

INTERIM REMEDIAL MEASURES (IRM) WORK PLAN
FOR THE
ROBERT MOSES PARKWAY RIVERWAY CONSTRUCTION ZONE PROJECT
AS PART OF THE
ROBERT MOSES PARKWAY INTERCHANGE CONSTRUCTION PROJECT
NYSDOT PIN 5410.54.30, CONTRACT NO. D262671
CITY OF NIAGARA FALLS, NIAGARA COUNTY, NEW YORK

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LIST OF ACRONYMS AND ABBREVIATIONS

| | |
|--------|---|
| BUD | Beneficial Use Determination |
| CAMP | Community Air Monitoring Plan |
| CMHP | Contractor's Site-Specific Contaminated Material Handling Plan |
| C-SCOs | NYSDEC Part 375 Commercial Soil Cleanup Objectives |
| DER | Division of Environmental Remediation |
| EIC | Engineer in Charge |
| ESC | Erosion and Sediment Control |
| FID | Flame-Ionization Detector |
| HASP | Health and Safety Plan |
| IRM | Interim Remedial Measure |
| mg/kg | Milligram Per Kilogram |
| ND | Non-Detect |
| NYPA | New York Power Authority |
| NYSDEC | New York State Department of Environmental Conservation |
| NYSDOT | New York State Department of Transportation |
| OPRHP | New York State Office of Parks Recreation and Historic Preservation |
| PID | Photoionization Detector |
| PPE | Personal Protective Equipment |
| ppm | Parts Per Million |
| RCRA | Resource Conservation and Recovery Act |
| RI/FS | Remedial Investigation/Feasibility Study |
| TAL | Target Analyte List |
| TCL | Target Compound List |
| TEQ | Toxic Equivalent |
| TSDF | Treatment, Storage, or Disposal Facility |
| USEPA | United States Environmental Protection Agency |
| Watts | Watts Architecture & Engineering |

1.0 INTRODUCTION

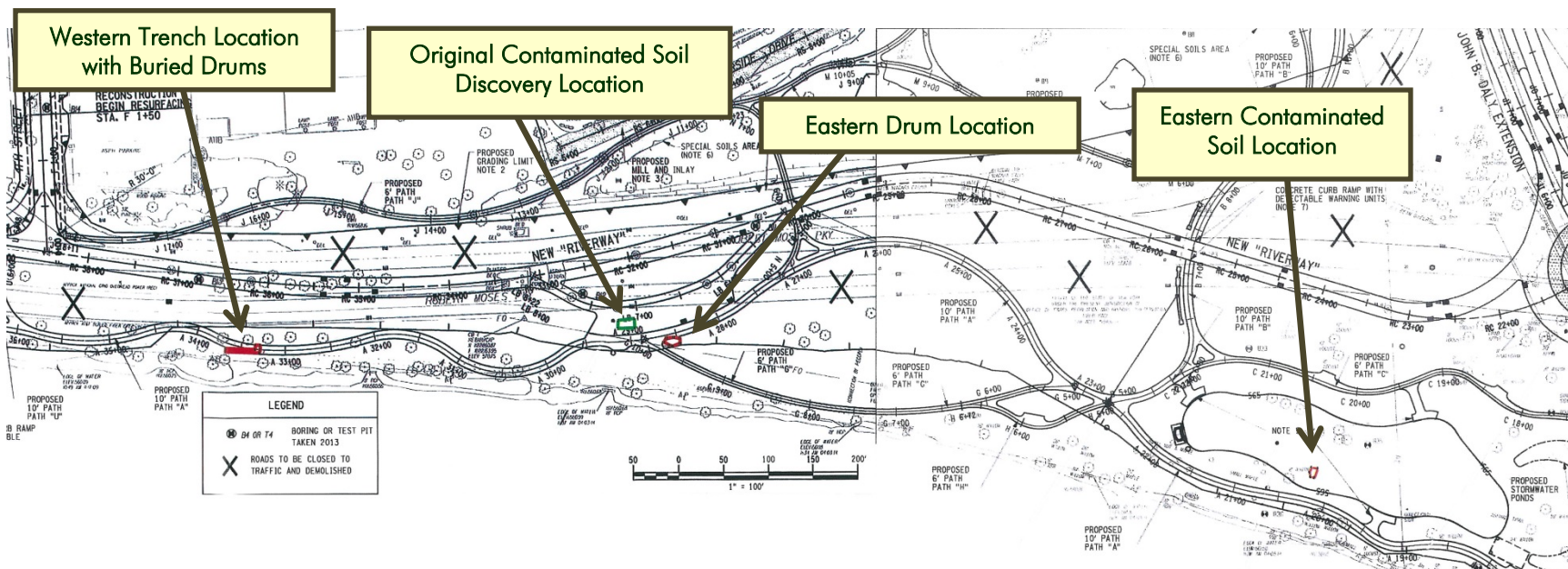
The New York State Department of Transportation (NYSDOT) has requested that Watts Architecture & Engineering (Watts) develop an Interim Remedial Measure (IRM) Work Plan for the Riverway Construction Zone area that is within the overall larger New York State Department of Environmental Conservation (NYSDEC) Robert Moses Parkway-South Site, #932166, remedial project located in the City of Niagara Falls, Niagara County, New York. The NYSDEC Robert Moses Parkway South Site remediation project is a portion of the NYSDOT Robert Moses Parkway, South Segment, Riverway Project (NYSDOT PIN 5410.54.301, Contract No. D262671. See **Figure 1** for the project location map and **Attachment A** for the NYSDEC Site Sub-Areas plan.

The NYSDEC Robert Moses Parkway South Site includes areas of the Niagara Falls State Park west of John Daly Boulevard and east of Fourth Street surrounding the former Robert Moses Parkway. The overall site is made up of two areas which are referenced as, the Former Pond area and the Riverway Construction Zone area. While these areas are part of the same overall NYSDEC site, investigation and/or IRM activities for each of the areas will proceed at different schedules, as approved by DEC.

The NYSDOT is administering the construction of the Robert Moses Parkway, South Segment, Riverway Project which involves the excavation of 1.4 miles of the Robert Moses Parkway-South on land owned by the NYS Office of Parks and Recreation (OPRHP) and the New York Power Authority (NYPA). The Robert Moses Parkway-South was constructed on land that consists mainly of fill from undocumented sources in a historically industrial area known for previous discoveries of contamination at a variety of sites. One of the areas of previously known contamination is the Former Pond area within the NYSDEC Robert Moses Parkway South Site.

Contamination has been discovered at the site during reconstruction at the NYSDOT Robert Moses Parkway Interchange Construction project outside the area of the Former Pond. Buried drums and contaminated soil has been discovered at multiple areas. As a result, NYSDEC has enlarged the Robert Moses Parkway South Site to include the Riverway Construction Zone area. The Former Pond and Riverway Construction Zone areas are a portion of the larger NYSDOT project.

A Remedial Investigation/Feasibility Study (RI/FS) Work Plan is being developed to determine the nature and extent of the contamination. However, during the investigation limited areas of contamination may be removed as an interim remedial measure (IRM) to protect human health and environment, and facilitate continuation of the ongoing NYSDOT Robert Moses Parkway Interchange Construction project. Remedial activities at the Former Pond area are being handled separately from the NYSDOT project.



Project Location



APPROXIMATE PROJECT AREAS

- = NYSDOT Robert Moses Parkway, South Segment, Riverway Project, PIN 5410.54.301
- + = NYSDEC Robert Moses Parkway South Site
- = NYSDEC Former Pond Area
- = NYSDEC Riverway Construction Area



Watts AE
95 Perry Street
Buffalo, New York

FIGURE 1 – PROJECT LOCATION MAP

Robert Moses Parkway, South Segment,
Riverway Project, PIN 5410.54.301, D031059
Niagara Falls, Niagara County, New York

Not to Scale

March 2016

2.0 INTERIM REMEDIAL MEASURE

2.1 Purpose and Need

The purpose of this IRM is to clean up isolated contaminated soil areas (hot spots) which will protect human health and the environment, and facilitate the continuation of the ongoing roadway construction project (NYSDOT Robert Moses Parkway, South Segment, Riverway Project, PIN 5410.54.301) within the remediation area. If field indicators of contamination such as odor, drums or elevated organic vapor readings are encountered in areas outside the remediation area this IRM will also serve as a guide at those locations during excavation activities.

Previous laboratory analysis of samples collected from the hot spots detected several volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), organochlorine pesticides, and metals in excess of the Part 375 Soil Cleanup Objectives (SCOs). Several of the constituents were detected in concentrations exceeding the Part 375 industrial SCOs. Most notable were the elevated results for multiple variations of chlorobenzene compounds (both volatile and semivolatile) and multiple organochlorine pesticides including Lindane and Alpha-, Beta-, and Delta-Benzene hexachlorides (BHC).

It should also be noted that significant levels of dioxins/furans were detected within a sample of a tar-like substance found within a buried/crushed drum. The tar-like substance was coated in yellow powder; therefore, it is unknown whether the detected dioxins/furans were from the tar-like substance or the yellow powder.

Several constituents were detected at levels with a potential to exceed the RCRA toxicity characteristic limits. Subsequent TCLP testing was requested and conducted. While the analytical data indicated that the results and concentrations of the analyzed constituents were below RCRA hazardous levels for toxicity characteristic hazardous waste, the assemblage of the various elevated constituents that were detected within the samples indicate contamination resulting from pesticide production, which would involve listed hazardous wastes.

Based upon the analytical results and subsequent discussions with NYSDEC, the solid materials and soils associated with these samples is considered a listed hazardous waste due to the presence of compounds connected with the historical manufacturing of organochlorine pesticides. All waste associated with these samples must be properly handled, stored, labeled, transported, and disposed of as a listed hazardous waste. As a result of the volume of material that must be processed, the Generator of this waste (OPRHP) must utilize their EPA ID number from the U.S. Environmental Protection Agency.

2.2 General Excavation Constraints

The procedures described herein are meant to summarize the procedures that have been agreed upon regarding handling of soils at the Riverway Construction Zone in the remediation area. These procedures have been derived from meetings, emails and conversations between interested parties. NYSDEC personnel will be notified at least five days in advance of IRM actions.

All persons working in close proximity or in contact with the contaminated soil will require appropriate personal protective equipment (PPE) and an appropriate organic vapor/dust particle respirator and gloves at a minimum. However, please note that this document does not address Health and Safety and is not meant to supersede the Contractor's (Mark Cerrone, Inc.) Site-Specific Contaminated Material Handling Plan (CMHP) already in place for this project.

It has been determined that the earliest field indicator of contamination is odor. Therefore, excavations in areas that are not known to be contaminated (i.e. without field indicators -odor, organic vapor readings from a photoionization detector (PID) or flame-ionization detector (FID), and visual-evidence of contamination) can continue without full-time organic vapor monitoring. If odor is detected in an excavation, all excavation activities will be immediately halted in that area, the contractor will notify the Engineer in Charge (EIC), mark the area, and move to another location to allow work to continue.

Sample collection locations and contaminated soil areas encountered will be surveyed for documentation.

The isolated contaminated soil areas (hot-spots) that have been encountered to-date appear to have similar characteristics and the current evidence supports that these contaminated materials were likely from various waste streams from the same facility, for the following reasons:

- a. Each of the locations exhibited the same distinct odor.
- b. Many of the locations (in or near the drums) contained a similar looking distinct yellow powder or black tarry substance.
- c. The analytical results show that the sampled locations have a similar list of detected contaminants.

If contaminated soils with other characteristics are identified during excavation the EIC should be notified immediately. If slag is encountered during excavations, the use of a radiation detector will be explored (to test the slag for potential radioactivity).

To allow for continued excavation at the site, it was determined that excavated soil will be segregated into the following 3 waste streams:

- **Waste Stream 1** – This waste stream will consist of drum carcasses and associated solid materials (e.g. black tarry material, yellow powder/solids, and contact soils). The solid materials will be generally segregated from the soil; however, soils in contact (within approximately 1 foot) shall also be included in **Waste Stream 1**. This material shall be placed into appropriate roll-off containers or dump trucks to allow for disposal at a properly permitted off-site facility. Disposal of this waste stream may require additional handling in the form of drum overpacking. Disposal requirements are the responsibility of the Contractor (Cerrone), see “Reuse and Disposal Options” section below.
- **Waste Stream 2** – This waste stream will consist of soil that has either an organic vapor reading above background, a chemical odor, or visual indicators of contamination. This material shall be placed into appropriate roll-off containers or dump trucks to allow for eventual disposal at a properly permitted off-site facility. Disposal requirements are the responsibility of Cerrone, see “Reuse and Disposal Options” section below.
- **Waste Stream 3** – This waste stream will consist of all excavated soils within the Riverway Construction Zone remediation area that are not near hot-spots and have no field indicators of contamination such as elevated organic vapor readings, visual, or olfactory. This waste stream will be either directly reused on-site (e.g. trench backfill or embankment) or stockpiled in piles of 1000 cubic yards or less within the project limits. Remediated hot-spot excavation sidewall and bottom soils may become **Waste Stream 3** material after confirmation sampling demonstrates compliance with SCOs. Note that analytical for this waste stream is only required if the soil is from the edge of an excavation to remove contamination (i.e. a confirmation sample) or if the soil is being transported off-site (to determine what reuse or disposal is appropriate). If the analytical indicates that reuse is not an option, off-site disposal requirements will be the responsibility of Cerrone, see “Reuse and Disposal Options” section below.

2.3 Remediation of “Hot-Spots”

For remediation of hot-spots (i.e. **Waste Stream 1** or **Waste Stream 2**), excavation will take place in areas of known contamination and continue until PID or FID organic vapor readings at the excavation edge/bottom are less than ten ppm and there are no visual or olfactory indicators that contamination remains. At this point excavation should stop and confirmation samples (number depending on excavation size and per NYSDEC on a case by case basis) should be collected. Confirmation sampling will include a number of soil samples from the walls and floor of the excavation to allow for closure. Analysis results from soil at the edge of the hot-spot excavation will be compared to the NYSDEC Part 375 Commercial Soil Cleanup Objectives (C-SCOs). If results are greater than C-SCOs then the excavation will need to be expanded to

remove the additional contamination. If results are less than C-SCOs then the excavation is considered complete, and the sidewall and/or bottom soil may be left in-place or reused on-site in the excavation it is adjacent to. If results of the confirmation sampling from the expanded excavation walls are close to meeting the C-SCOs, NYSDEC will be consulted regarding further closure options.

An electromagnetic survey will be conducted by New York State Parks in an effort to identify additional buried drums that may be present at the site. If additional drums are identified, remediation of these additional hot-spots will be handled in this same manner as identified in this IRM Work Plan.

Confirmation samples will be collected at a frequency following DER-10 Section 5.4(b). Given the history of this area, NYSDEC has requested the following analysis schedule for future investigatory and confirmation samples at this site:

- Target Compound List (TCL) Volatiles (EPA method 8260)
- TCL Semi-Volatiles (EPA method 8270)
- TCL Pesticides (EPA method 8081)
- Total RCRA Metals (EPA method 6010/7470A) plus tri- and hexavalent chromium (EPA method 7196A), cyanide (EPA method 335.2)

In addition, if excess **Waste Stream 3** piles are to be potentially reused off-site, the analyses schedule for these piles will include the following (not including the potential disposal analysis that the Contractor may have to perform if the soils are found to be contaminated):

- Target Compound List (TCL) Volatiles (EPA method 8260)
- TCL Semi-Volatiles (EPA method 8270)
- TCL Pesticides (EPA method 8081)
- TCL Herbicides (EPA method 8151)
- TCL PCBs (EPA method 8082)
- TAL metals (EPA method 6010/7470A) plus tri- and hexavalent chromium (EPA method 7196A), cyanide (EPA method 335.2).

After excavation is deemed complete by NYSDEC and all involved parties, the excavation pit shall be back filled with soil that meets NYSDEC requirements. Any imported backfill material will meet residential SCOs. Excess on-site material (aka **Waste Stream 3**) may be reused as backfill if it meets commercial SCOs (see section 2.5).

Soil that contains low levels of hazardous waste may be eligible for a 'contained-in determination' that allows for the soil to be managed as a solid waste. Soil that is granted this condition is still a solid waste, and subject to regulation under 6 NYCRR Part 360 unless the material is also granted a beneficial use determination (BUD). A BUD could potentially allow site soils to be used as backfill for the remediated hot spot areas. If these processes are deemed necessary, they will be handled as a separate task outside of this IRM.

2.4 Segregation and Stockpiling

It has been established that monitoring for organic vapors (VOCs) will be performed with either a PID or an FID, in areas that exhibit field indicators of contamination as described above.

Soil stockpiles from **Waste Stream 3** can be placed anywhere on-the-site, on poly, that is convenient as long as appropriate erosion and sediment control (ESC) measures are in place. No confirmation soil sampling (beneath the poly) will be required after stockpiles from **Waste Stream 3** have been removed. All soil stockpiles related to **Waste Stream 3** shall be marked and identified by Cerrone as to where the soil came from to allow for future handling and coordination with the Owner (a.k.a. generator - NYSOPRHP).

If stockpiles of **Waste Stream 1** or **Waste Stream 2** are placed on poly on the ground, confirmation soil sampling (beneath the poly) will be required after stockpiles have been removed. Prior to the start of IRM excavations, proper storage methods and/or containers will be identified for materials associated with **Waste Stream 1** and **Waste Stream 2**. Note that **Waste Streams 1 and 2** are considered hazardous wastes and will need to comply with the United States Environmental Protection Agency (USEPA) Resource Conservation and Recovery Act (RCRA) storage and disposal requirements.

2.5 Reuse and Disposal Options

Soil from **Waste Stream 3** may be reused on-site for backfill within the same excavation without analytical sampling; however, if on-site reuse is not an option, excess soils will require sampling to determine appropriate offsite reuse or disposal. Sampling for determination of appropriate off-site reuse shall follow NYSDEC's recommendations in DER-10. If the analytical indicates that reuse is not an option, off-site disposal requirements will be the responsibility of Cerrone.

Note that sampling for **Waste Stream 3** should only be conducted for soils that are within the remediation area and will not be reused on-site. If sampling is performed on a **Waste Stream 3** pile, the results will need to meet the C-SCOs in order to be reused on-site.

- If analytical testing is performed on the piles from **Waste Stream 3** and listed hazardous waste compounds are identified but below C-SCOs, the soil may only be reused in the excavation it originated from. However, for soil containing listed hazardous waste, moving material from one excavation on the site to another is not permitted and is considered "active waste management".

- **Waste Stream 3** material that contains a listed hazardous waste and is actively managed must be managed as a hazardous waste, regardless if it meets SCOs. This material is potentially eligible for a contained-in-determination.
- If the analytical shows contaminants above the lower of the groundwater and residential use Part 375 SCOs, offsite reuse shall be restricted (potentially requiring landfill disposal) and agreed upon by NYSDOT on a case-by-case basis.

Active waste management is defined as follows:

- Active waste management occurs when remediation waste is stored (even briefly) in a tank or container, removed from the area of contamination and treated ex-situ, either on-site or off-site, or removed from an area of contamination and placed onto another separate and distinct area of contamination.
- Active waste management does not occur as a result of remediation waste: being consolidated (i.e., excavated, temporarily stockpiled, re-deposited, graded, and/or leveled) within the same area of contamination, in an area of contamination being capped in-place, including grading prior to capping, or in an area of contamination being treated in-situ.

Listed hazardous wastes (HW) such as Lindane (Gamma BHC) and other BHC's are known to be present on this site. Soil from this site with a listed waste may potentially be considered a HW regardless of the concentration of the listed constituent. Soil at this site is only considered a HW if it contains listed waste(s) and is actively managed. For example:

- If soil analytical contains a listed waste above C-SCOs and has nuisance characteristics (odor, drum/barrel), it cannot be left on site and it is considered a HW.
- If soil analytical contains a listed waste above C-SCOs with no nuisance characteristics and it is removed from the site, it is considered a HW.
- If soil analytical contains listed waste above C-SCOs with no nuisance characteristics (drum/barrel, odor or PID/FID reading), and it is not actively managed, it is not considered a HW and can be reused in the same excavation on site. These areas must be surveyed and locations documented.

2.6 Transportation

The Contractor will be responsible for transportation and containment controls during the offsite transport of materials in accordance with federal, State, and local requirements. Materials will be covered and conveyed during transportation in equipment that is properly designed, equipped, operated, and maintained to prevent leakage, spillage or airborne emissions during transport.

Cerrone is responsible for disposal sampling and other arrangements required for landfill disposal under the disposal of contaminated (NYSDOT Item 205.050201) and hazardous (NYSDOT Item 205.0501nn) soil items. Analytical results from samples collected at the site by NYSDOT or the Owner shall be shared with Cerrone. Disposal arrangements should be prearranged to make sure that appropriate landfills are selected. Some landfills may not be able to accept these contaminated soils based on the constituents and concentrations identified. All materials removed from the site that contain listed waste (thus are hazardous waste) need to be disposed at a permitted treatment, storage, or disposal facility (TSDF). The TSDF should be selected prior to excavation to ensure that all shipping, labeling, and other facility specific requirements are adequately addressed. Also, based on the concentrations observed to date it is likely that some waste, mainly from Waste Stream 1 will require treatment (likely incineration) prior to final land disposal at a TSDF.

2.7 Material Tracking

The Contractor will be responsible for waste management tracking including generation and disposal information. The Contractor will provide documentation including transported manifests, final waste facility manifests, and Certificates of Disposal to record the location and disposition of materials transported offsite.

2.8 Site Safety and Monitoring

Site access must be restricted by physical barriers and/or signs to all pedestrians, residents, and non-related site personnel during all IRM excavations. The IRM Contractor conducting the site work will be required to develop a HASP that specifically addresses health and safety procedures for all aspects of the remediation work. The HASP must include a Contingency Plan that addresses potential site-specific emergencies. A member of the Contractor's field team will be designated to serve as the on-site Health and Safety Officer and will monitor Health and Safety activities throughout the IRM program.

This project will meet the requirements of the New York State Department of Health (NYSDOH) Generic Community Air Monitoring Program (CAMP) from NYSDOH's DER-10. The NYSDOH Generic CAMP is attached to this document as **Attachment B**.

3.0 IRM REPORTING

Standard daily reporting procedures will include preparation of a daily work report, and when appropriate, problem identification and corrective measures report. Information that may be included on the daily report form includes:

- Approximate sampling locations (sketches) and sample designations.
- Processes and locations of activities under way.
- Equipment and personnel working in the area, including subcontractors.
- Approximate volume and description of materials removed (i.e., soil, cake, powder, drums, other).
- Number and type of truckloads of materials removed from the site.

The completed reports will be submitted to the NYSDEC as part of the IRM Closure Report. Photo documentation of the IRM activities will be prepared throughout the duration of the project as necessary to convey typical work activities and whenever changed conditions or unexpected circumstances are encountered.

3.1 IRM Closure Reporting

Details of completion of IRM activities will be documented in an IRM Closure Report submitted to the NYSDEC. The results of all sampling and analysis will be presented. The Report will present a detailed summary of site physical conditions, chemical conditions and potential risks to human health or the environment. The IRM Report will include (at a minimum):




- Text describing the IRM activities performed; a description of any deviations from the Work Plan and associated corrective measures taken; and other pertinent information necessary to document that site activities were carried out in accordance with this Work Plan.
- A site map showing the sampling locations with sample identification; drum locations; areas of contaminated soils; and significant site features.
- Tabular quantity summaries of volume of materials removed.
- Documentation on the disposition of material removed from the site.
- Tabular comparison of soil sampling and disposal characterization analytical results to disposal criteria, respectively.
- Tabular comparison of confirmation analytical results to SCGs.
- Copies of daily inspection reports and, if applicable, problem identification and corrective measure reports.
- Photo documentation of IRM activities.

APPENDIX A

Figure: NYSDEC's Site Sub-Areas Plan

Legend

(all locations are approximate)

-  Expanded Site Boundary
-  Riverway Construction Zone
-  Former Pond Area



1 inch = 250 feet

Site Sub-Areas

Robert Moses Parkway South Site

Niagara Falls, NY 14303

Site #932166

January 2016

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

APPENDIX B

New York State Department of Health (NYSDOH) Generic Community Air Monitoring Program (CAMP) from NYSDEC's Division of Environmental Remediation (DER)-10

Appendix 1A

New York State Department of Health Generic Community Air Monitoring Plan

Overview

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

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

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

Community Air Monitoring Plan

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

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

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

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

VOC Monitoring, Response Levels, and Actions

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

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.
2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.
4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

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

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

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than $150 \text{ mcg}/\text{m}^3$ 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.

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

December 2009

Appendix 1B

Fugitive Dust and Particulate Monitoring

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

1. Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.
2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities may also include the excavation, grading, or placement of clean fill. These control measures should not be considered necessary for these activities.
3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM₁₀) with the following minimum performance standards:
 - (a) Objects to be measured: Dust, mists or aerosols;
 - (b) Measurement Ranges: 0.001 to 400 mg/m³ (1 to 400,000 :ug/m³);
 - (c) Precision (2-sigma) at constant temperature: +/- 10 :g/m³ for one second averaging; and +/- 1.5 g/m³ for sixty second averaging;
 - (d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);
 - (e) Resolution: 0.1% of reading or 1g/m³, whichever is larger;
 - (f) Particle Size Range of Maximum Response: 0.1-10;
 - (g) Total Number of Data Points in Memory: 10,000;
 - (h) Logged Data: Each data point with average concentration, time/date and data point number
 - (i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;
 - (j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;
 - (k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;
 - (l) Operating Temperature: -10 to 50° C (14 to 122° F);
 - (m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.
4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the remedial party to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.
5. The action level will be established at 150 ug/m³ (15 minutes average). While conservative,

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

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

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

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

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

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

Appendix 1C

DEC Permits Subject to Exemption

In accordance with section 1.10, exemptions from the following permit programs may be granted to the person responsible for conducting the remedial programs undertaken pursuant to section 1.2:

- Air - Title 5 permits
- Air - State permits
- Air - Registrations
- Ballast Discharge
- Chemical Control
- Coastal Erosion Hazard Areas
- Construction of Hazardous Waste Management Facilities
- Construction of Solid Waste Management Facilities
- Dams
- Excavation and Fill in Navigatable Waters (Article 15)
- Flood Hazard Area Development
- Freshwater Wetland
- Hazardous Waste
- Long Island Wells
- Mined Land Reclamation
- Navigation Law - Docks
- Navigation Law - Floating Objects
- Navigation Law - Marinas
- Non-Industrial Waste Transport
- Operation of Solid Waste Management Facilities
- Operation of Hazardous Waste Management Facilities
- State Pollution Discharge Elimination Systems (SPDES)
- Stream Disturbance
- Tidal Wetlands
- Water Quality Certification
- Water Supply
- Wild, Scenic and Recreational Rivers