**

Bayer MaterialScience LLC
125 New South Road
Hicksville, New York

Prepared for:
Bayer MaterialScience LLC

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Attachment

Attachment A - Example Erosion and Sediment Control Inspection Report

1. Introduction

1.1 Purpose

This *Construction Quality Assurance Plan* (CQAP) has been prepared by ARCADIS of New York, Inc. (ARCADIS) to support implementation of the remedial activities at the Bayer MaterialScience LLC (Bayer) site located at 125 New South Road in Hicksville, New York (the Site). This CQAP describes the materials, procedures, and testing necessary for proper construction, evaluation, and documentation during implementation of the remedial action.

1.2 Definitions and Terms

The following terms and abbreviations are used throughout this CQAP. The definition of each term or abbreviation is consistent throughout this plan.

ASTM – American Society for Testing and Materials.

Contractor – The person or persons designated by Bayer to perform the remedial action, including the person or persons designated by the Contractor to perform work associated with the remedial action.

RD – The Remedial Design, which includes Design Drawings, Technical Specifications, Community Air Monitoring Plan (CAMP), Citizen Participation Plan (CPP), Contingency Plan, and this Construction Quality Assurance Plan (CQAP).

CQA – Construction quality assurance.

CQC – Construction quality control.

Engineer – The person or persons responsible for the design aspects of the project. The Engineer's duties include reviewing modifications to the RD. In addition, the Engineer will be responsible for the quality assurance/quality control (QA/QC) aspects of the project. Duties will include CQA sampling, testing, determination of work limits, and measurement of work for payment and final acceptance. The Engineer will provide a project coordinator (onsite construction project manager/engineer) to oversee and monitor implementation of the remedial activities by the remedial contractor.

Manufacturer – The person or persons designated by the Contractor to provide construction materials.

1.3 CQAP Organization

The CQAP is organized as follows:

Section	Purpose
Section 1 – Introduction	Presents the purpose and contents of the CQAP and definition of terms used throughout the CQAP.
Section 2 – Required Personnel and Qualifications	Presents a description of personnel qualifications for proper implementation of CQAP procedures.
Section 3 – Documentation Requirements	Presents a description of proper communication and documentation of work activities.
Section 4 – Pre-Construction Activities/Mobilization	Presents a description of CQA/CQC requirements for pre-construction activities/mobilization.
Section 5 – Excavation	Presents a description of CQA/CQC requirements during excavation activities.
Section 6 – Sampling	Presents a description of CQA/CQC requirements during sampling activities.
Section 7 – Decontamination Activities	Presents a description of CQA/CQC requirements during decontamination activities.
Section 8 – Waste Handling, Treatment, and Disposal	Presents a description of CQA/CQC requirements during waste handling, treatment, and disposal.
Section 9 – Site Restoration/ Demobilization	Presents a description of CQA/CQC requirements for site restoration/demobilization.

2. Required Personnel and Qualifications

2.1 CQA Management Organization

As part of the engineering services performed during the remedial action, the Engineer will be responsible for observing and documenting the activities outlined in the RD.

In general, observation, sampling, testing, and/or documentation of construction materials installation and associated procedures will be performed by a person or persons familiar with contemporary construction procedures and materials. The project personnel will be under the direct supervision of a Professional Engineer licensed in the State of New York. The CQA Personnel will be familiar with the use of equipment and methodology needed to sample and test soil, water, air, and other materials. When necessary, the CQA Personnel will provide proof that field personnel are appropriately trained and/or certified for the use of applicable testing equipment.

Specific descriptions for personnel with daily project involvement are as follows:

Bayer

Bayer will have the final authority on all aspects of the Remedial Construction. Bayer is empowered to determine the amount, quality, acceptability and fitness of all parts of the RD.

CQA Officer (*David Schnelzer*) – The CQA Officer is knowledgeable of the project requirements and objectives and is familiar with the RD. The CQA Officer will be on-site as required during construction activities. The responsibility of the CQA Officer is to ensure the quality of construction that meets or exceeds that defined by the RD and identified in the Construction Quality Assurance Plan (CQAPP).

The CQA Officer will have the following responsibilities in the implementation of the procedures in the CQAP:

- Attend the pre-mobilization site meeting.
- Attend periodic project coordination meetings.
- Direct and support the CQC representative inspection personnel in performing observations and tests by verifying that the data are properly recorded, validated, reduced, summarized, and inspected.

- Evaluate the construction activities and the CQC representative's efforts.
- Evaluate sampling activities and efforts of the Engineer.
- Prepare transportation manifests for the transportation of non-hazardous waste, hazardous waste, and conditionally exempt materials (i.e., soil, water, debris).
- Schedule and coordinate CQA inspection activities.

Engineer

The Engineer will provide onsite and office-based assistance to Bayer throughout duration of remedial actions. The Engineer will observe the progress and quality of the remedial activities and determine, in general, if the construction is proceeding in substantial compliance with the RD.

Project Manager – The Project Manager will have experience in a position of significant responsibility for construction projects similar in magnitude and complexity to the project being undertaken. The Project Manager must be knowledgeable of the project requirements and objectives and must be familiar with the RD.

The Project Manager will have the following responsibilities during the implementation of the procedures in the CQAP:

- Attend the pre-mobilization site meeting.
- Attend periodic project coordination meetings.
- Maintain responsibility for the implementation of the procedures in the CQAP.
- Provide the appropriate technical review (i.e., by qualified representatives of the Engineer) of the RD, modifications to the RD, and Final Engineering Report.
- Maintain contact with Bayer, Contractor, and subcontractors regarding conformance with the requirements in this plan.
- Provide overall coordination of the remedial activities.
- Provide assistance in the review and interpretation of field and laboratory testing results.

- Educate CQC inspection personnel on CQC requirements and procedures as necessary.
- Provide assistance in the review of shop drawings and other submittals from the Contractor.
- Perform periodic site visits to review the progress of the remedial action.
- Review the installed portion of work to permit further construction.
- Identify noted deficiencies during construction activities (based on QC testing results) so corrective actions can be taken.
- Review daily construction summary reports prior to submittal to Bayer. The weekly construction reports will be submitted at the end of the week in an electronic format to Mr. David Schnelzer, Bayer's project manager at david.schnelzer@bayer.com.
- Oversee preparation of the Final Engineering Report and provide required certification.
- Serve as the overall Project Emergency Coordinator and have ultimate authority in specifying and facilitating any contingency action during potential emergencies when the *Contingency Plan* is implemented.

CQA Engineer – The CQA Engineer must demonstrate knowledge of construction, excavation, excavation dewatering, erosion and sedimentation control, and applicable test methods through a combination of formal education, training, and experience. The CQA Project Manager may also fill the role of the CQA Engineer.

The CQA Engineer will have the following responsibilities in the implementation of the procedures in the CQAP:

- Oversee and coordinate the QA/QC sampling and testing.
- Attend the pre-mobilization site meeting.
- Attend periodic project coordination meetings.
- Record onsite activities that could result in damage to the Site and report these activities to the Contractor and Project Manager.

- Review daily and weekly construction reports with the CQA Observer(s).
- Serve as the daily contact person for the CQA personnel.
- Perform the duties of the health and safety officer.
- Maintain routine contact with Bayer and the Contractor regarding conformance with QC requirements.
- Review shop drawings and other submittals from the Contractor.
- Review field and laboratory QA/QC testing results for conformance with the RD.
- Determine areas that require rework and/or repair.
- Monitor the delivery of samples to the CQA Laboratory for testing.
- Coordinate the activities of the CQA Observer(s) to establish proper sampling procedures.
- Perform regular site walkthroughs to review progress and QA/QC procedures.

CQA Observer(s) – The CQA Observer(s) must demonstrate knowledge of construction, excavation, excavation dewatering, erosion and sedimentation control, and applicable test methods through a combination of formal education, training, and experience. The “Project Coordinator” and/or other staff from the Engineer will serve as the CQA observers.

The CQA Observer(s) will have the following responsibilities in the implementation of the procedures in the CQAP:

- Perform and document field and laboratory testing at the frequency established in this CQAP.
- Identify areas of nonconformance based upon the results of field and laboratory testing.
- Perform and document field sampling for QA/QC testing.
- Observe construction materials, such as soils, and geosynthetics, delivered to the Site, to determine general conformance with material specifications.

- Observe and record procedures used for pre-construction activities/mobilization.
- Observe and record procedures used during excavation activities.
- Observe and record procedures used for noise, vapor/odor suppression, and dust control.
- Observe and record procedures used during decontamination.
- Observe and record procedures used during waste handling, treatment, and disposal.
- Observe and record procedures used for site restoration/demobilization.
- Arrange delivery of samples to the CQA Laboratory.
- Prepare a transportation log documenting all loads of solid or liquid waste that are transported off-site. The transportation log will be submitted at the end of each week in an electronic format to Mr. David Schnelzer, Bayer's project manager at david.schnelzer@bayer.com.
- Prepare daily construction reports.
- Prepare weekly project status reports electronically.

2.2 Contractor Qualifications and Responsibilities

The Contractor will be trained and experienced, and demonstrate that the superintendent, field crew foreman, and subcontractors have similar experience in the construction, installation, and performance of the various components outlined in the RD, including excavation and erosion and sedimentation control. The Contractor shall provide evidence of prior work on satisfactorily completed projects of similar magnitude and complexity to this project.

The Contractor will have the following responsibilities for implementing the procedures presented in the CQAP:

- Provide offsite and onsite project management and field staff that are qualified to implement the remedial action.
- Review and be completely familiar with the RD.

- Maintain lines of communication with the CQA Personnel to identify and discuss field issues as they arise.
- Coordinate with all equipment suppliers to document compliance with the CQAP requirements.
- Provide Bayer and/or the Engineer with at least five (5) days written notice of any tests or inspections required by the RD; timely notice of all other tests and inspections; and an additional forty-eight (48) hours notice prior to the actual performance of any test or inspection.
- Prepare and submit to the CQA Personnel, all shop drawings and other required submittals specified in the RD.
- Identify any potential design and/or construction issues as early as possible to allow resolution in a manner that will not impact the quality of the construction or the schedule of construction activities.
- Maintain a continuous record of any approved changes or modifications to the RD.
- Prepare weekly erosion and sediment control inspection reports.

2.3 CQA Surveyor Qualifications

All surveys necessary for implementation of remedial activities and for the collection of as-built information will be carried out by personnel practiced in land survey techniques and under the direction of a New York State-licensed Land Surveyor.

3. Documentation Requirements

3.1 Documentation

The documentation of CQA activities will support a determination of whether construction activities have been carried out in general accordance with the RD. The documentation process includes recognition of construction tasks that will be observed and documented; assignment of responsibilities for the observation, testing, and documentation of these tasks; and the completion of the required reports, data sheets, forms, and checklists to provide an accurate record of the work performed during the remedial action.

3.1.1 Daily and Weekly Construction Reports

The CQA Observer will complete a daily summary report of each day's construction activities. The daily construction report will contain, at a minimum, the following information:

- Date, project name, location, and the number and names of people onsite.
- Time that work starts and ends, in addition to the time of work stoppages related to inclement weather, or insufficient equipment or personnel or other reasons.
- Data on weather conditions, including temperature, humidity, wind direction and speed, cloud cover, and precipitation.
- Summary information regarding community air monitoring results.
- Contractor's workforce, equipment, and materials delivered to or removed from the job site.
- Chronological description of work in progress, including notices to or requests from the Contractor and/or installer.
- A description of any health and safety issues.
- Results of testing performed onsite by the CQA Personnel.
- Problem/deficiency identification and documentation describing corrective actions taken for field problems and nonconformance with this plan.

- A listing of laboratory samples collected, marked, and delivered to the CQA/CQC Laboratory, including a Chain of Custody (COC) form for all samples from the field to the laboratory and a waybill receipt of accepted sample shipment by Federal Express or courier.
- A record of communications with other onsite parties, outside companies, regulatory agencies, or consultants regarding the day's construction activities.
- A record of calibrations or standardizations performed on field testing equipment, including actions related to the results of recalibrations.

Weekly construction reports will be prepared covering construction work performed from Monday through Friday of the preceding week. The weekly construction reports will include a summary of work completed in the week, proposed site activities for the next week, and photographs showing work in progress. The weekly construction progress reports will be submitted in an electronic format to Mr. David Schnelzer, Bayer's project manager at david.schnelzer@bayer.com for review. Following approval, the reports will be finalized and sent to representatives NYSDEC, NYSDOH, Bayer, the Engineer, and Contractor.

3.1.2 Problem/Deficiency Identification and Corrective Action Documentation

Daily construction reports prepared by the CQA Observer will include documentation of problems and/or deficiencies noted during construction (e.g., when construction material or activity is observed or tested that does not meet the requirements set forth in this plan), and corrective action employed by the Contractor to address the problems or deficiencies. The documentation reports will be cross-referenced to the reports, data sheets, forms, and checklists that contain data or observations leading to the determination of a problem or deficiency. Problem and deficiency identification and corrective action documentation may include the following information:

- A description of the problem or deficiency, including reference to supplemental data or observations related to the determination of the problem or deficiency.
- Location of the problem or deficiency, including how and when the problem or deficiency was discovered.
- The corrective action taken for resolving the problem or deficiency. If the corrective action has already been implemented, observations and documentation showing that the problem or deficiency was resolved should be included. If the problem or deficiency

has not been resolved by the end of the day upon which it was discovered, the documentation will state that the deficiency was unresolved at the end of the day.

If the problem or deficiency has not been resolved, then Bayer and the Engineer will discuss the corrective actions necessary to resolve the problem or deficiency as soon as possible.

3.1.3 Health and Safety Accident Reports

In the event of any accident occurring on-site during the remedial project, the Project Manager, CQA Engineer, and CQA Officer will be contacted. Accident report sheets will be attached to the Health and Safety Plans (HASPs) and available in the field project trailer.

3.1.4 Weekly Erosion and Sediment Control Inspection Reports

The Contractor will complete a weekly inspection report that summarizes the results of erosion and sediment control inspections (as described below in subsection 4.2). The weekly erosion and sediment control inspection reports will contain, at a minimum, the following information:

- Date and time of inspection.
- Name and title of person(s) performing inspection.
- A description of the weather and soil conditions (e.g., dry, wet, saturated) at the time of the inspection.
- A description of the condition of the runoff at all points of discharge from the construction site. This will include identification of any discharges of sediment from the construction site, discharges from conveyance systems (i.e., pipes, culverts, and ditches), and overland flow.
- A description of the condition of all natural surface water bodies located within (or immediately adjacent to) the boundaries of the construction site, which receive runoff from disturbed areas. This will include identification of any discharges of sediment to the surface water body.
- Identification of all erosion and sediment control practices that need repair or maintenance.

- Identification of all erosion and sediment control practices and permanent stormwater controls, which were not installed properly or are not functioning as designed and need to be reinstalled or replaced.
- Description and sketch of areas that are disturbed at the time of the inspection and areas that have been stabilized (temporary and/or final) since the last inspection.
- Description of the current phase of construction, including installation of permanent stormwater management features.
- Corrective action(s) that must be taken to install, repair, replace, or maintain erosion and sediment control practices and to correct deficiencies identified with the construction of the permanent stormwater management practice(s).
- Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The qualified inspector will attach color photographs to the inspection report. The qualified inspector will also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The qualified inspector will attach color photographs to the inspection report that documents the completion of the corrective action.

An electronic copy of weekly inspection reports will be provided to the Engineer and/or the Bayer's Representative within two business days following the inspection. An example weekly Erosion and Sediment Control Inspection Report is included in Attachment A.

3.1.5 Transportation Log

The CQA Observer(s) will prepare a transportation log to record all loads of solid or liquid waste that are transported off-site. The transportation log will remain in the office during the remedial activities.

3.1.6 Photographic Documentation

The CQA Observer(s) will document observations, problems, deficiencies, and work in progress by taking digital photographs. Prior to the start of work, the Engineer will collect pre-construction photographs of the site to show existing conditions. During construction activities, the Engineer will collect photographs of construction activities to include, but not be limited to, erosion and sedimentation controls, material staging areas, excavation

sidewall support systems, and final removal limits for each excavation. Following completion of work, the Engineer will collect post-construction photographs of the

site to show final conditions. The photographs will include a date stamp and be filed according to date and unique, sequential photo numbers.

3.1.7 Final Engineering Report

A Final Engineering Report will be prepared at the end of construction. At a minimum, the report will contain the information identified in Section 4 of the RD.

3.1.8 Construction Submittals

The Contractor shall prepare and submit, to the Engineer, two hard copies and an electronic copy of all submittals required in the RD. Information contained in the Contractor's submittals that is not applicable to the specification furnished should be clearly lined out or deleted. The Contractor's submittals must be easily legible, clean, and clearly reproduced.

All required submittals shall be reviewed by the Engineer for conformance with the requirements presented in the RD. The Contractor will not be permitted to perform any activity that directly or indirectly involves the item or items covered by a submittal until a "reviewed" or "reviewed and noted" stamp is provided by the Engineer.

The Engineer's review shall in no way be construed as permitting departure from the RD, except where the written request by the Contractor and written acceptance by the Engineer and Bayer for such departure is provided. The Engineer's review does not relieve the Contractor of any responsibility to comply with applicable laws, rules, regulations, or agreements. The Engineer will mark each submittal with a stamp to indicate the following:

1. "Reviewed" if no objections are observed or comments made.
2. "Reviewed and Noted" if minor objections, comments, or additions are made but re-submittal is not necessary.
3. "Resubmit" if the objections, comments, or additions are extensive. In this case the Contractor shall revise and resubmit the items for review by the Engineer within five days of receiving comments on the original submittal.

4. "Rejected" if the submittal does not comply, even with reasonable revision, with contract conditions. In this case, the Contractor shall resubmit to the Engineer within five days a new or modified supplemental submittal that meets the scope and intent of the work specified herein.
5. "For Your Information" if a submittal does not require the Engineer's review and is being filed for informational purposes only (this code is generally used in acknowledging receipt of field conformance test reports and HASPs).

3.2 Project Meetings

Daily, weekly, and monthly site safety inspections and project coordination/progress meetings may be attended by a NYSDEC representative for the duration of the construction activities. A brief description of the site meetings and inspections/reviews to be conducted are presented in the RD.

4. Pre-Construction Activities/Mobilization

4.1 General

This section describes the construction and testing procedures for the activities that will take place prior to the start of the remedial action, including: erosion and sediment control measure installation; and material staging, containment, and decontamination area construction.

4.2 Erosion and Sediment Control Measures

Prior to the start of the remedial action, erosion and sediment control measures will be constructed/installed/placed by the Contractor and/or site Owner in general accordance with the RD.

CQA Observations

The CQA Observer(s) will document, through visual observations, that erosion and sediment control measures are constructed and maintained in accordance with the RD.

4.3 Material Staging, Containment, and Decontamination Areas

Prior to the start of the remedial action, the Contractor will construct remedial support areas including, but not limited to, material staging, containment, and equipment/personnel decontamination areas. The Contractor will be responsible for submitting to the Engineer a figure indicating the proposed locations of material staging, containment, and decontamination areas for approval prior to initiating material excavation activities.

CQA Observations

The CQA Observer(s) will observe that the material staging, containment, and decontamination areas are constructed in accordance with the RD, and are sloped and equipped with a sump to collect liquids.

5. Excavation

5.1 General

Excavation activities will be performed by the Contractor in accordance with the RD. All removed soil, concrete, debris, and water will be handled in accordance with the RD.

5.2 Soil Excavation

Soil excavation will be performed in general accordance with the following Technical Specification Sections:

- Section 01160 – Survey Control.
- Section 02201 – Earthwork.

The excavation areas are shown on the Design Drawings.

CQA Observations

The CQA Observer(s) will observe excavation activities to: 1) document that they are being performed in accordance with the RD; and 2) report non-conformances to the CQA Engineer. During excavation activities, the CQA Observer(s) will also observe and document the effectiveness of dewatering activities.

Throughout excavation activities, the surveyor (contracted by the Contractor) will measure the excavation elevations, and the CQA Observer(s) will document whether the appropriate removal elevations have been achieved.

The CQA Observer(s) will document number, location and depth of verification samples. During sampling activities, the CQA Observer(s) will document whether the verification sampling is carried out in conformance with the RD.

5.3 Excavation and Material Dewatering

Excavation and Material dewatering will be completed in general accordance with the following Technical Specification Sections:

- Section 02201 – Earthwork.

CQA Observations

The CQA Observer(s) will observe and document that the dewatering system is functioning properly and that water obtained from the excavation and material staging areas is being handled in accordance with the RD.

6. Sampling

6.1 General

Soils and water samples will be collected in support of the remedial activities in general accordance with the Remedial Design and Quality Assurance Project Plan (QAPP) included as appendices to the *RCRA Facility Assessment/RCRA Facility Investigation Work Plan (ENSR, December 2003)*. The Contractor will directly hire a certified laboratory under the New York State Department of Health (NYSDOH) Environmental Laboratory Accreditation Program (ELAP) for analysis of all samples.

6.2 Sample Collection

Samples will be collected and placed in pre-cleaned sample containers provided by the laboratory performing the analysis. All necessary preservatives (if needed) will be added to the sample containers at the laboratory prior to being shipped to the Site. Samples will be stored at 4° Celsius until delivered to and analyzed by the laboratory. When collecting composite samples for volatile organic analysis [if any such additional analysis is required by the disposal facility (ies)], volatilization will be minimized by covering the sample compositing container and placing it within a cooler filled with ice between grab samples.

CQA Observations

During sample collection, the CQA Observer(s) will record the following and note other observations in the daily construction report:

- Time of sample collection.
- Location of sample collection.
- Sampling collection procedures.
- Purpose of sample collection.

6.3 Sample Custody, Identification and Tracking

Samples will be delivered to the laboratory by same day courier or overnight delivery in sealed coolers with ice. Each sample collected during the project will have a unique identification number. This number, date of collection and type of analysis will be placed on each sample contained after the sample is collected.

CQA Submittals

All samples from the point of sampling to the delivery of the samples to the laboratory will be accompanied by a COC. The COC will include the sample identification, location, time and date collected, number of containers collected, type(s) of analysis, and any other special remarks for each sample. The COC will be signed by each custodian of the samples.

6.4 Quality Control

Upon sample receipt, laboratory personnel will be responsible for sample custody. The laboratory sample custodian will verify sample integrity and compare the cooler contents against the COC. The Engineer will be immediately notified if a sample container is broken or leaking, or if there are any labeling discrepancies or descriptive errors.

6.5 Decontamination Procedures

The following decontamination procedures will be implemented for all non-disposable sample equipment before being re-used:

- Equipment will be washed thoroughly with a non-phosphate detergent.
- The equipment will then be rinsed with distilled water.
- If the equipment is being used for the collection of samples for polychlorinated biphenyl (PCB) analysis, the equipment will then be rinsed with a reagent grade hexane solution diluted with distilled water.
- If the equipment is being used for the collection of samples for volatile organic compound (VOC) or semi-volatile organic compound (SVOC) analysis, the equipment will then be rinsed with a reagent grade methanol solution diluted with distilled water.

- If the equipment is being used for the collection of samples for metals analysis, it will be rinsed with a 10% reagent grade nitric acid solution.
- Lastly, the equipment will be will be rinsed with distilled water.

After decontamination, equipment will be carefully stored to avoid contamination between sampling events.

6.6 Personal Protective Equipment

Personal Protective Equipment (PPE) will be worn in accordance with the project HASP during sample collection.

6.7 Field Instruments and Equipment

Equipment instruments, tools, gauges, and other items requiring preventative maintenance will be serviced in accordance with the manufacturer's recommendations. All field equipment service will be conducted by qualified personnel. Each piece of field equipment will be inspected for operation before any field sampling. If the equipment is not operational, it must be repaired prior to use. All equipment with required charging will be fully charged at the start of the project. Any non-operational/non-repairable field equipment will be replaced.

7. Decontamination Activities

7.1 General

The Contractor will decontaminate (as necessary) all personnel and equipment that has come into contact with excavated materials at the Site in accordance with the RD. The Contractor will conduct decontamination of personnel and equipment within constructed decontamination area(s).

7.2 Decontamination Activities

As part of everyday activities, the Contractor will provide personnel decontamination area (as specified in the Contractor's HASP). The personnel decontamination area (within the contamination reduction zone) will include those facilities necessary to decontaminate personnel upon exit of the work area (Exclusion Zone), in accordance with the Contractor's HASP, and in accordance with local, state, and federal laws and regulations.

The Contractor will establish procedures for decontamination of all vehicles and equipment used for construction activities. These procedures will be reviewed by Bayer and the Engineer prior to initiation of construction activities. Visual observation of the equipment will be performed by the Contractor. This observation will occur while the equipment is positioned in the Equipment Decontamination Area. Any visible soils or other debris will be promptly removed and disposed in a manner consistent with materials excavated.

Unless otherwise directed by Bayer/CQA Engineer, any equipment to be taken offsite will be subject to final visual observation and decontamination (if necessary) at a designated Equipment Decontamination Area. In general, this area will consist of an impermeable barrier which shall be sloped to a collection sump. The Equipment Decontamination Area(s) will be constructed in accordance with the RD. Precautions shall be taken to limit contact between the equipment, personnel performing the decontamination activities, and any decontamination liquids that may accumulate in the decontamination area. The Contractor shall be responsible for constructing and maintaining the decontamination area to accommodate all loads, equipment, and migration scenarios. The Contractor will dismantle and properly dispose all materials associated with the decontamination area and will restore the area to its original conditions.

The extent and method of decontamination will be at the discretion of the Contractor; however, equipment and materials will be observed by the CQA Observer prior to its departure from the Equipment Decontamination Area. In addition, Bayer and/or the CQA Observer reserves the right to require additional decontamination if deemed necessary.

Wash water, solids, and other materials generated during equipment cleaning will not contact native soils and existing facilities, and will be collected by the Contractor and placed into designated containers. Disposal of collected wash water, solids, and other materials shall be in accordance with the RD.

Personnel engaged in vehicle decontamination will use personal protective equipment including disposable clothing in accordance with the Contractor's HASP.

Should vehicles be required to transport materials over site roadways or roadways traversed by local traffic, it is imperative that these roads be kept free of any potentially impacted as well as non-impacted soils due to Contractor's operations. All Contractor vehicles will be carefully loaded to avoid potential contamination of areas exterior to the excavation areas.

CQA Observations

The CQA Observer(s) will observe decontamination activities to document that the following activities are completed in accordance with the RD and Contractor's HASP, including (but not limited to):

- Project equipment (including excavation equipment, trucks, pumps, hand tools, etc.) that comes in contact with excavated materials is decontaminated prior to demobilization from the Site and prior to handling non-impacted material.
- No visible soil, sediment, debris, or stains are present on the equipment surfaces (to the satisfaction of the Engineer).
- Equipment (e.g., pumps) is flushed using clean water and appropriate cleaning agents, as necessary (to the satisfaction of the Engineer).

- Solids and other materials generated during equipment cleaning requiring offsite treatment/disposal are collected and placed into appropriate waste containers for characterization (as appropriate) and offsite disposal in accordance with the RD.

8. Waste Handling, Treatment, and Disposal

The Contractor shall arrange for proper handling, treatment, and disposal of waste materials including, but not limited to, soil, water, debris, and miscellaneous wastes generated during the remedial activities in accordance with the RD and all applicable federal, state, and local regulations.

CQA Observations

The CQA Observer(s) will observe implementation of the remedial activities at the Site to document that activities are completed in accordance with the above.

CQA Submittals

Contractor submittal requirements for waste handling, treatment, and disposal activities are presented in the RD and include, but are not limited to, the following:

- Waste Transportation Permit(s) (obtained in accordance with Title 6 of the Official Compilation of Codes, Rules, and Regulations [6 NYCRR] Part 364) for waste transporter(s) hauling waste materials.
- Bills of lading/Non-Hazardous Waste Manifests.
- Contracts.
- Trucking logs.

8.1 Loading of Materials for Transportation

Materials will be loaded with an excavator into dump trucks for transportation to permitted disposal facilities. To retain any spilled materials polyethylene sheeting will be placed between the waste transport container (dump truck, trailer, rolloff, gondola rail car, etc.) and excavations or stockpiles. Following completion of loading for each container, the spilled material will be added to back into the stockpile or excavation.



Construction Quality Assurance Plan

Bayer MaterialScience LLC
125 New South Road
Hicksville, NY

CQA Observations

The CQA Observer(s) will visual inspect the loading area to confirm that impacted material that collects on the polyethylene sheeting is removed from the area.

9. Site Restoration/Demobilization

9.1 General

Following completion of excavation activities, the Contractor shall backfill each excavation area, restore each area, and demobilize labor, equipment, and materials from the Site in accordance with the RD. Site restoration activities shall include repairing topsoil/vegetation and pavement (to the satisfaction of the site owner) and completing final grading of disturbed areas. Site restoration and demobilization activities shall be completed and tested as indicated below.

9.2 Backfilling

Excavation areas will be backfilled with imported clean fill and certain excavated materials deemed suitable (through visual confirmation and existing laboratory analytical data) for onsite reuse (e.g., shallow soils removed from the portions of former excavations that were backfilled in 2009, areas of soil containing PCBs and SVOCs at concentrations greater than surface soil cleanup levels but less than subsurface soil cleanup levels) in accordance with the RD. The Contractor will select an appropriate offsite backfill source(s) and provide the analytical data for that source(s) to the Engineer at least three (3) weeks prior to bringing the selected material onsite. If sample results show that the material does not meet the requirements, the Contractor must identify a new source for the material and provide the required data report for the new source of material prior to the use of such material onsite.

CQA Observations

The CQA Observer(s) will observe the backfilling activities in the excavation areas to document that the following activities are completed in accordance with the RD, including (but not limited to):

- Backfilling is done in accordance with Technical Specification Section 02201 (Earthwork) and Section 02206 (Select Fill).
- Material is placed and compacted in 1.5-foot lifts in accordance with the RD.
- In-place density tests are performed at a frequency of one per 2,500 square feet for each lift placed or to reliably and consistently determine the compaction level being achieved.

- Compacted surface of material is smooth and free of any loose stones, protrusions, and other sharp objects or foreign matter.
- Material placed within an excavation area contains the optimum moisture content.
- The minimum field requirements are met for the compaction of backfill material.
- Any settlement occurring in the backfilled areas is refilled and compacted.

Contractor CQA Submittals

- Name and location of the selected offsite backfill source.
- Samples and Sieve Analysis (ASTM D422) reports of the proposed backfill source.

Results of analytical testing for Target Compound List (TCL) VOCs, TCL SVOCs, PCBs, pesticides/herbicides, and Target Analyte List (TAL) inorganic constituents will be provided by the Engineer. Prior to backfill importation to the Site, test results must demonstrate that the offsite materials meet the lower of the commercial use and groundwater protection soil cleanup objectives presented in 6 NYCRR Part 375-6.8(b), in accordance with Technical Specification – Section 02206 (Selected Fill).

9.3 Surface Restoration

Following backfilling activities, excavation areas will be restored to the final grades and conditions indicated in the RD.

CQA Observations

Prior to the start of construction, the CQA Observer(s) will obtain photographic documentation of pre-construction conditions in all areas that are indicated to be restored to pre-construction conditions within the RD.

During restoration activities, the CQA Observer(s) will observe surface restoration activities to document that the following activities are completed in accordance with the RD.

9.4 Demobilization

The Contractor will demobilize from the Site following completion of all remediation activities. Demobilization activities will include, at a minimum, the following:

- Dismantling the work area(s), staging area(s), containment area(s), and equipment decontamination area(s).
- Disposing of material staging, containment, and decontamination area construction materials in accordance with the RD.
- Cleaning/decontaminating equipment and construction-related materials prior to removal from the Site.
- Removing from the Site, all materials and equipment.

CQA Observations

The CQA Observer(s) will observe the Contractor demobilization activities to document that the following activities were completed in accordance with the RD:

- Equipment and construction-related materials have been cleaned/decontaminated prior to demobilization from the Site.
- Work area(s), material staging area(s), containment area(s), and equipment and personnel decontamination area(s) have been dismantled.
- All Contractor materials and equipment have been removed from the Site.

Attachment A

Example Erosion and Sediment
Control Inspection Report

EROSION AND SEDIMENT CONTROL PLAN - INSPECTION REPORT

**BAYER MATERIALSCIENCE LLC
125 NEW SOUTH ROAD
HICKSVILLE, NEW YORK**

Name/Title: _____

Date/Time: _____

Weather and Site Conditions: _____

____ WEEKLY ____ RAIN EVENT ____ OTHER

Measures & Controls	In Conformance with Design Standards	Effective Pollutant Control Practice
Construction Entrance	YES / NO / NA	YES / NO / NA
Silt Fence	YES / NO / NA	YES / NO / NA
Soil Stabilization	YES / NO / NA	YES / NO / NA
Straw Bales	YES / NO / NA	YES / NO / NA
Solid Waste Disposal	YES / NO / NA	YES / NO / NA
Equipment Fueling / Storage	YES / NO / NA	YES / NO / NA
Hazardous Materials Storage	YES / NO / NA	YES / NO / NA
Hazardous Waste	YES / NO / NA	YES / NO / NA
Sanitary / Septic	YES / NO / NA	YES / NO / NA
Catch Basins	YES / NO / NA	YES / NO / NA
Offsite Storage Erosion Controls	YES / NO / NA	YES / NO / NA
Rock Check Dams	YES / NO / NA	YES / NO / NA
Other:	YES / NO / NA	YES / NO / NA

NOTES: (Explain each "NO": circled above)

Provide a description or photographs of all runoff from site (e.g. overland flow, culverts, and ditches):

Provide a description or photograph of receiving water bodies, including identification of any discharges of sediment to adjacent water bodies:

Describe or sketch any disturbed areas and/or areas stabilized since the last inspection:

Insert photographs (with time stamp) of all practices requiring corrective action and those measures repaired from the previous inspection.

RECOMMENDED CORRECTIVE ACTION(S):

INSPECTOR'S SIGNATURE:

Signature: _____



Appendix C

Citizen Participation Plan



New York State Department of Environmental Conservation

State Superfund Program

Citizen Participation Plan for **Bayer MaterialScience LLC** **(former Hooker Chemical/Occidental Chemical** **Corporation/OXY/RUCO Polymer Corp.)** **Operable Unit Number: 04** **NYSDEC Site #130004**

125 New South Road
Hicksville
Nassau County, New York

February 2013

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* * * * *

Note: The information presented in this Citizen Participation Plan was current as of the date of its approval by the New York State Department of Environmental Conservation. Portions of this Citizen Participation Plan may be revised during the site's investigation and cleanup process.

Responsible Party: **Bayer MaterialScience LLC**
Site Name: Bayer MaterialScience (former Hooker Chemical/Occidental Chemical Corporation/OXY/RUCO Polymer Corp.) Site
Site Address: **125 New South Road, Hicksville, NY**
Site County: **Nassau County**
Site Number: **130004**

1. What is New York's State Superfund Program?

New York's State Superfund Program (SSF) identifies and characterizes suspected inactive hazardous waste disposal sites. Sites that pose a significant threat to public health or the environment, such as the site identified above, undergo a process of investigation, evaluation, cleanup, and monitoring.

The New York State Department of Environmental Conservation (NYSDEC) administers the SSF Program with assistance and input from the New York State Department of Health (NYSDOH). When the parties responsible for the contamination of the site are known ("responsible parties"), they often pay for or perform the investigation and evaluation of cleanup options under an enforceable consent order. At sites where responsible parties cannot be found or are unable or unwilling to fund an investigation, the State pays for the investigation and may try to recover costs from a responsible party after the investigation and cleanup are complete.

The SSF program contains investigation and cleanup requirements, ensuring that cleanups protect public health and the environment. For more information about the SSF program, go online at: <http://www.dec.ny.gov/chemical/8439.html>.

2. Citizen Participation Activities

Why NYSDEC Involves the Public and Why It Is Important

NYSDEC involves the public to improve the process of investigating and cleaning up contaminated sites, and to enable citizens to participate more fully in decisions that affect their health, environment, and social well being. NYSDEC provides opportunities for citizen involvement and encourages early two-way communication with citizens before decision makers form or adopt final positions.

Involving citizens affected and interested in site investigation and cleanup programs is important for many reasons. These include:

- Promoting the development of timely, effective site investigation and cleanup programs that protect public health and the environment;
- Improving public access to, and understanding of, issues and information related to a particular site and that site's remedial process;
- Providing citizens with early and continuing opportunities to participate in NYSDEC's site investigation and cleanup process;

- Ensuring that NYSDEC makes site investigation and cleanup decisions that benefit from input that reflects the interests and perspectives found within the affected community; and
- Encouraging dialogue to promote the exchange of information among the affected/interested public, State agencies, and other interested parties that strengthens trust among the parties, increases understanding of site and community issues and concerns, and improves decision making.

This Citizen Participation (CP) Plan provides information about how NYSDEC will inform and involve the public during the investigation and cleanup of the site identified above. The public information and involvement program will be carried out with assistance, as appropriate, from the responsible party.

Project Contacts

Appendix A identifies NYSDEC project contact(s) to whom the public should address questions or request information about the site's investigation and cleanup program. The public's suggestions about this CP Plan and the CP program for the site are always welcome. Interested people are encouraged to share their ideas and suggestions with the project contacts at any time.

Locations of Reports and Information

The locations of the reports and information related to the site's remedial program also are identified in Appendix A. These locations provide convenient access to important project documents for public review and comment. Some documents may be placed on the NYSDEC web site. If this occurs, NYSDEC will inform the public in fact sheets distributed about the site and by other means, as appropriate.

Site Contact List

Appendix B contains the site contact list. This list has been developed to keep the community informed about, and involved in, the site's investigation and cleanup process. The site contact list will be used periodically to distribute fact sheets that provide updates about the status of the project. These will include notifications of upcoming activities at the site (such as fieldwork), as well as availability of project documents and announcements about public comment periods. The site contact list includes, at a minimum:

- Chief executive officer and planning board chairperson of each county, city, town and village in which the site is located;
- Residents, owners, and occupants of the site and properties adjacent to the site;
- The public water supplier which services the area in which the site is located;
- Any person who has requested to be placed on the site contact list;
- The administrator of any school or day care facility located on or near the site for purposes of posting and/or dissemination of information at the facility; and
- Location(s) of reports and information.

The site contact list will be reviewed periodically and updated as appropriate. Individuals and organizations will be added to the site contact list upon request. Such requests should be submitted to the NYSDEC project contact(s) identified in Appendix A. Other additions to the site contact list may be made at the discretion of the NYSDEC project manager, in consultation with other NYSDEC staff as appropriate.

CP Activities

The table at the end of this section identifies the CP activities, at a minimum, that have been and will be conducted during the site's investigation and cleanup program. The public is informed about these CP activities through fact sheets and notices distributed at significant points during the program. Elements of the investigation and cleanup process that match up with the CP activities are explained briefly in Section 4.

- **Notices and fact sheets** help the interested and affected public to understand contamination issues related to a site, and the nature and progress of efforts to investigate and clean up a site.
- **Public forums, comment periods and contact with project managers** provide opportunities for the public to contribute information, opinions and perspectives that have potential to influence decisions about a site's investigation and cleanup.

The public is encouraged to contact project staff at any time during the site's investigation and cleanup process with questions, comments, or requests for information.

This CP Plan may be revised due to changes in major issues of public concern identified in Section 3 or in the nature and scope of remedial activities. Modifications may include additions to the site contact list and changes in planned citizen participation activities.

Technical Assistance Grant

The site identified above poses a significant threat to public health or the environment, so that a qualifying community group may apply for a Technical Assistance Grant (TAG). The purpose of a TAG is to provide funds to the qualifying community group to obtain independent technical assistance. This assistance helps the TAG recipient to interpret and understand existing environmental information about the nature and extent of contamination related to the site and the development/implementation of a remedy.

An eligible community group must certify that its membership represents the interests of the community affected by the site, and that its members' health, economic well-being, or enjoyment of the environment may be affected by a release or threatened release of contamination at the site.

For more information about TAGs, go online at: <http://www.dec.ny.gov/regulations/2590.html>.

Note: The table identifying the citizen participation activities related to the site's investigation and cleanup program follows on the next page:

Citizen Participation Requirements (Activities)	Timing of CP Activity(ies)
<p align="center">Before Start of Remedial Investigation (RI):</p> <ul style="list-style-type: none"> • Prepare site contact list • Establish document repository • Prepare Citizen Participation (CP) Plan • Place approved RI Work Plan in document repository • Distribute fact sheet to site contact list that announces availability of RI Work Plan and describes upcoming RI field work 	
<p align="center">When NYSDEC Approves Remedial Investigation Report:</p> <ul style="list-style-type: none"> • Distribute fact sheet to site contact list that describes RI results • Place approved RI Report in document repository 	
<p align="center">When NYSDEC Releases Proposed Remedial Action Plan (PRAP):</p> <ul style="list-style-type: none"> • Place PRAP in document repository • Distribute fact sheet to site contact list that describes PRAP and announces 30-day comment period and public meeting • Conduct 30-day public comment period • Hold public meeting about PRAP 	
<p align="center">When NYSDEC Issues Record of Decision (ROD):</p> <ul style="list-style-type: none"> • Place ROD in document repository • Distribute notice to site contact list that announces availability of ROD. ROD includes responsiveness summary of significant comments about PRAP 	
<p align="center">Before Start of Remedial Action:</p> <ul style="list-style-type: none"> • Distribute fact sheet to site contact list that describes upcoming remedial action 	
<p align="center">When NYSDEC Issues Certificate of Completion (COC) or Similar Site Closure Document:</p> <ul style="list-style-type: none"> • Place COC in document repository • Distribute fact sheet to site contact list that announces that clean up action has been completed and that summarizes the Final Engineering Report • Distribute fact sheet to site contact list that announces issuance of COC 	

3. Major Issues of Public Concern

This section of the CP Plan identifies major issues of public concern that relate to the site. Additional major issues of public concern may be identified during the course of the site's investigation and cleanup process.

Based on the Applicant and NYSDEC experience with other remediation projects, several issues of public concern have been identified for the site and related project work, including:

- Sufficient notification to the community regarding site work;
- Health and safety of residents who live near the site;
- Disruption to quality of life during construction from factors such as truck traffic, odors, noise, dust, and construction scheduling;
- Impacts to properties and businesses during construction; and
- Need for NYSDEC oversight during remediation.

Additional issues of public concern may also be identified during the design and implementation phase of work.

4. Site Information

Site Location

The site is a triangular-shaped parcel located just southeast of the intersection of New South Road and Commerce Place in the City of Hicksville, New York. The site is bordered to the north by industrial properties, to the south and west by the Long Island Railroad (LIRR) and commercial/industrial properties, and to the east by a commercial building complex owned by Simone Development and a complex owned by Northrop Grumman Corporation (Northrop Grumman). The site is approximately 0.06 miles east of a residential area and 0.4 miles east of a community baseball field. Agricultural areas were not identified in the vicinity of the site, and the closest body of water is South Oyster Bay, approximately 12 miles south of the site. Appendix C contains a map identifying the site location.

Site Description

The 14-acre site originally consisted of several buildings that were used in the manufacture of various plastics and related chemicals. These buildings and support facilities included the following:

- The Plant 1 building and adjoining warehouse that were used for production of polyester from 1982 until 2002.

- The Plant 2 building that housed the production of polyester as polyurethane in solvent and polyurethanes in water.
- The Plant 3 building that was used as a warehouse for accumulation of materials generated in connection with manufacturing operations.
- Several aboveground tanks and silos that were used to store raw materials used in manufacturing operations.
- The Pilot Plant that was used to produce small volumes of solid polyurethane and polyesters.
- The Administration building that contained offices and non-hazardous storage

A large asphalt-paved parking area is located in the western portion of the site, and a series of rainwater runoff sumps/recharge basins are located along the eastern property boundary. A railroad spur enters the northwestern portion of the site and extends eastward beyond the former Plant 2 building. Access to the site is limited by a chain-link fence and locking gates.

Aside from the Administration Building, all other buildings and aboveground structures formerly used in connection with site operations were demolished down to their floor slabs in 2003. The building floor slabs and foundations were demolished and removed between December 2005 and February 2006 in accordance with the NYSDEC-approved Demolition Work Plan.

History of Site Use, Investigation, and Cleanup

The site was originally developed in 1945 and was used for chemical manufacturing until closure in 2002. The main products produced at the site were polyester resin, polyurethane dispersions, polyvinyl chloride (PVC), latex, and ester.

The site was originally owned/operated by the Rubber Company of America. Hooker Chemical and Plastic Corporation (HCPC) purchased the Rubber Company of America in the 1950s, and HCPC was subsequently purchased by Occidental Chemical Corporation (OCC) in 1966. OCC owned and operated the site until it was sold to RUCO Polymers in 1982.

From 1951 to 1975, three onsite sumps were used to dispose of wastewaters from PVC, latex, and ester manufacturing processes. Wastewaters contained resin solids and various “chlorinated solvents” (a group of chemicals used directly in manufacturing processes or cleanup) consisting primarily of vinyl chloride, trichloroethylene (TCE), tetrachloroethylene (PCE), and vinyl acetate. Styrene and butadiene were also discharged from the latex process. Two sumps received wastewater containing an unknown amount of mixed glycols and alcohols from the ester processes at Plant 1. From 1946 to 1978, the Pilot Plant used a heat transfer fluid that contained polychlorinated biphenyls (PCBs), which belong to a broad family of man-made organic chemicals known as chlorinated hydrocarbons. PCBs were used in a wide variety of applications (including heat transfer fluid) due to their non-flammability, chemical stability, high boiling point, and electrical insulating properties, but were banned from manufacture in 1979 due to

health concerns. The incidental release of the heat transfer fluid to the ground resulted in PCB soil contamination.

The site was designated a Superfund site by the United States Environmental Protection Agency (USEPA) and placed on the National Priorities List (NPL) established under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) in 1984. Various soil and groundwater investigations were initiated in the mid-1980s and initially focused on: (1) former discharge of plant wastewater containing volatile organic compounds (VOCs) and heavy metals into onsite recharge basins; and (2) past release of heat transfer fluid containing PCBs. These investigations lead to the designation of three separate “Operable Units” that were addressed by the remedial activities described further below.

Ruco Polymer Corporation (RUCO) purchased the facility from HCPC/OCC in 1982. The purchase agreement indemnified RUCO for environmental liabilities associated with facility operations conducted prior to the sale. RUCO operated an onsite Resource Conservation and Recovery Act (RCRA) interim status drum storage facility in the early 1980s, which formed the basis for a RCRA Facility Investigation (RFI) and subsequent interim cleanup actions referred to as interim corrective measures (ICMs).

RUCO was acquired by Sybron Chemical Corporation (Sybron) in 1988, and Sybron became the facility owner. Sybron was, in turn, acquired by Bayer Corporation in 2000. Facility ownership was transferred from Bayer Corporation to Bayer Polymers LLC in 2003 as part of a corporate restructuring. As part of further restructuring, Bayer Polymers LLC became Bayer MaterialScience LLC (Bayer) in 2004. Bayer operated the facility for a total of two years.

Based on economic evaluation, manufacturing operations were discontinued during 2002 and transferred to existing Bayer facilities in Georgia and West Virginia. Bayer entered into a RCRA Closure Order on Consent with NYSDEC in December 2002. In an effort to prepare the site for future sale and economic redevelopment, all raw materials, products, and hazardous chemicals were removed from the site. In addition, facility equipment was decommissioned and tanks/piping were closed pursuant to applicable regulations. Asbestos-containing materials were removed and all other buildings and aboveground structures formerly used in connection with site operations (except the Administration Building) were demolished down to their floor slabs in 2003. As previously indicated, building floor slabs and foundations were demolished in 2005 and 2006 in accordance with a NYSDEC-approved Demolition Work Plan.

Operable Units

An operable unit (OU) is a portion of the remedial program for a site that for technical or administrative reasons can be addressed separately to investigate, or eliminate a release, threat of release, or exposure pathway resulting from site contamination. Operable units may address geophysical portions of a site, media specific action, specific site problems, or an initial phase of an action, or may consist of any set of actions performed over time or any actions that are concurrent but located in different parts of a site. For this site, three OUs (OU1, OU2 and OU3) are part of the USEPA Federal Superfund Program for which Records of Decision (ROD) have already been signed and the remedial action is complete or in operation, maintenance and monitoring (OMM). OU4 is part of the New York State Superfund program and is the subject of proposed remediation pursuant to a ROD issued by the NYSDEC in July 2012.

OU1 - Select Onsite Soils and Onsite Groundwater

This OU consists of soil and groundwater remediation. The soils addressed were in the southeast corner of the site where former Sump 1 and Sump 2 were located. These two drainage sumps received discharge wastewater from various processes at the site that contained elevated levels of TCE and PCE. Also, waste vinyl chloride monomer (VCM) was discharged undiluted directly into the former Sumps. The soils in the former sump area were impacted with a group of chemicals known as tentatively identified compounds (TICs). These TICs are comprised mainly of long chain glycols and acids that more readily degrade in the environment. Ultimately, some soils were excavated and transported offsite and other soils were flushed of solvents and TICs to be addressed in the groundwater as part of OU3. OU1 has been fully implemented and requires continued management for the ongoing OMM.

OU2 - PCB Soil Removal

This OU consists of soil/debris within four areas, including a “direct-spill area” in the vicinity of the Pilot Plant where heat transfer fluid was released, the area surrounding the Pilot Plant where fluid was spread by onsite truck traffic, a nearby sump/recharge basin (sump No. 3) that received surface water runoff from the vicinity of the Pilot Plant, and former soil stockpile areas east and south of the Pilot Plant. PCBs and organic constituents were the primary site-related contaminants for this OU. A ROD for OU2 was signed by the USEPA in 1990.

The ROD required excavation and offsite treatment and disposal of soils with PCBs at concentrations greater than 10 ppm. Remedial activities within OU2 were presumed to be completed in December 2001 by OCC. However, later sampling as part of the RCRA Corrective Action Program identified additional PCB impacts that are discussed under OU4.

OU3 - Offsite Groundwater

OU3 consists of groundwater impacted vinyl chloride, disposed in the southern recharge basin, which has migrated offsite. Remediation of OU3 is occurring by breaking down vinyl chloride in groundwater through biosparging technology. Additionally, other chlorinated solvents, such as PCE, TCE, along with soluble site-related compounds, TICs, that include various long chain alcohols, were discharged in OU3 and were attributable to OU1 sources. These additional OU1 compounds have migrated down gradient and will be addressed by the OU3 remedy. The

impacted groundwater not addressed through biosparging is projected to be captured by the down gradient Northrop Grumman groundwater containment system.

OU4- Onsite Soils and Soil Vapor

All onsite soils not previously addressed by the ROD issued by the USEPA for OU1 and OU2 are included in OU4. Remediation of this OU will be performed under the New York State Superfund Program and includes removal of soils contaminated with PCBs, polycyclic aromatic hydrocarbons (PAHs), and metals. An extensive amount of PCB soil removal from OU4 has already occurred as part of three separate ICMs performed between 2005 and 2009. The impacted soil excavated as part of these ICMs (approximately 15,500 tons) was transported offsite via railroad or truck to licensed disposal facilities.

As indicated above, there are currently no buildings at the site other than the Administration building. However, development of the site is planned, with construction of new buildings. Therefore, a site-wide soil gas sampling program was completed to determine the potential for soil vapor intrusion at future buildings. Measures will be required to address the potential intrusion of subsurface vapors into the new buildings.

5. Investigation and Cleanup Process

Investigation

Detailed studies of the site have already been performed by Bayer with oversight by the NYSDEC and NYSDOH. The studies consisted of a two-phase RCRA Facility Investigation (RFI) in 2004 and then multiple phases of additional investigation starting in December 2005 and continuing through July 2011. The additional investigation was initiated after visibly-stained soil was encountered during foundation demolition in the Plant 1 footprint and continued, as needed, to delineate the extent of soil found to contain PCBs, PAHs, and metals at concentrations exceeding applicable soil cleanup levels. Part of the additional investigation focused on evaluating the presence and extent of constituents of interest in soil vapor.

The NYSDOH reviewed and recommended activities that were performed during the investigation to ensure that a complete picture of potential health impacts is understood. Such activities included identifying the ways contamination can reach people, such as through direct contact, eating, drinking, or breathing.

The site investigations achieved the following goals:

- Defined the nature and extent of contamination in soil and soil vapor;
- Identified the source(s) of the contamination;
- Assessed the impact of the contamination on public health and the environment; and
- Provided information to support the development of a proposed remedy to address the contamination

The findings of the investigations are presented in the NYSDEC-approved RFI Report and follow-up documents. These documents are available for public review at the “Locations of Reports and Information” identified in Appendix A.

Interim Corrective Measures (ICMs)

ICMs are activities to control or abate threats to human health and/or the environment from releases of contaminants and/or to prevent or minimize the further spread of contamination while long-term remedies are pursued. As indicated above, three ICMs were implemented at this site. The ICMs resulted in the removal of all identified soil that contained chemical constituents at concentrations greater than the disposal threshold for a hazardous waste and allowed progress to be made toward final site cleanup.

Corrective Measures Study

A “Corrective Measures Study” (CMS) was conducted by Bayer following the investigation and ICM activities described above, with oversight by NYSDEC. The CMS used information developed during the site investigations to develop and evaluate potential final ways to clean up the remaining contamination related to the site. The CMS was equivalent to a “Feasibility Study” and evaluated a total of seven potential remedial alternatives against criteria established by NYSDEC.

Proposed Remedy

The evaluation of possible remedies ended with a recommended proposal to eliminate the threat posed by contaminants remaining at the site. NYSDEC approved this proposal, officially called a “Proposed Remedial Action Plan” (PRAP), which describes the remedy preferred by NYSDEC. The PRAP summarizes the decision that led to the recommendation of the preferred remedy by discussing each alternative and the reasons for choosing or rejecting it. The goal of any cleanup plan is to protect public health and the environment. NYSDEC presented the PRAP to the public for its review and comment during a 30-day comment period and at a public meeting held on March 20, 2012.

Selected Remedy

NYSDEC considered public comments as it selected the remedy to address contamination related to the site. The selected remedy has been described in a document officially called a “Record of Decision” (ROD). The ROD explains why the remedy was selected and responds to public comments. This document was placed in the “Locations of Reports and Information”.

Cleanup Action

Because the ROD calls for final cleanup action, the project has moved to the design phase to address the site contamination. When cleanup actions have been completed, NYSDEC will

review and approve a final engineering report that describes the cleanup actions undertaken and certifies that cleanup requirements have been achieved or will be achieved.

Certificate of Completion

Upon approval of the final engineering report, NYSDEC may issue a Certificate of Completion (COC). The COC would recognize the findings of the final engineering report. The COC would note that the cleanup program achieved a cleanup level consistent with specific categories of use for the site. The recipient of the COC would be entitled to limited liability as long as it complied with the terms of the COC, and other conditions.

A COC may be modified or revoked if, for example, the recipient does not comply with the terms of the COC, or if the recipient commits fraud regarding its certification that it has met cleanup levels.

Site Management

Site management is the last phase of the site cleanup program. This phase begins when the COC is issued. Site management may be conducted by NYSDEC, or by the responsible party under NYSDEC oversight, if contamination will remain in place. Site management incorporates any institutional and engineering controls required to ensure that the remedy implemented for the site remains protective of public health and the environment. All significant activities are detailed in a Site Management Plan.

An institutional control is a non-physical restriction on use of the site, such as a deed restriction that would prevent or restrict certain uses of the property. An institutional control may be used when the cleanup action leaves some contamination that makes the site suitable for some, but not all uses.

An engineering control is a physical barrier or method to manage contamination. Examples include: caps, covers, barriers, fences, and treatment of water supplies.

Site management also may include the operation and maintenance of a component of the remedy, such as a system that is pumping and treating groundwater. Site management continues until NYSDEC determines that it is no longer needed.

During the Site Management phase, NYSDEC may also take steps to reclassify the site or remove the site from the Registry.

Appendix A - Project Contacts and Locations of Reports and Information

Project Contacts

For information about the site's investigation and cleanup program, the public may contact any of the following project staff:

New York State Department of Environmental Conservation (NYSDEC):

Steven Scharf
Project Manager
NYSDEC Central Office
Division of Environmental Remediation
625 Broadway, 12th floor
Albany, NY 12233-7015
Phone: (518) 402-9620
sxscharf@gw.dec.state.ny.us

Bill Fonda
Citizen Participation Specialist
NYSDEC Region 1 Office
50 Circle Road
Stony Brook, NY 11790
Phone: (631) 444-0350

New York State Department of Health (NYSDOH):

Renata Ockerby
Project Manager
NYSDOH
Bureau of Environmental Exposure Investigation
Empire State Plaza
Corning Tower, Room 1787
Albany, NY 12237
Phone: (518) 402-7880
BEEI@health.state.ny.us

Locations of Reports and Information

The facilities identified below are being used to provide the public with convenient access to important project documents:

Hicksville Public Library

169 Jerusalem Ave

Hicksville, NY 11801

Phone: (516) 931-1417

Hours: Monday- Thursday 9:00 a.m. – 9:00 p.m.

Friday and Saturday 9:00 a.m. – 5:00 p.m.

Sunday 1:00 p.m. - 5:00 p.m. (October- May)

NYSDEC Central Office

625 Broadway, 12th floor

Albany, NY 12233

Attn: Steven Scharf

sxscharf@gw.dec.state.ny.us

Phone: (518) 402-9620

Hours: Monday- Friday 8:30 a.m. – 4:30 p.m. (call for appointment)

NYSDEC Region 1 Office

50 Circle Road

Stony Brook, NY 11790

Attn: Katy Murphy

khmurphy@gw.dec.state.ny.us

Phone: (631) 444-0350

Hours: Monday- Friday 8:30 a.m. – 4:30 p.m. (call for appointment)

Additional site details, including environmental and health assessment summaries, are available on NYSDEC's website at:

<http://www.dec.ny.gov/cfmx/extapps/derexternal/haz/details.cfm?pageid=3&progno=130004>

Information on the previous and ongoing cleanups through the United State Environmental Protection Agency (USEPA) can be found at:

<http://www.epa.gov/region02/superfund/npl/0201477c.pdf>

Project documents are also available on the NYSDEC website at:

<http://www.dec.ny.gov/chemical/8431.html>

Appendix B - Site Contact List

Public Officials

Town Supervisor

John Venditto
Oyster Bay Town Hall
54 Audrey Avenue
Oyster Bay, NY 11771

Oyster Bay Town Council

The Honorable John Venditto, Supervisor
54 Audrey Ave.
Oyster Bay, NY 11771

The Honorable Joseph D. Muscarella, Councilman
54 Audrey Ave.
Oyster Bay, NY 11771

The Honorable Anthony D. Macagnone, Councilman
54 Audrey Ave.
Oyster Bay, NY 11771

The Honorable Chris J. Coschignano, Councilman
54 Audrey Ave.
Oyster Bay, NY 11771

The Honorable Elizabeth Faughnan, Councilwoman
54 Audrey Ave.
Oyster Bay, NY 11771

The Honorable Joseph G. Pinto, Councilman
54 Audrey Ave.
Oyster Bay, NY 11771

The Honorable Rebecca Alesia, Councilwoman
54 Audrey Ave.
Oyster Bay, NY 11771

Director of Legislative Affairs & Environmental Attorney
Oyster Bay Town Hall
54 Audrey Ave.
Oyster Bay, NY 11771

Environmental Control Commission

Neil Bergin

Town of Oyster Bay Environmental Resources Department

150 Miller Pl. Syosset, NY 11791

Town of Oyster Bay Environmental Quality Review Commission

Environmental Resources

150 Miller Place

Syosset, NY 11791

Nassau County Executive

Edward P. Mangano

1550 Franklin Avenue

Mineola, NY 11501

Nassau County Clerk

Ms. Maureen O'Connell

240 Old Country Rd.

Mineola, NY 11501

Director, Office of Soil and Groundwater Remediation

Mr. Joseph DeFranco

106 Charles Lindbergh Boulevard

Uniondale, NY 11553

Nassau County Department of Health

Susan King

106 Charles Lindbergh Boulevard

Uniondale, NY 11553

Nassau County Legislature

The Honorable Peter J. Schmitt

Nassau County Legislature - District 12

1 West Street

Mineola, NY 11501

The Honorable Norma L. Gonsalves

Nassau County Legislature - District 13

1 West Street

Mineola, NY 11501

The Honorable Joseph V. Belesi

Nassau County Legislature - District 14

1 West Street

Mineola, NY 11501

The Honorable Dennis Dunne, Sr.
Nassau County Legislature - District 15
1 West Street
Mineola, NY 11501

The Honorable Judith Jacobs
Nassau County Legislature - District 16
1 West Street
Mineola, NY 11501

The Honorable Rose Marie Walker
Nassau County Legislature - District 17
1 West Street
Mineola, NY 11501

The Honorable Delia DeRiggi-Whiton
Nassau County Legislature - District 18
1 West Street
Mineola, NY 11501

The Honorable David Denenberg
Nassau County Legislature - District 19
1 West Street
Mineola, NY 11501

Public Information Officer
Oyster Bay Town Hall
54 Audrey Ave.
Oyster Bay, NY 11771

New York State Executives

The Honorable Andrew Cuomo
New York State Governor
NYS Capital Building
Albany, NY 12224

The Honorable Thomas DiNapoli
Office of the State Comptroller
110 State Street
Albany, NY 12236

The Honorable Eric T. Schneiderman
Office of the Attorney General
The Capitol
Albany, NY 12224

The Honorable Carl L. Marcellino
New York State Senate
District 5 – Oyster Bay
250 Townsend Square
Oyster Bay, NY 11171

The Honorable Charles J. Fuschillo, Jr.
New York State Senate
District 8 - South Oyster Bay
5550 Merrick Road Suite 205
Massapequa, NY 11758

The Honorable Michael Montesano
New York State Assembly
District 15 – N.C. OB; SE North Hemp.; N.C. Hemp.
111 Leviton Parkway
Hicksville, NY 11801

Local News Media

Channel 12
1 Media Crossways
Woodbury, NY 11797

WABC-TV- Long Island Bureau
100 Supreme Court Drive
Mineola, NY 11501

Anton Newspapers
132 East 2nd Street
Hicksville, NY 11801

Mid-Island Times
81 East Barclay Street
Hicksville, NY 11801

Local Newsday
235 Pinelawn Road
Melville, NY 1147

Hicksville Illustrated
135 Liberty Avenue
Mineola, NY 11501

Long Island Business News
2150 Smithtown Avenue
Ronkonkoma, NY 1179

New York Times- Long Island Bureau
1235 Franklin Avenue
Garden City, NY 11530

Penny Saver
425 Smith Street
Farmingdale, NY 11735

Long Island Press
575 Underhill Boulevard Ste 210
Syosett, NY 11791

Noticia Hispanoamericana
636 West Seman Avenue
Baldwin, NY 1172

La-Tribuna Hispana – USA
P.O. Box 186
Hempstead, NY 11550

Water Supplier Serving the Area

Hicksville Water District
4 Dean Street
Hicksville, NY 11802

Commissioner of Nassau County Department of Public Works
Shila Shah-Gavnoudias, P.E.
1194 Prospect Avenue
Westbury, NY 11590

Schools and Care Facilities Located Near the Site

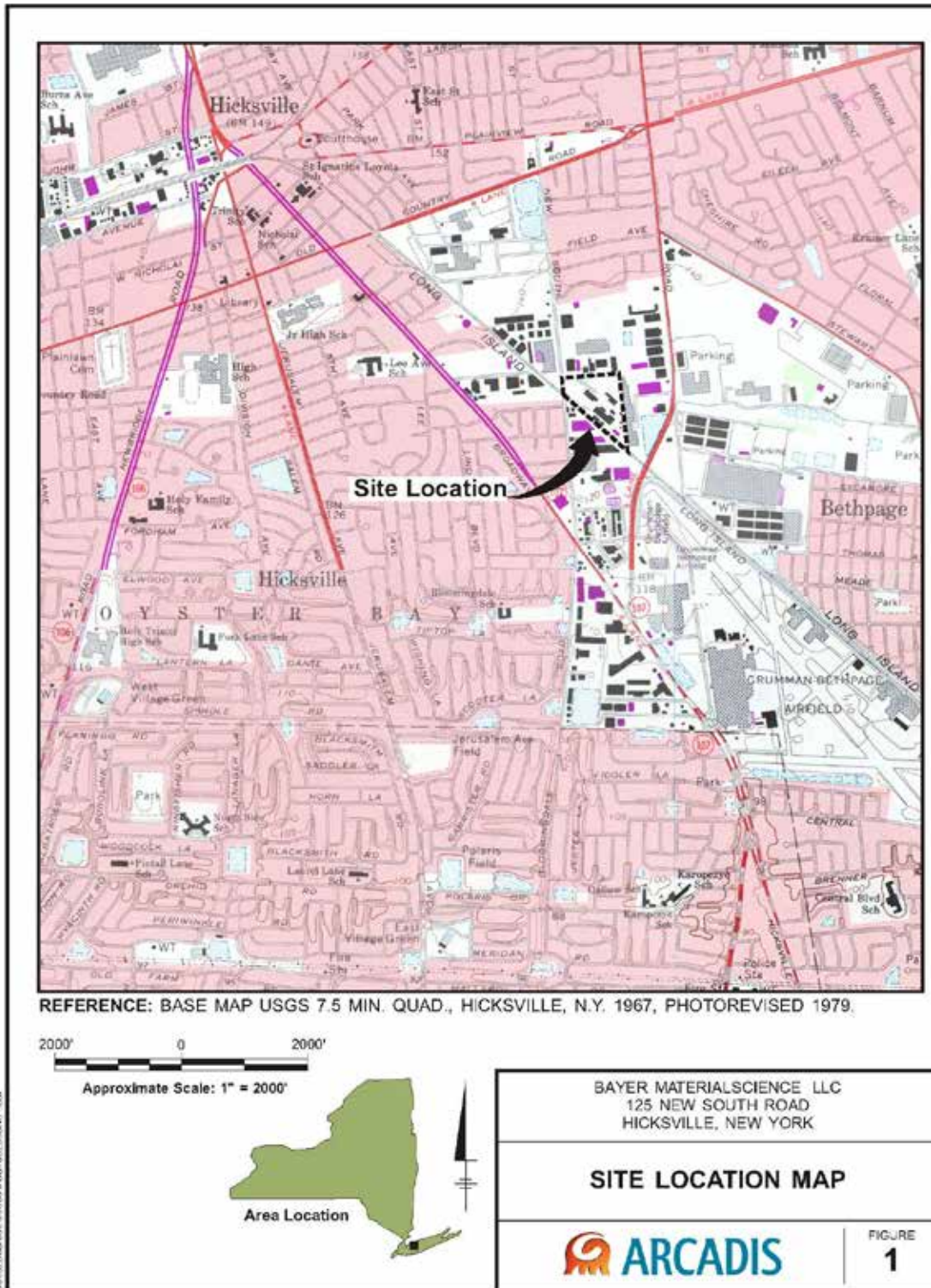
Center for the Developmental
101 New South Road
Hicksville, NY 11801

Kumon Math and Reading Center
495 S. Broadway
Hicksville, NY 11802

Location of Document Repository for the Project

Hicksville Public Library
169 Jerusalem Ave
Hicksville, NY 11801
Phone: (516) 931-1417

Appendix C - Site Location Map





Appendix D

Community Air Monitoring Plan

Bayer MaterialScience LLC

Community Air Monitoring Plan

125 New South Road
Hicksville, New York
NYSDEC Site No. 130004

February 2013



Community Air Monitoring Plan

Bayer Material Science LLC
125 New South Road
Hicksville, New York

Prepared for:
Bayer MaterialScience LLC

Prepared by:
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Our Ref.:
B0032305.0007.00001

Date:
February 2013

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Attachments

- A New York State Department of Health Generic Community Air Monitoring Plan (Appendix 1A of DER-10)
- B Fugitive Dust Suppression and Particulate Monitoring (Appendix 1B of DER-10)
- C Specifications for Community Air Monitoring Equipment



Community Air Monitoring Plan

Bayer MaterialScience LLC
125 New South Road
Hicksville, New York

1. Introduction

This *Community Air Monitoring Plan* (CAMP) has been prepared by ARCADIS to support implementation of the remedial action at the Bayer MaterialScience LLC (Bayer) site located at 125 New South Road in Hicksville, New York (the Site). This CAMP fulfills the general requirements set forth in the New York State Department Environmental Conservation (NYSDEC) document titled *DER-10 Technical Guidance for Site Investigation and Remediation*, (DER-10) issued on May 3, 2010. Specifically, Appendix 1A of DER-10 (included herein as Attachment A) provides general guidance and protocols for the preparation and implementation of a CAMP. In addition, Appendix 1B of DER-10 (included herein as Attachment B) supplements the contents of Appendix 1A and provides additional requirements for fugitive dust/particulate monitoring.

The intent of this CAMP is to provide a measure of protection for downwind communities from potential airborne releases of constituents of concern during intrusive and/or potential dust-generating remedial construction activities at the Site. Accordingly, this CAMP identifies potential air emissions, and describes air monitoring procedures, monitoring schedule, data collection, and reporting requirements for the remedial action.

The Contractor will be required to obtain the services of a qualified third party subcontractor to provide all labor, materials, and equipment necessary to implement the community air monitoring program specified in this CAMP. A dedicated air monitoring technician (from the third party subcontractor) will be responsible for performing all monitoring activities described herein, including but not limited to: (1) establishing the daily air monitoring sampling stations based on prevailing wind directions and making adjustments to the locations, as needed; (2) performing daily calibrations of the monitoring equipment; (3) routinely checking the air monitoring sampling stations to confirm that the monitoring equipment is functioning properly and to record manual hourly air monitoring readings; (4) downloading data from the monitoring instruments; (5) documenting the remedial construction activities being performed while air monitoring is ongoing; and (6) preparing weekly CAMP reports.

1.1 Site Description

The Site consists of a 14-acre triangular-shaped parcel located just southeast of the intersection of New South Road and Commerce Place in the City of Hicksville, New York. The Site is bordered to the north by industrial properties, to the south and west by the Long Island Railroad (LIRR) and commercial/industrial properties, and to the east by warehouses owned by Simone Development and a complex owned by Northrop Grumman Corporation (Northrop Grumman).



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Aside from the Administration Building located in the northern portion of the Site, all other buildings and aboveground structures formerly used in connection with site operations were demolished down to their floor slabs in 2003. The building floor slabs and foundations were demolished and removed between December 2005 and February 2006 in accordance with the NYSDEC-approved *Demolition Work Plan* (ARCADIS BBL, July 2005) and follow-up correspondence.

1.2 Remedial Action Summary

The proposed remedial activities primarily include the following:

- Excavating soil containing polychlorinated biphenyls (PCBs), metals, and polycyclic aromatic hydrocarbons (PAHs) at concentrations exceeding soil cleanup levels for offsite transportation and disposal.
- Excavating surface soil (top 1 foot of soil) at select locations (where concentrations of constituents meet subsurface soil cleanup levels but exceed surface soil cleanup levels) for re-use as subsurface fill.
- Transporting excavated impacted soil for offsite disposal.
- Collecting and processing verification soil samples (confirmation and documentation samples) to confirm that the remedial objectives are achieved and concentrations are documented.
- Backfilling the excavated areas.
- Performing various restoration activities.

1.3 Potential Air Emissions Related to Remedial Activities

Ground-intrusive and certain non-intrusive activities have the potential to generate localized impacts to air quality. Such activities are anticipated to include, but may not be limited to the following:

- Material excavation to the limits shown in the Remedial Design (RD).



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- Material handling and storage (e.g., manipulation of excavated materials to render them suitable for offsite treatment/disposal, stockpiling of materials, loading of materials for transport to the offsite treatment and/or disposal facility[ies], etc.).
- Soil boring for verification soil sampling.
- Handling materials subject to re-use for subsequent placement onsite.
- Backfilling/restoring remediated and other disturbed areas.
- Performing decontamination activities.

1.4 Vapor/Dust/Odor Emissions and Control Measures

Air emissions control and fugitive dust suppression measures will be implemented concurrently with the activities identified above (as needed) to limit the potential for organic vapor, dust, and dust emissions from the Site. Such control measures are anticipated to include the following:

- Applying a water spray to suppress dust originating from excavation and dumping and from vehicle traffic.
- Applying a foam or Biosolve[®] spray that uses encapsulation and chemical masking to suppress vapors/odors originating from the excavation, excavator bucket, or staging areas.
- Limiting travel speed and applying water to gravel haul roads, if needed.
- Minimizing the number and size of excavation areas open at one time.
- Covering the excavation and materials in the staging area(s) using ultraviolet resistant polyethylene sheeting.

These vapor, dust, and odor control measures will be mobilized to the Site at the beginning of the project and will be maintained onsite in sufficient supply throughout the work. Control measures will be implemented as necessary based on visual or olfactory observations, and the results of community air monitoring for organic vapors (including volatile organic compounds [VOCs]) and particulate matter less than 10 microns in diameter (PM₁₀).



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2. Air Monitoring Procedures

Real-time community air monitoring for VOCs and PM₁₀ will be performed at representative locations upwind and downwind of the area subject to remediation during construction activities. Additional information regarding the monitoring locations, equipment, and action levels is presented below.

2.1 Selection of Monitoring Locations

VOC and PM₁₀ monitoring station locations will be determined daily based on data from an onsite meteorological monitoring station (predominant wind direction) and the nature and location of the anticipated construction activities. An upwind location for both VOCs and PM₁₀ monitoring (station "UP") will be selected at the start of each workday. Three additional locations (stations "DN1", "DN2", and "DN3") will be selected to monitor for both VOCs and PM₁₀ as follows: (1) downwind from site activities; and (2) between site activities and nearest receptors.

Station "DN2" will be positioned at the downwind perimeter of the immediate work area (Exclusion Zone) as determined based on the prevailing wind direction. Recognizing that there will be wind gusts from time-to-time that differ from the prevailing wind direction, stations "DN1" and "DN3" will be positioned equidistant on either side of station "DN2" to create a monitoring "envelope" downwind from the Exclusion Zone (accounting for variability in wind direction). As indicated in the Remedial Design, the Exclusion Zone will generally extend toward or directly to the shared property boundaries with the Simone Building Complex (to the east) and the LIRR (to the south). Based on the site layout, the footprint of the proposed remedial activities (which occupy most of the eastern half of the Site), and the locations of nearby buildings, it is anticipated that the three downwind locations will generally be established along the property boundary (just inside the fence line), generally opposite the adjacent offsite commercial/industrial facilities. Therefore, the proposed downwind monitoring stations will also serve as stations between the Site and the nearest receptor. Monitoring data from each of these stations will also be used to make field adjustments (if needed) to be protective of offsite receptors.

Potential downwind monitoring stations for various prevailing wind directions are identified in the table below:

Prevailing Wind Direction From:	Proposed Downwind CAMP Sampling Stations
West/ Northwest	Opposite the Simone Building Complex at 1 Enterprise Place. If the wind direction is from the northwest, one of these stations may be positioned along the southernmost property boundary depending on the location of intrusive work activities.
North/ Northeast/ East	Opposite the Long Island Railroad and the neighboring Westye Group East, Capitol Warehouse Corp., and American Compressed Gases facilities (and/or opposite New South Road depending on the location of intrusive work activities).
Southeast/ South	In the northern portion of the Site and/or along the western property boundary (west of the paved former parking lots and directly opposite New South Road), depending on the location of intrusive work activities.
Southwest	Opposite the Simone Building Complex and/or along the northern fence line opposite several offsite commercial/industrial facilities (e.g., beyond the proposed arsenic soil removal area), depending on the location of intrusive work activities.

If wind direction shifts radically during the workday and for an extended period of time, such that the upwind location and downwind locations no longer fall within acceptable guidelines (+/- 60° compass change from the original wind direction), the monitoring stations will be relocated so that the upwind and downwind locations are maintained. Any changes in monitoring locations will be documented.

2.2 VOC Monitoring

VOCs will be monitored continuously during the intrusive and/or potential dust-generating remedial construction activities with instrumentation equipped with electronic data-logging capabilities. Because real-time monitors for PCBs, metals, and PAHs are not available, the real-time VOC monitors will also serve as surrogate indicators for emissions (if any) of PCBs, metals, and PAHs during the work. A real-time VOC monitor (MultiRAE Plus or equivalent) equipped with a photoionization detector (PID) will be used for these purposes. Attachment C provides additional information regarding the capabilities of the MultiRAE Plus. All 15-minute average concentrations, as well as any instantaneous readings taken to



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facilitate activity decisions, will be recorded, stored onsite, and summarized in weekly CAMP reports to NYSDEC/New York State Department of Health (NYSDOH).

2.3 PM₁₀ Monitoring

PM₁₀ will also be monitored continuously during intrusive and/or potential dust-generating remedial construction activities using instrumentation equipped with electronic data-logging capabilities. PM₁₀ monitoring equipment will also be equipped with an audible alarm to indicate exceedances of the action levels identified below in Section 2.4.2. An MIE DataRAM (or equivalent) will be used to conduct the real-time PM₁₀ monitoring during the remedial construction activities. Attachment B provides additional information regarding requirements for PM₁₀ monitoring equipment and Attachment C provides additional information regarding the capabilities of the MIE DataRAM. All 15-minute average concentrations, as well as any instantaneous readings taken to facilitate activity decisions, will be recorded, stored onsite, and summarized in weekly CAMP reports to NYSDEC/NYSDOH.

Fugitive dust migration will be visually assessed during all work activities, and reasonable dust suppression techniques will be used during any remedial construction activities that may generate fugitive dust.

2.4 Action Levels

The action levels provided below are to be used to initiate corrective actions, if necessary, based on real-time monitoring. Each piece of monitoring equipment will have alarm capabilities (audible and/or visual) to indicate exceedances of the action levels specified below.

2.4.1 Action Levels for Organic Vapors

If the ambient air concentration of total VOCs at the downwind perimeter of the work area, Exclusion Zone, or opposite the nearest occupied building exceeds 5 parts per million (ppm) above the background (upwind) concentration for the 15-minute average, work activities will be temporarily halted while monitoring continues. If the total VOC concentration readily decreases (through observation of instantaneous readings) below 5 ppm above the background (upwind) concentration, work activities will resume with continued monitoring.

If the ambient air concentration of total VOCs at the downwind perimeter of the work area, Exclusion Zone, or opposite the nearest occupied building persists at levels in excess of 5 ppm but less than 25 ppm above the background (upwind) concentration: (1) work activities will be



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halted; (2) the source of the elevated total VOC concentration will be identified; (3) corrective actions will be implemented to reduce or abate the emissions; and (4) air monitoring will be continued. Once these activities have been implemented, work activities will resume provided the following two conditions are met:

- The 15-minute average VOC concentrations remain below 5 ppm above background.
- The total VOC concentration 200 feet downwind of the work area/Exclusion Zone or half the distance to the nearest potential receptor or residential/commercial structure (whichever is less but in no case less than 20 feet) is below 5 ppm over the background (upwind) concentration for the 15-minute average.

If the ambient air concentration of total VOCs at the downwind perimeter of the work area, Exclusion Zone, or opposite the nearest occupied building exceeds 25 ppm above the background (upwind) concentration, work activities will stop and corrective actions will be implemented to reduce or abate the emissions.

2.4.2 Action Levels for PM₁₀

If the ambient air concentration of PM₁₀ at the downwind perimeter of the work area, Exclusion Zone, or nearest occupied building exceeds 100 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) above the background (upwind) concentration, or if airborne dust is observed leaving the work area, dust suppression techniques will be employed. Work will continue with dust suppression techniques provided the downwind PM₁₀ concentration does not exceed 150 $\mu\text{g}/\text{m}^3$ above the background (upwind) concentration.

If, after implementation of dust suppression techniques, the downwind PM₁₀ concentration is greater than 150 $\mu\text{g}/\text{m}^3$ above the background (upwind) concentration, work will be stopped while activities are re-evaluated. Work will resume provided the dust suppression techniques and other controls are successful in: (1) reducing the downwind PM₁₀ concentration to less than 150 $\mu\text{g}/\text{m}^3$ above the background (upwind) concentration; and (2) preventing visible dust from leaving the work area.

2.5 Meteorological Monitoring

Meteorological monitoring will be conducted continuously at the Site using a portable meteorological monitoring system equipped with electronic data-logging capabilities. The meteorological monitoring system will be installed in a prominent location at the Site to provide representative observations of the local meteorological conditions. Security and



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accessibility to the meteorological monitoring system will also be considered during the selection of the meteorological monitoring system location. At a minimum, the meteorological monitoring system will monitor wind speed, wind direction, relative humidity, and ambient temperature. A digital meteorological monitoring system (AutoMet or equivalent) will be used to collect the meteorological data.

2.6 Instrument Calibration

Calibration of the VOC, PM₁₀, and meteorological monitoring instrumentation will be conducted in accordance with each of the equipment manufacturer's calibration and quality assurance requirements. The VOC and PM₁₀ monitors will be calibrated daily (at a minimum), and calibrations will be recorded in the field logbook.



Community Air Monitoring Plan

Bayer MaterialScience LLC
125 New South Road
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3. Monitoring Schedule and Data Collection/Reporting

The following identifies the monitoring schedule and data collection/reporting requirements.

3.1 Monitoring Schedule

Community air monitoring will be conducted prior to initiating remedial construction activities to establish adequate baseline data and until such time that intrusive and/or potential dust generating activities are complete. The frequency of community air monitoring will be relative to the level of site work activities being conducted and may be adjusted as the work proceeds and in consideration of the monitoring results. Air monitoring for VOCs and dust may be discontinued during periods of heavy precipitation that would otherwise result in unreliable data or damage to monitoring equipment. Meteorological monitoring will be performed continuously during work activities.

3.2 Data Collection and Reporting

Community air monitoring data will be collected continuously from VOC and PM₁₀ monitors during all intrusive and/or potential dust-generating activities by the electronic data-logging systems, except as discussed above in Section 3.1. The data management software will be set up to continuously monitor instantaneous readings and record average concentrations (calculated for continuous 15-minute increments – i.e., 08:00 to 08:15, 08:15 to 08:30, etc.), including meteorological data. Results of the perimeter/community air monitoring for total organic vapors and particulates (both instantaneous readings and 15-minute average concentrations) will be recorded by the monitoring instruments (dataloggers).

The air monitoring technician will prepare weekly CAMP reports that will include, but not be limited to, the following:

- A brief memorandum summarizing the air monitoring work activities and results for the monitoring period, including an in-text table that presents a “dashboard” view of the organic vapor and particulate concentrations measured at each station during the period. The memorandum will be supported by two attachments: (1) Attachment A showing air monitoring station daily locations; and (2) Attachment B presenting graphs of the 15-minute time-weighted average VOC and particulate concentrations recorded at each of the four sampling stations (one graph for each station showing the weekly results relative to action levels).



Community Air Monitoring Plan

Bayer MaterialScience LLC
125 New South Road
Hicksville, New York

- A “zip” file that contains the raw data files from the individual monitors and meteorological data from the weather station.

The air monitoring technician will submit weekly CAMP reports (via e-mail) to the following:

NYSDEC – Steven Scharf (sxscharf@gw.dec.state.ny.us)

NYSDOH – Renata Ockerby (reo02@health.state.ny.us)

Bayer – David Schnelzer (david.schnelzer@bayer.com)

Bayer – Ramon Simon (ramon.simon@bayer.com)

ARCADIS – John Brussel (john.brussel@arcadis-us.com)

ARCADIS – David Kingsley (david.kingsley@arcadis-us.com)

ARCADIS – Andrew Enigk (andrew.enigk@arcadis-us.com)

In the event of an exceedance of a community air monitoring action level (for either PM₁₀ or VOCs), the air monitoring technician will notify Bayer and the NYSDEC (via telephone) and the Engineer’s onsite representative (in person) once the exceedance is observed (i.e., real time). Within 24 hours of the observed exceedance, the air monitoring technician will send a follow-up e-mail to the NYSDEC, NYSDOH, Bayer, and the Engineer summarizing the data, the cause of the exceedance, and any corrective measures implemented (or to be implemented) as a result of the exceedance. The information will also be documented in the weekly CAMP report.



Community Air Monitoring Plan

Bayer MaterialScience LLC
125 New South Road
Hicksville, New York

4. References

NYSDEC. 2010. DER-10 Technical Guidance for Site Investigation and Remediation.
May 2010.



Attachment A

*New York State Department of Health
Generic Community Air Monitoring
Plan (Appendix 1A of DER-10)*

New York State Department of Health Generic Community Air Monitoring Plan

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

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

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

Community Air Monitoring Plan

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

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

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

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

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

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

Particulate Monitoring, Response Levels, and Actions

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

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed $150 \text{ mcg}/\text{m}^3$ above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than $150 \text{ mcg}/\text{m}^3$ above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within $150 \text{ mcg}/\text{m}^3$ of the upwind level and in preventing visible dust migration.

All readings must be recorded and be available for State (DEC and DOH) personnel to review.

June 20, 2000

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Attachment B

*Fugitive Dist Suppression and
Particulate Monitoring (Appendix 1B
of DER-10)*



NEW YORK STATE
DEPARTMENT OF
ENVIRONMENTAL CONSERVATION

Fugitive Dust Suppression and Particulate Monitoring Program (TAGM - 4031)

To:	Regional Hazardous Waste Remediation Engrs., Bur. Directors & Section Chiefs
From:	Michael J. O'Toole, Jr., Director, Division of Hazardous Waste Remediation (signed)
Subject:	Technical and Administrative Guidance Memorandum -- Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites
Date:	Oct 27, 1989

1. Introduction

Fugitive dust suppression, particulate monitoring, and subsequent action levels for such must be used and applied consistently during remedial activities at hazardous waste sites. This guidance provides a basis for developing and implementing a fugitive dust suppression and particulate monitoring program as an element of a hazardous waste site's health and safety program.

2. Background

Fugitive dust is particulate matter--a generic term for a broad class of chemically and physically diverse substances that exist as discrete particles, liquid droplets or solids, over a wide range of sizes--which becomes airborne and contributes to air quality as a nuisance and threat to human health and the environment.

On July 1, 1987, the United States Environmental Protection Agency (USEPA) revised the ambient air quality standard for particulates so as to reflect direct impact on human health by setting the standard for particulate matter less than ten microns in diameter (PM₁₀); this involves fugitive dust whether contaminated or not. Based upon an examination of air quality composition, respiratory tract deposition, and health effects, PM₁₀ is considered conservative for the primary standard--that requisite to protect public health with an adequate margin of safety. The primary standards are 150 ug/m³ over a 24-hour averaging time and 50 ug/m³ over an annual averaging time. Both of these standards are to be averaged arithmetically.

There exists real-time monitoring equipment available to measure PM₁₀ and capable of integrating over a period of six seconds to ten hours. Combined with an adequate fugitive dust suppression program, such equipment will aid in preventing the off-site migration of contaminated soil. It will also protect both on-site personnel from exposure to high levels of dust and the public around the site from any exposure to any dust. While specifically intended for the protection of on-site personnel as well as the public, this program is not meant to replace long-term monitoring which may be required given the contaminants inherent to the site and its air quality.

3. Guidance

A program for suppressing fugitive dust and monitoring particulate matter at hazardous waste sites can be developed without placing an undue burden on remedial activities while still being protective of health and environment. Since the responsibility for implementing this program ultimately will fall on the party performing the work, these procedures must be incorporated into appropriate work plans. The following fugitive dust suppression and particulate monitoring program will be employed at hazardous waste sites during construction and other activities which warrant its use:

1. Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.
2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Such activities shall also include the excavation, grading, or placement of clean fill, and control measures therefore should be considered.
3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM₁₀) with the following minimum performance standards:

Object to be measured: Dust, Mists, Aerosols

Size range: <0.1 to 10 microns

Sensitivity: 0.001 mg/m³

Range: 0.001 to 10 mg/m³

Overall Accuracy: ±10% as compared to gravimetric analysis of stearic acid or reference dust

Operating Conditions:

Temperature: 0 to 40°C

Humidity: 10 to 99% Relative Humidity

Power: Battery operated with a minimum capacity of eight hours continuous operation

Automatic alarms are suggested.

Particulate levels will be monitored immediately downwind at the working site and integrated over a period not to exceed 15 minutes. Consequently, instrumentation shall require necessary averaging hardware to accomplish this task; the P-5 Digital Dust Indicator as manufactured by MDA Scientific, Inc. or similar is appropriate.

4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the entity operating the equipment to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.
5. The action level will be established at 150 ug/m³ over the integrated period not to exceed 15 minutes. While conservative, this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m³, the upwind background level must be measured immediately using the same portable monitor. If the working site particulate measurement is greater than 100 ug/m³ above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see Paragraph 7). Should the action level of 150 ug/m³ be exceeded, the Division of Air Resources must be notified in writing within five working days; the notification shall include a description of the control measures implemented to prevent further exceedences.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM_{10} at or above the action level. Since this situation has the potential to migrate contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential--such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.
7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:
 1. Applying water on haul roads.
 2. Wetting equipment and excavation faces.
 3. Spraying water on buckets during excavation and dumping.
 4. Hauling materials in properly tarped or watertight containers.
 5. Restricting vehicle speeds to 10 mph.
 6. Covering excavated areas and material after excavation activity ceases.
 7. Reducing the excavation size and/or number of excavations.

Experience has shown that utilizing the above-mentioned dust suppression techniques, within reason as not to create excess water which would result in unacceptable wet conditions, the chance of exceeding the 150 ug/m^3 action level at hazardous waste site remediations is remote. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. If the dust suppression techniques being utilized at the site do not lower particulates to an acceptable level (that is, below 150 ug/m^3 and no visible dust), work must be suspended until appropriate corrective measures are approved to remedy the situation. Also, the evaluation of weather conditions will be necessary for proper fugitive dust control--when extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended.

There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require appropriate toxics monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.



Attachment C

Specifications for Community Air
Monitoring Equipment

Product Overview

All these applications
in one small unit

- Indoor air quality monitoring
- Walk-through surveys
- Personal exposure monitoring
- Time & motion studies
- Workplace & plant monitoring
- Fixed-point continuous monitoring
- Remediation personal surveillance
- Remote alarming
- Mobile monitoring in vehicles & aircraft
- Toxicology & epidemiology studies
- Emergency response
- Testing air filtration efficiency



personalDataRAM™ Series

Measures airborne particulate concentration in real time

- pDR-1000AN
For passive air sampling applications
- pDR-1200
For active air sampling applications

Measure airborne particulate concentration in real-time

The *personalDataRAM* (pDR-1000AN) measures mass concentrations of dust, smoke, mists, and fumes in real time, and sounds an audible alarm whenever the user-defined level is exceeded. Conventional filter-based monitoring methods cannot indicate dangerous, real-time dust levels. In contrast, the pDR-1000AN alerts you to a problem within seconds, allowing you to take immediate action. With the datalogging enabled, the instrument automatically tags and time stamps the data collected, and stores it for subsequent retrieval, printing, or graphing through a computer.

Highest performance of any real-time personal particulate monitor

With a measurement range from 0.001 to 400 mg/m³ (auto-ranging), and an optical feedback stabilized sensing system, the pDR-1000AN sets the standard for sensitivity, long-term stability and reliability.

The palm-sized pDR-1000AN weighs only 18 oz (0.5 kg) for easy portability and attachment to a belt or a shoulder strap. The absence of any moving parts, such as pumps, motors and valves, and the use of low-power semiconductors housed in a ruggedized case ensures long life and dependable operation.

High correlation with gravimetric measurement

The pDR-1000AN is a light-scattering photometer (i.e., nephelometer) incorporating a pulsed, high output, near-infrared light emitting diode source, a silicon detector/hybrid preamplifier, and collimating optics and a source reference feedback PIN silicon detector. The intensity of the light scattered over the forward angle of 50° to 90° by airborne particles passing through the sensing chamber is linearly proportional to their concentration. This optical configuration produces optimal response to particles in the size range of 0.1-10 µm, achieving high correlation with standard gravimetric measurements of the respirable and thoracic fractions.

Simple zeroing and calibration

The pDR-1000AN arrives practically ready to use after the easy zeroing step. The unit comes gravimetrically calibrated in mg/m³ (NIST traceable) using standard SAE Fine test dust (ISO Fine). Zeroing with particle-free air is accomplished quickly and effectively under field conditions using the zeroing kit included with the instrument. Internal firmware controls an automatic calibration check. To maximize efficiency in the field, gravimetric calibration can be performed by comparison with a filter sampler and programming of the calibration constant.

Standard Accessories

- Universal voltage power supply
- PC communications software
- Zeroing kit
- Belt clip kit
- Instruction manual
- Carrying case
- Signal output cables

Optional Accessories

- Rechargeable battery pack (NiMH)
- Active sampling kit (converts pDR-1000AN to pDR-1200)
- Portable pump unit
- Shoulder strap
- Remote alarm interface
- Wall mounting bracket



pDR-1200

Active aerosol monitor/datalogger, plus aerodynamic sizing

Designed for active particulate monitoring applications

The *personaDataRam*™ (model pDR-1200) performs active sampling applications and aerosol sizing. The pDR-1200 requires a vacuum pump module to perform particle size selective measurements under field conditions. The separate pump (not included) is required for active sampling and aerosol sizing. With optional inlet accessories, the pDR-1200 is excellent for ambient air measurements under variable wind and high humidity conditions. It is ideal for respirable, thoracic, and PM_{2.5} monitoring, as well as continuous emission and test chamber monitoring. With an isokinetic sampling set, the pDR-1200 can be used for stack and duct extractive sampling monitoring. Membrane filters can be used to capture particles for subsequent laboratory analysis.

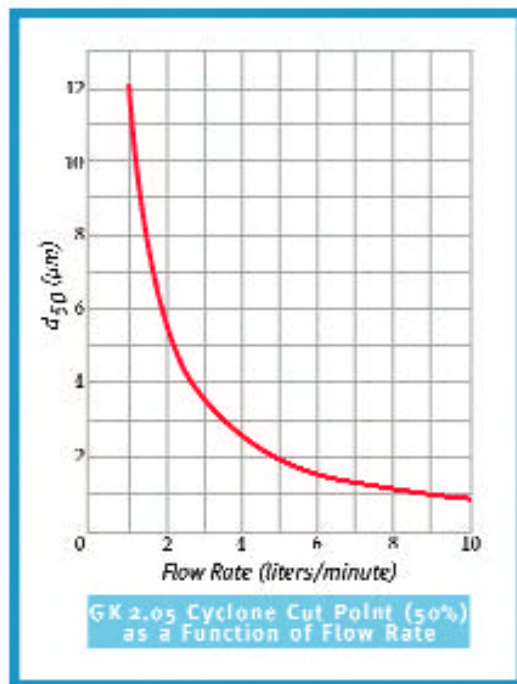
Aerodynamic particle sizing

The pDR-1200 incorporates an optimally designed metal cyclone (BGI Model GK 2.05) or the optional low flow cyclone (BGI Model Triplex SCC1.062-CUST) especially selected for PM_{2.5} collection at 1.5 LPM.

By operating the pump at specific sampling flow rates, the pDR-1200 cyclone preseparator provides precisely defined particle size cuts.

Primary calibration and particle samples by filter collection

An integral filter holder directly downstream of the photometric sensing stage accepts 37 mm filters. The calibration constant of the pDR-1200 is simply adjusted to coincide with the filter-determined concentration. Primary gravimetric calibration of the instrument concentration readout is easily accomplished under actual field conditions by means of this integral filter. Use membrane filters for chemical analysis or concurrent gravimetric measurements.



pDR-PU Attachable Pump Module

This optional accessory is designed for use with the *personaDataRAM* Model pDR-1200. It incorporates a dual-chamber diaphragm pump, a volumetric flow sensing, and control unit. The pump module operates from either an optional, rechargeable NiMH battery pack or from AC line current using the power supply/charger supplied with the *personaDataRAM*. The pDR-PU is designed as a modular unit that can be used in various combinations.

- Flow rate (user adjustable): 1 to 4 liters/minute
- Typical Conditions: 2 LPM @ 10 in H₂O (25 mbar) for up to 4 hours
- Maximum Conditions: 2 LPM @ 30 in H₂O
- Precision of constant flow rate control: ±2%
- Power: 9 VDC, 200 mA at 4 liters/minute (approximate)
- Dimensions:
 - 4 in (100 mm) H x
 - 3.6 in (90 mm) W x
 - 1.8 in (45 mm) D
- Weight: 1 lb (0.45 kg)

personalDataRAM™ Series

At last,
a compact,
versatile,
real-time
aerosol monitor

Specifications

Concentration Measurement Range (auto-ranging)

Referred to gravimetric calibration with SAE
Fine test dust ($mmd = 2$ to 3 mm $sg = 2.5$, as aerosolized)
0.001 to 400 mg/m^3

Scattering Coefficient Range

1.5×10^{-6} to 0.6 m^{-1} (approx) @
 $\lambda = 880\text{ nm}$

Precision/Repeatability Over 30 Days (2-sigma at constant temperature and full battery voltage)

- $\pm 2\%$ of reading or $\pm 0.005\text{ mg/m}^3$, whichever is larger, for 1 second averaging time
- ± 0.5 of reading or $\pm 0.0015\text{ mg/m}^3$, whichever is larger, for 10 second averaging time
- $\pm 0.2\%$ of reading or $\pm 0.0005\text{ mg/m}^3$, whichever is larger, for 60 second averaging time

Accuracy

Referred to gravimetric calibration with SAE
Fine test dust ($mmd = 2$ to 3 mm , $sg = 2.5$, as aerosolized)
 $\pm 5\%$ of reading \pm precision

Resolution

0.1% of reading or 0.001 mg/m^3 , whichever is larger

Particle Size Range of Maximum Response

0.1 to $10\text{ }\mu\text{m}$

Flow Rate Range (model pDR-1200)

1-10 liters/min (external pump required)

Aerodynamic Particle Sizing Range

1.0 to $10\text{ }\mu\text{m}$ (pDR-1200 only)

Concentration Display Updating Interval

1 second

Concentration Display Averaging Time (user selectable)

1 to 60 seconds

Alarm Level Adjustment Range (user selectable)

Selectable over entire measurement range

Alarm Averaging Time (user selectable)

Real-time (1 to 60 seconds) or STEL (15 minutes)

Datalogging Averaging Periods (user selectable)

1 second to 4 hours

Total Number of Data Points That Can Be Logged in Memory

More than 13,300

Number of Data Tags (data sets)

99 (maximum)

Logged Data

- Each data point: average concentration, time/date, and data point number
- Run summary: overall average and maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration, and time/date of occurrence, averaging (logging) period, calibration factor, and tag number

Analog Signal Output

0 to 5 V and 4 to 20 mA, with selectable full scale ranges between 0.1 and 400 mg/m^3

Power

- Internal battery 9 V alkaline, 20 hour run time (typical)

- Internal battery 9 V lithium, 40 hour run time (typical)
- AC source universal voltage adapter (included) 100-250 volts, 50-60 Hz (CE marked)
- Optional battery pack rechargeable NiMH, 72 hour run time typical (pDR-BP)

Readout Display

LCD 16 characters (4 mm height) x 2 lines

Serial Interface

RS232, 4800 baud

Computer Requirements

PC compatible, 486 or higher, Windows 95® or higher

Storage Environment

-20°C to 70°C (-4°F to 158°F)

Operating Environment

-10°C to 50°C (14°F to 122°F), 10 to 95% RH, non-condensing

Dimensions (max external)

153 mm (6.0 in) H x 92 mm (3.6 in) W x 63 mm (2.5 in) D (pDR-1000AN)
160 mm (6.3 in) H x 205 mm (8.1 in) W x 60 mm (2.4 in) D (pDR-1200 including cyclone and filter holder)

Weight

0.5 kg (18 oz) (pDR-1000AN)
0.68 kg (24 oz) (pDR-1200)

Approvals

- Intrinsic safety approval by US Mine Safety & Health Administration (MSHA) coal-mining environments containing methane gas (the pDR-PU pump is not approved by MSHA)
- US FCC Rules (Part 15)
- CE certified

About Thermo

Thermo Electron Corporation, the world's leading maker of high-tech instruments, provides instruments, equipment, software, and solutions that help laboratory and industrial customers advance scientific knowledge, enable drug discovery, improve manufacturing

processes, and protect people and the environment. With annual revenue exceeding \$2 billion, Thermo is a global leader employing 11,000 people in 30 countries worldwide. The company is based in Waltham, Massachusetts.

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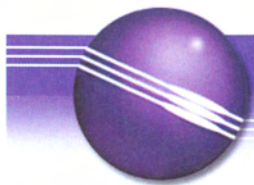
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+1.508.520.0430

+1.508.520.1460 fax

Analyze • Detect • Measure • Control™

Thermo
ELECTRON CORPORATION



MultirAE Plus

One-to-Five Gas Monitor with VOC Detection

The **MultirAE Plus** combines a PID (Photoionization Detector) with the standard four gases of a confined space monitor (O₂, LEL, and two toxic gas sensors) in one compact monitor with sampling pump. Like the Leatherman™ tool, the **MultirAE Plus** gets the job done in more circumstances than any other gas detector. With more than 10,000 units in the field today, its versatility makes it the gas meter of choice for some of the highest profile HazMat/WMD teams in the United States. The **MultirAE Plus** is quickly and easily changed from a sophisticated technician instrument to a simple text-only monitor. The same monitor can be used as a personal monitor, a hand-held sniffer or as a continuous-operation area monitor.

Key Features

- **O₂, LEL, PID and any two plug-in "smart" toxic sensors:** CO, H₂S, SO₂, NO, NO₂, Cl₂, HCN, NH₃, PH₂
- **0-2,000 ppm measurement of VOCs** (volatile organic compounds) with 0.1 ppm resolution
- **Measure more chemicals than with any other PID** With over 60 Correction Factors built into the **MultirAE Plus** memory and the largest printed list of Correction Factors in the world (300+), RAE Systems offers the ability to accurately measure more ionizable chemicals than any other PID!
- **Drop-in Battery** When work schedules require putting in more than the 14 hours supplied by the advanced Lithium-ion (Li-ion) battery, the drop-in alkaline pack supplied with every **MultirAE Plus** allows you to finish the job.
- **User friendly** screens make it easy to use for simple applications and flexible enough for sophisticated options.
- **Rugged Rubber Boot** assures that the **MultirAE Plus** survives the bumps and knocks of tough field use
- **Strong, built-in sample pump** draws up to 100 feet (30m) horizontally or vertically. Large external filter and automatic low flowage
- **Large keys** are operable with 3 layers of gloves
- **Easy-to-read display** with backlight
- **Store up to 80 hours of data** at one minute interval for all 5 sensors for download to PC (with the optional datalogging)
- **Loud audible alarm** that varies for different alarm conditions and an optional external vibration alarm for noisy areas
- **Access sensors and battery in seconds** with the new, improved case

Applications

HazMat/Homeland Security

- Initial PPE (personal protective equipment) assessment
- Leak detection
- Perimeter establishment and maintenance
- Spill delineation
- Decontamination
- Remediation

Confined Space Entry

- Aviation/wing tank entry with jet fuel
- Shipyard and maritime confined spaces with diesel fuel
- Pulp and paper industry for confined space entry in turpentine environments

Environmental

- Soil and water headspace analysis
- Leaking underground storage tanks (LUST)
- Landfill monitoring

Industrial Hygiene, Plant Health & Safety

- Confined Space Entry
- Indoor Air Quality (IAQ)



ATEX



Specifications*

Sensor Specifications

Sensor	Range	Resolution
Oxygen	0-30%	0.1%
Combustible Gas	0-100% LEL	1% LEL
VOCs	0-200 ppm	0.1 ppm
	200-2000 ppm	1 ppm
Carbon Monoxide	0-500 ppm	1 ppm
Hydrogen Sulfide	0-100 ppm	1 ppm
Sulfur Dioxide	0-20 ppm	0.1 ppm
Nitric Oxide	0-250 ppm	1 ppm
Nitrogen Dioxide	0-20 ppm	0.1 ppm
Chlorine	0-10 ppm	0.1 ppm
Hydrogen Cyanide	0-100 ppm	1 ppm
Ammonia	0-50 ppm	1 ppm
Phosphine	0-5 ppm	0.1 ppm

Detector Specifications

Size	4.65"L x 3.0"W x 1.9"H (11.8 x 7.6 x 4.8 cm)
Weight	16 oz. with battery (454g)
Sensors	Up to 5 sensors including: <ul style="list-style-type: none"> • Photoionization detector for VOCs, 10.6 eV lamp standard • Protected catalytic bead for combustible gases • Interchangeable electrochemical sensors for oxygen and toxic gases (2)
Battery	<ul style="list-style-type: none"> • Interchangeable Li-ion and alkaline battery packs • Rechargeable units include Lithium-ion battery pack with internal smart charging, 120V AC/DC wall adapter, and spare alkaline battery pack
Operating Hours	<ul style="list-style-type: none"> • 14 hours continuous with Li-ion (typical) • Unit will run and charge simultaneously
Display	2 line, 16 digit LCD with LED backlighting automatically in dim light or alarm condition
Keypads	1 operation and 2 programming keys
Direct Readout	Instantaneous values (up to 5): <ul style="list-style-type: none"> • Oxygen as percentage by volume • Combustible gas as percentage of lower explosive level (LEL) • Toxic gases and VOCs as parts per million by volume (VOC scaleable using correction factors) • High and low values for all gases • STEL and TWA values of toxic gases and VOCs • Battery and shut down voltage • Date, time, elapsed time, temperature
Alarms	90 dB buzzer and flashing red LED to indicate exceeded preset limits: <ul style="list-style-type: none"> • High: 3 beeps and flashes per second • Low: 2 beeps and flashes per second • STEL and TWA: 1 beep and flash per second • Automatic reset or latching with manual override • Additional diagnostic alarms and display messages for low battery and pump stall
EM/RFI	Highly resistant to EMI/RFI. Compliant with EMC Directive 89/336/EEC
IP Rating	IP-55: protected against dust, protected against low pressure jets of water from all directions
Datalogging & Communication	Optional 80 hours, 5 channels at one minute intervals download to PC with serial number of unit, user ID, site number, and calibration date
Calibration	Two-point field calibration for zero span gas
Sampling Pump	Internal two-speed pump. Flow rates: <ul style="list-style-type: none"> • Low: ~150 cc/min • High: ~250 cc/min
Low Flow Alarm	Auto shut-off pump at low flow condition

Detector Specifications (continued)

Hazardous Area Approval	<ul style="list-style-type: none"> • US and Canada: UL, cUL, Classified as Intrinsically Safe for use in Class I, Division I Groups A, B, C, D, T3C • Europe: ATEX II 2G EEx ia d IIC T3 & T4
Temperature	-4° to 113 °F (-20 to 45°C)
Humidity	0% to 95% relative humidity (non-condensing)
Attachment	Durable yellow boot with belt clip and wrist strap; Shoulder strap; optional tripod/wall mounting bracket
Warranty	Lifetime on non-consuming components (per RAE Systems Standard Warranty), 2 years for O ₂ , LEL, CO, and H ₂ S sensors, 1 year all other sensors, 1 year pump, 1 year battery, 1 year for 10.6eV PID lamp

*Ongoing projects to enhance our products means that these specifications are subject to change

MultiRAE Plus Accessories

Monitor only includes:

- Sensors as specified
- Calibration adapter
- Training CDROM
- Operation and maintenance manual
- Rubber boot with belt clip
- Alkaline battery adapter
- Rechargeable units additionally include:
 - Standard Lithium-ion (Li-ion), optional extended duration Lithium-ion battery, or ATEX-certified charger and barrier kit
 - 120/230 V AC/DC Wall Adapter (if specified)
- 3 external filters
- 3-inch inlet probe

Monitor with accessories kit also includes:

- Hard transport case with pre-cut foam
- Sampling wand with 15 feet (5m) of self-coiling Teflon® tubing
- Tool Kit

Black boot is available for tactical operations
(part number 027-3042-000)

Optional calibration kit also includes:

- Four-gas mix in a 34L cylinder; (50% LEL, 20.9% O₂, 25 ppm Hydrogen Sulfide, 50 ppm Carbon Monoxide)
- 100 ppm Isobutylene in 34L cylinder
- Calibration regulator(s) and tubing

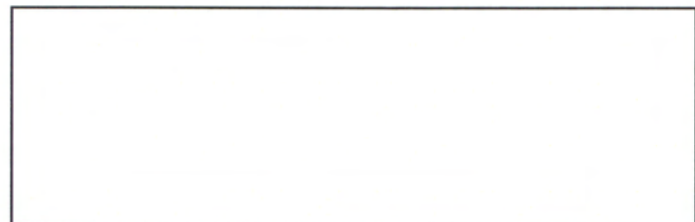
Datalogging Monitors also include:

- Software ProRAE Suite Package for Windows 98, NT, 2000 and XP
- Computer interface cable

Optional Guaranteed Cost of Ownership Program:

- 4-year repair and replacement guarantee
- Annual maintenance and servicing

DISTRIBUTED BY:



MULTIRAE Plus



Appendix E

Contingency Plan

Bayer MaterialScience LLC

Contingency Plan

125 New South Road
Hicksville, New York
NYSDEC Site No. 130004

February 2013



Contingency Plan

Bayer MaterialScience LLC
125 New South Road
Hicksville, New York

Prepared for:
Bayer MaterialScience LLC

Prepared by:
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Our Ref.:
B0032305.0007.00001

Date:
February 2013

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1. Introduction

The Contingency Plan has been developed for personnel to follow during implementation of the remedial activities at the Bayer MaterialScience LLC site located at 125 New South Road in Hicksville, Nassau County, New York. In general, this Contingency Plan presents responsibilities of emergency coordinators, an evacuation and emergency access plan, measures to prevent spills from occurring, and measures to properly respond to spills/spill-related emergencies, fire, explosion, or other emergency, should they occur. The remedial activities associated with the Contingency Plan include:

- Mobilization/demobilization
- Excavation of impacted material
- Excavation sloping/benching/shoring
- Material handling, staging, loading, and transportation
- Site restoration
- Equipment decontamination

This Contingency Plan was prepared in accordance with United States Environmental Protection Agency (USEPA) and Occupational Health and Safety Administration (OSHA) guidance documents. Reasonable measures will be taken to prevent emergency situations. However, if an emergency occurs, this Contingency Plan will be implemented immediately, and the procedures herein will be followed. All project personnel shall read and comply with this Contingency Plan.

The remainder of this plan is organized as follows:

- Section 2 – Responsibilities and Designation of Emergency Coordinator
- Section 3 – Evacuation/Emergency Access Plan
- Section 4 – Spill Prevention Plan
- Section 5 – Spill Response Plan



Contingency Plan

Bayer MaterialScience LLC
125 New South Road
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- Section 6 – Coordination Plan
- Section 7 – Contact Personnel/Nearest Medical Facility

2. Responsibilities and Designation of Emergency Coordinator

The Contractor's emergency coordinator (EC) or his alternative is responsible for implementing this Contingency Plan during an emergency. The EC shall also act as the site health and safety officer (HSO) to maintain continuity in the lines of authority during an emergency. The site EC/HSO responsibilities shall be handled by a designated alternate to serve in case of the primary EC absence. All site employees must be familiar with the procedures in this plan and are responsible for implementing the plan should the EC or the alternative be unavailable.

At the beginning of the site activities, the EC/HSO will designate one or more employees of the project team in conjunction with any subcontractor, to serve as part of a rescue team. At a minimum, the rescue team will consist of two persons. The rescue team will communicate with the project manager on a daily basis.

The rescue team will respond to emergencies, as needed, and will be under the direction of the EC/HSO. The members of the team must be certified in cardiopulmonary resuscitation (CPR) and emergency first aid.

A list of offsite emergency personnel is provided in Section 7. The EC/HSO will either notify offsite personnel or designate someone to do so. The first responders consist of police, fire, ambulance, and potentially the New York State Department of Environmental Conservation (NYSDEC). They will be alerted as to the type of emergencies that may arise and the types of hazards at the site.

3. Evacuation/Emergency Access Plan

The EC/HSO shall inform onsite personnel of a required evacuation using appropriate methods (e.g., compressed air horn). As field activities progress, it will be necessary to modify the evacuation routes in accordance with site conditions and layout. Onsite personnel shall evacuate the site via the nearest safe route and gather at the main construction entrance off New South Road. Attendance will be taken to verify that all onsite personnel are present (based on the sign-in/sign-out sheet). In the event of an injury to onsite personnel, emergency procedures outlined in the Health and Safety Plan (HASP) should be followed. Emergency vehicles entering the site will enter along the main construction entrance off New South Road.

3.1 Safe Distances and Refuge

The following minimum safe distances have been established. Depending upon the nature of the incident, the EC/HSO may increase the distances. Arrangements will be made with the local police department to evacuate nearby neighbors. Any decisions on the need for and distances of evacuation will be made in conjunction with the fire and police department and the NYSDEC:

- **Minor Spills** – No established distance
- **Major Spills** – Evacuate non-essential personnel offsite or 1,000 feet, whichever is greater
- **Minor Fire** – Evacuate non-essential personnel offsite
- **Explosion** - Evacuate all personnel ½ mile in all directions

3.2 Confined Space Emergencies

Each employee entering a confined space shall wear a safety harness equipped with a lifeline for evacuation purposes in the case of an emergency, unless the lifeline creates more of a hazard for the individual in the space. Emergency equipment such as lifelines, breathing equipment, fire extinguishers and harnesses will be ready for immediate response in case an emergency situation arises.

3.3 Fire

A fire extinguisher shall be used on minor fires where a container is not involved. If the fire cannot be extinguished immediately or a container is involved, the area must be evacuated immediately and the fire department notified from a safe location. Extinguishing methods include CO₂ or dry chemical. A water spray can also be used (not a direct hose stream). Foam, water spray, or fog can be used on larger fires.

3.4 Explosion

In the event of an explosion, the area shall immediately be evacuated and the fire department notified. The cause of the explosion should be assessed and corrected prior to reentry onto the site.

3.5 Medical

Medical emergencies are addressed in the HASP. Appropriate first aid will be administered, and if necessary, the injured individual will be sent to the designated medical facility. An ambulance will be summoned, if needed. The cause of the accident will be determined and corrected, prior to continuing operations. A first aid kit will be maintained in the office trailer at all times.

When possible, injured personnel will be decontaminated or partially decontaminated in accordance with the HASP. Based upon the anticipated toxicity of the contaminants, personnel decontamination procedures may be eliminated in a life-threatening situation. Emergency medical personnel will be notified as to the lack of decontamination. Emergency medical personnel will wash with soap and potable water after handling the victim. Appropriate documentation should be completed in accordance with the HASP.

3.6 Severe Weather Conditions

When a hurricane, flood, electrical storm, windstorm, freeze-up, or other severe weather-related threat is detected, all site personnel will immediately be notified. Each Severe Weather Alert will require last-minute preventative measures to minimize potential damage to facilities and equipment. For example, steps such as checking drains, removing electrical material from open yards, discontinuing sheetpile driving, protecting soil piles and excavations, and managing sheet flow of water will have to be evaluated depending on weather conditions.

4. Spill Prevention Plan

Prior to mobilization, each piece of equipment to be brought on-site will be visually inspected by the Contractor for potential sources of spills of hydraulic fluid, engine oil, transmission fluid, fuel, etc. (by inspecting the condition of hydraulic cylinders, hoses, gaskets, fuel tanks, etc.). If a potential spill source is identified, the Contractor will conduct the necessary repairs or replace the piece of equipment prior to entering the site. Each piece of heavy equipment used at the site will be equipped with a spill kit, consisting of sorbents and absorbent booms. In addition, each piece of heavy equipment at the site will be equipped with a fire extinguisher.

The selected Contractor will take the following precautions to minimize potential spills of fuel during the remedial activities:

- Refueling activities will be conducted on level ground within a designated area away from steep slopes and the edge of the excavation.
- No smoking will be permitted within 50 feet of the refueling area.
- No internal combustion engine fuel tank will be refilled with a flammable liquid while the engine is running.
- Fuel caps will be replaced before starting the engine.
- Fuel pump dispensers will be secured (i.e., locked) when not in use to avoid accidental fuel release.
- Visual inspections of equipment/portable fuel tanks will be conducted to check for leaks. If leaks are observed, the Contractor will transfer the tank contents to an alternate tank and the leaking tank will be replaced or repaired, as appropriate.
- Equipment will be maintained in accordance with the manufacturer's specifications.
- Vehicles and equipment will be operated/parked a safe distance away from the edge of the excavation.

5. Spill Response Plan

Spill response procedures have been developed for responding to unplanned release of oil, products, materials, hazardous waste, etc. to soil or groundwater during the soil removal activities. All spills will be immediately reported to the Contractor's EC/HSO, who in turn, will inform the Engineer and Bayer's Project Manager (whose names and phone numbers will be included in the emergency contact personnel and phone number list). In addition, reportable spills will be called in to the NYSDEC spills hotline within two hours of discovery. The EC/HSO will be responsible for implementing the following general spill response procedures:

1. *Ceasing Operation of the Affected Equipment:* This will consist of shutting off the equipment and/or closing any valves and stopping the leak, if possible.
2. *Containing the Spill:* If the spilled material is floating on a water surface, spill-absorbent pads/booms will be placed across the path of the floating spill. If the spilled material sinks below the water surface, a dam, weir, or other containment method will be used to stop the flow of the spilled material. If the spill occurs on land, a ditch, dam, or other containment unit will be constructed to stop the flow of the spilled material. Absorbent material will be applied as necessary.
3. *Cleaning Up the Spill:* Spills in water will be recovered using pumps, sorbent material, etc. as necessary until the spilled material is recovered (and no sheen or other evidence of the spill is observed on the water surface). Spills on land shall be recovered using pumps, sorbent material, and heavy equipment, as necessary until the spilled material is recovered. Other activities to be conducted during spill cleanup include: removing impacted soil/sorbent pads; using rags and cleaning solution to remove excess spilled material from equipment; and collecting verification samples to confirm that the impacted soil has been removed.
4. *Containerizing Spill Materials:* Spill materials, impacted soil, sorbent pads, etc. will be containerized in New York State Department of Transportation- (NYSDOT-) approved containers. The containers will be labeled with the waste type and date of accumulation in accordance with applicable regulations contained in 49 CFR Part 172. Samples will be collected to characterize the spilled materials for disposal (e.g., as a hazardous/non-hazardous waste).

5. *Disposing of Spill Materials:* Impacted materials and spill cleanup debris will be disposed of at a facility permitted to accept the materials. The Contractor shall be responsible for the coordination of the disposal activities.
6. *Performing Post-Spill Maintenance:* Following cleanup of the spill, the Contractor's EC/HSO will ensure that all used spill cleanup material and equipment has been disposed of or decontaminated, as appropriate. If the equipment that caused the spill cannot be properly repaired, replacement equipment shall be obtained.

Further information on responding to spills is presented below.

5.1 Minor Spills During Drum Handling Removal

For purposes of the Contingency Plan, minor spills would be those that consist of 1 gallon or less. Minor spills will be remediated by removing spill debris with any underlying or surrounding contaminated soil. The spilled material will be handled as a hazardous waste or nonhazardous waste, depending on the material involved. If leaking, the container will be placed in an overpack drum. Additional emergency measures would not be implemented, unless needed. Empty drums, Speedi-dri, miscellaneous hand tools, fire extinguishers, absorbent pads, and booms will be available onsite to deal with minor spills that occur.

5.2 Minor Spills in the Drum Staging or Storage Areas

Minor spills onto soil will be cleaned up as discussed above. Minor spills that occur in other areas will need to be collected using absorbent material such as absorbent pads and/or Speedi-dri.

5.3 Major Spills

For purposes of this Contingency Plan, a major spill is defined as those that involve greater than 1 gallon of material. In the event of a major spill, communication and notification procedures will be implemented. The response will depend on the nature of the release. Attempts will be made to control the release of diking and draining the area. An absorbent pad, Oil Dry, or soil will be used to absorb the release. The removed material will be placed into appropriate drums and sealed to prevent hazards. Employees should note that absorbents solidify the liquid, but do not remove the potential fire or exposure hazards. Solvents will volatilize from the absorbent and can ignite. Therefore, a fire extinguisher shall be brought to the area of the release by the

Contingency Plan

Bayer MaterialScience LLC
125 New South Road
Hicksville, New York

emergency response team, until the material is secured inside a drum. In the event that the release is of sufficient magnitude and cannot be controlled by diking, damming, absorbing, or other method, the local fire department, NYSDEC, and National Response Center shall be notified.

6. Coordination Plan

The EC/HSO will be responsible for coordinating and directing emergency response measures and should be thoroughly familiar with the remedial activities, the location and characteristics of all materials handled at the site, the general layout of the area, and all aspects of the Remedial Design. In the event of a spill and/or emergency, the Contractor's EC/HSO shall complete the following activities:

- Inform site personnel of the potential hazards and required levels of personal protective equipment to conduct the cleanup.
- Notify appropriate emergency/spill response personnel.
- Notify the Engineer and Bayer's project manager (to be included on the Contractor's emergency contact personnel and phone number list).
- Notify appropriate site security personnel of the nature of the emergency and the emergency response vehicles (i.e., fire trucks, ambulances, police cars, etc.) that will require access to the site.
- Notify spill/emergency personnel of site hazards prior to entering the exclusion zone.

The EC/HSO shall also record the following information pertaining to a spill incident:

- Name of the person who identified the spill incident
- Date, time, and location of the spill incident
- A brief description of the spill incident
- The estimated quantity of material spilled
- The extent of impacts to soil, groundwater, etc., from the spill

A copy of the above-identified information will be provided to the Engineer within 24-hours of the spill occurrence. In the event that there is an immediate threat to human health and the environment (based on observations of the spill incident and/or air monitoring results), the EC/HSO shall notify the appropriate authorities identified in the



Contingency Plan

Bayer MaterialScience LLC
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HASP (i.e., local police, fire departments, hospitals, and state and local emergency response teams). The EC/HSO will evacuate personnel from the site as described above.

7. Contact Personnel/Nearest Medical Facility

The Contractor shall prepare a table listing contact names and phone numbers for Bayer, Engineer, and Contractor personnel. For reference, emergency contact information and directions to the nearest medical facility are presented below.

Emergency Contact	Phone
Local Police –	911 or 516.573.5275
Local Ambulance –	911
Local Fire Department –	911
Local Hospital (North Shore-Long Island Jewish Health System [NSLIJ]: Plainview Hospital) –	516.719.2336 (Emergency) 516.719.3000 (Non-Emergency)
Local Weather Data (National Oceanic and Atmospheric Administration) –	631.924.0517
Poison Control	800.222.1222
National Response Center (all spills in reportable quantities)	800.424.8802
Work Care	800.455.6155
ARCADIS Project Manager (John C. Brussel) –	315.671.9441 (Office) 315.317.8104 (Cell)
Site Manager –	TBD
H&S Manager –	TBD
Client Contact (David Schnelzer)–	412.777.7603

If emergency attention is not needed but professional medical attention is necessary, the employee will be taken to (see hospital route):

Medical Facility: NSLIJ Plainview Hospital
Address: 888 Old Country Road, Plainview, NY 11803
Plainview, NY 11803

Phone Number: 516.719.2336 (Emergency)
516.719.3000 (Non-Emergency)

The estimated travel time is 6 minutes for 2.2 miles of travel.



125 New South Rd
Hicksville, NY 11801

**1. Head north on New South Rd toward
Commerce St/Kalda Ln**

0.6 mi



2. Turn right onto E Old Country Rd
Destination will be on the left

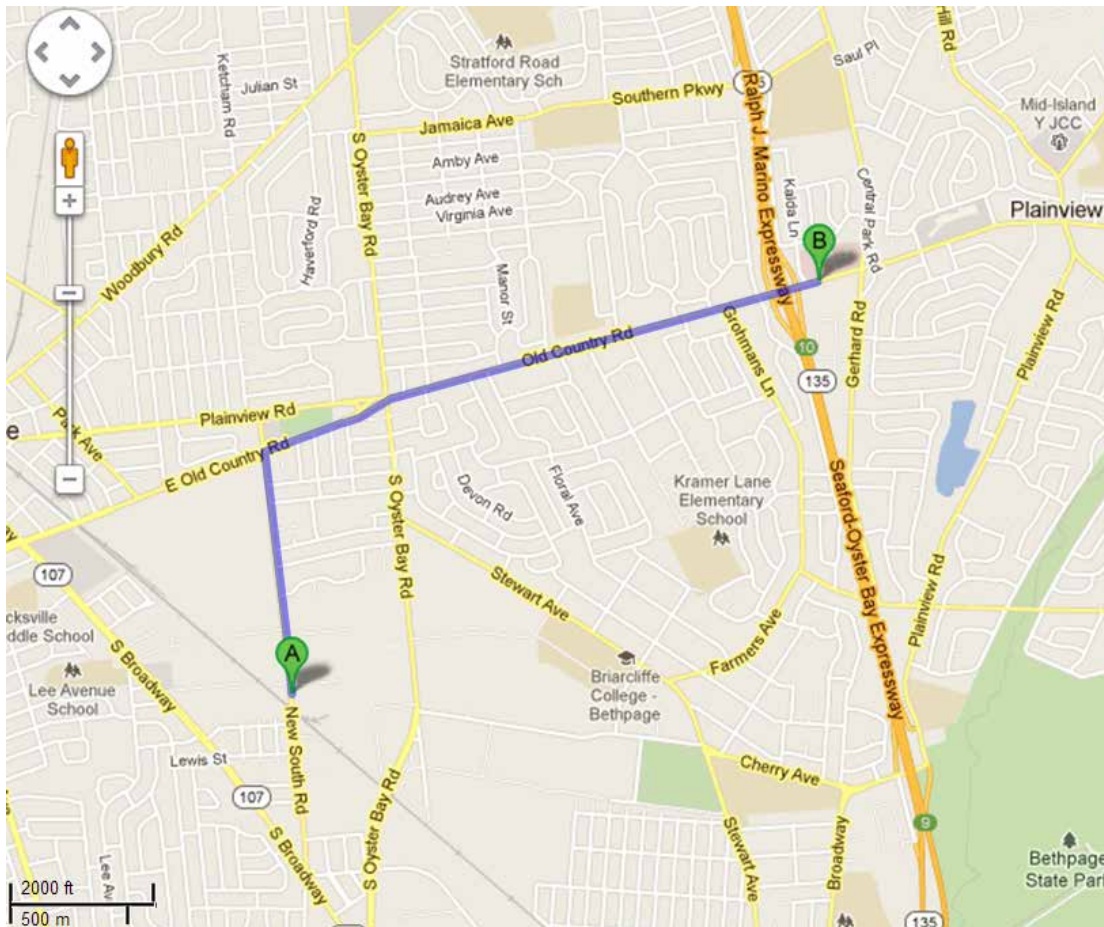
1.5 mi



888 Old Country Rd
Plainview, NY 11803

Contingency Plan

Bayer MaterialScience LLC
125 New South Road
Hicksville, New York





Appendix F

Minimum Requirements for Waste
Loading and Offsite Transportation

APPENDIX F
MINIMUM REQUIREMENTS FOR WASTE LOADING AND OFFSITE TRANSPORTATION

REMEDIAL DESIGN
BAYER MATERIALSCIENCE LLC
HICKSVILLE, NEW YORK

This document presents minimum requirements for the offsite transportation of solid and liquid non-hazardous wastes generated by the remedial activities at the Bayer MaterialScience LLC (the Owner) site in Hicksville, New York (the Site).

The use of the term “transporter” for the purposes of this document shall mean the transporter and the Contractor if/when the transporter is subcontracted to the Contractor.

The transporter shall provide all necessary supervision, labor, training, permits, hazardous waste manifests (if required), personal protective equipment (PPE), tools, equipment, materials, and all things incidental and necessary to transport solid and liquid waste from the Site to the permitted disposal facilities.

The offsite transportation of wastes generated by the remedial activities at the Site shall be performed by the transporter in accordance with all applicable federal, state, and local laws, rules, regulations, and guidelines. This includes, but is not limited to, the following:

- Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 364 “Waste Transporter Permits”.
- Commercial vehicle safety regulations, including: (1) the Federal Motor Carrier Safety Regulations found in Title 49 of the Code of Federal Regulations (49 CFR), Parts 390, 391, 392, 393, 395, 396, and 397 as they apply to interstate highway transportation; and (2) Title 17 of the Official Compilation of Codes, Rules and Regulations of the State of New York (17 NYCRR) Part 820, “Safe Operations of Commercial Motor Vehicles by Motor Carriers and Drivers” for vehicles operated in New York State.

In addition, the transporter shall comply with the following minimum requirements:

1. The transporter shall develop and implement a written Health & Safety Plan (HASP) for their drivers that address potential exposure to site residuals.
2. Any truck found unacceptable by the Owner's representative (Engineer) will be rejected, and the cost for any rejected truck shall be incurred by the transporter. If New York State Department of Environmental Conservation (NYSDEC) onsite personnel find any trucks unacceptable, they should notify the Engineer who, in turn, shall notify the truck driver.
3. The transporter shall adhere to the following rules while at the Site, in transit from the Site to the waste disposal facility, and at the waste disposal facility:
 - Prior to entry to the Site, truck drivers shall stage their trucks only in areas designated by the Engineer. While staged, truck engines shall be shut off.

APPENDIX F
MINIMUM REQUIREMENTS FOR WASTE LOADING AND OFFSITE TRANSPORTATION

REMEDIAL DESIGN
BAYER MATERIALSCIENCE LLC
HICKSVILLE, NEW YORK

- Truck drivers shall announce their arrival at the Site to the Engineer.
- Truck drivers are generally restricted to their trucks and designated waiting areas. Drivers are not permitted access to the Site without permission from the Engineer.
- Truck drivers shall wear HARD HATS, SAFETY GLASSES, SAFETY SHOES, and GLOVES, as a minimum for personal protection.
- Truck drivers shall line the entire waste transport container (dump truck box, dump trailer, roll-off waste container, etc.) that will be used to haul non-hazardous waste (e.g., to top of the side boards) with 6-mil thick polyethylene sheeting. Certain waste transport containers used to haul construction and demolition (C&D) debris may also need to be lined as indicated above. All waste transport containers shall have a watertight tailgate with a gasket between the box and tailgate. Tailgates shall be secured via locking turnbuckles.
- All trucks shall be equipped with working audible and visual backup signals.
- When waste transport containers are being loaded, and when directed by the Engineer, the truck engine shall be shut off. The truck engine may be restarted and the truck driven away only after the "all clear" direction is provided to the driver by the loading equipment operator or by a site representative.
- No waste transport container shall be loaded above the sideboards and no waste shall be permitted to spill out of the waste transport container. Before trucks leave the loading areas, the exterior of the waste hauling portion of the vehicle and tires shall be cleaned (by the Contractor's site workers) to remove any residual waste.
- The Contractor's site workers shall reposition the cover bars over the waste material. Drivers shall not walk over waste material.
- Drivers shall cover loads before leaving the loading area with a solid fabric (i.e., vinyl, reinforced polyethylene) that extends over the entire load and is secured to resist wind forces at highway speeds.
- Drivers shall obey all traffic signs and notices (obey the posted speed limit) and comply with weight restrictions.
- Drivers shall obey rules posted on the Site and contained in any of the site-specific HASPs used at the Site by the Contractor and Engineer.

APPENDIX F
MINIMUM REQUIREMENTS FOR WASTE LOADING AND OFFSITE TRANSPORTATION

REMEDIAL DESIGN
BAYER MATERIALSCIENCE LLC
HICKSVILLE, NEW YORK

- Drivers shall report any accidents to the Engineer and cooperate with any subsequent accident investigation.
- No children under 16 years of age shall be allowed on site projects.
- No passengers are allowed in the Contamination Reduction Zone (loading area).
- Drivers shall slow down and use extra caution during inclement weather (i.e., rain, fog, snow).
- Drivers shall use extra caution around blind corners (watch for pedestrians and construction equipment).
- Smoking, eating, and/or drinking is not permitted within the Contamination Reduction Zone, but may be permitted in designated areas of the Support Zone.
- After disposal of waste, the transporter shall be responsible for properly decontaminating the waste hauling portion of their vehicle.