City of Johnstown

Soil Gas Work Plan

Johnstown Landfill

Fulton County, New York

NYSDEC Site No. 518002

January 2025
REV. May 2025

Soil Gas Work Plan

Johnstown Landfill

Fulton County, New York

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Acronyms and Abbreviations

EPA	Environmental Protection Agency
NYSDEC	New York State Department of Environmental Conservation
SMP	Site Monitoring Plan
PRR	Periodic Review Report
bgs	Below Ground Surface
NAVD	North American Vertical Datum
NAD	North American Datum

1 Introduction

The City of Johnstown Landfill (NYSDEC Site No. 518002) on West Fulton Street Extension in Fulton County, New York (site) was used as an open refuse disposal facility from 1947 to 1960 before being converted to a sanitary landfill. The landfill accepted industrial wastes from local tanneries and textile plants until April 1979, and sludge from the Gloversville-Johnstown Joint Sewage Treatment Plant from 1973 to April 1979. Landfill operations ceased in June 1989. Much of the tannery wastes were disposed in the landfill as chromium-treated hide trimmings and other materials. Sewage sludge was reportedly disposed in the landfill at a rate of approximately 20,000 cubic yards per year. The sludge contained chromium, iron, and lead.

In June 1986, the site was placed on the National Priorities List of Superfund Sites by the United States Environmental Protection Agency (USEPA) (I.D. No. NYD980506927), and the New York State Registry of Inactive Hazardous Waste Disposal Sites by the New York State Department of Environmental Conservation (NYSDEC) (I.D. No. 518002). The City of Johnstown entered into an interim Order on Consent with the NYSDEC to remediate the property in 1988. Under the Order on Consent and the Record of Decision, known soil contamination associated with the site was consolidated into the on-site landfill. Remedial activities were completed in July 1997.

In its latest Five-Year Review Report (USEPA 2021), the USEPA concluded that no risks are present at the site in either groundwater or soils; furthermore, the USEPA concluded that no risks are expected as long as the site use does not change, and the following engineering and institutional controls are properly monitored and maintained in accordance with the Site Monitoring Plan (SMP) (Arcadis 2016):

- Existing landfill cap;
- Perimeter fencing;
- Warning signage; and
- Environmental Covenant, which prohibits the installation of drinking water wells at the site and restricts activities that could affect the integrity of the cap.

In accordance with the SMP, the landfill is inspected quarterly, landfill gases are monitored at the gas vents quarterly, groundwater and sediment samples are collected annually and surface water samples are collected semi-annually. The results of these monitoring activities are reported in annual monitoring reports, which are submitted to NYSDEC and USEPA. In September 2021, the City of Johnstown's five-year Periodic Review Report (PRR) required by the SMP was submitted to the NYSDEC and the New York State Department of Health for review. The report summarized the results of inspections and post-closure groundwater, surface water, and sediment monitoring conducted in the five-year time span of January 2016 through December 2020. The five-year PRR was approved by the NYSDEC on February 3, 2022 and the engineer and institutional controls continue to be properly monitored and maintained.

In a September 18, 2024 letter (NYSDEC 2024), NYSDEC requested that Arcadis implement a program to monitor perimeter subsurface gasses between the landfill and the adjacent properties to be in compliance with the Record of Decision (USEPA 1993). This Work Plan details the process Arcadis proposes to complete that request.

2 Scope of Investigation

The activities to be completed under this Work Plan include:

- Health and Safety Plan Preparation
- Soil Gas Monitoring Point Installation
- Quarterly Soil Gas Monitoring

These activities are discussed in the following subsections.

2.1 Health and Safety Procedures and Community Air Monitoring Plan Implementation

The site-specific Health and Safety Plan will be revised to present the health and safety procedures, methods, and requirements that will apply to field personnel during implementation of the field work described in this Work Plan as well as the quarterly environmental monitoring. Field activities will be conducted using Modified Level D personal protective equipment. All personnel who work in areas where they may be exposed to site contaminants will be trained as required. Health and safety procedures will be compliant with the Occupational Safety and Health Administration's Hazardous Waste Operations and Emergency Response standards, as described in 29 Code of Federal Regulations 1910.120. Because the work is not to be conducted within the landfill cap or where contamination is expected, the Excavation Work Plan included in the Site Management Plan will not be implemented.

Arcadis will implement the site-specific Community Air Monitoring Plan (CAMP) (Appendix B) during ground-intrusive activities. The subcontractor will be responsible for taking action to reduce and mitigate dust generation and ambient air concentrations of total organic vapors if action levels in the CAMP are exceeded. The CAMP monitoring will be conducted to minimize the possibility that field personnel and the surrounding community will be exposed to site contaminants during drilling activities.

2.2 Soil Gas Monitoring Point Installation

Up to seven permanent subsurface soil vapor points will be installed between the landfill and the neighboring properties at the locations shown on Figure 1 (SG-1 to SG-7). Prior to installing the soil vapor monitoring points, each location will be cleared of utilities using three lines of evidence. It is assumed that the following lines may be used: review of site figures, geophysical scan (ground penetrating radar/magnetometer), UDig-NY one-call utility locating service (formerly DigSafelyNY), visual scan of nearby monitoring wells and other infrastructure, and clearing using hand tools. Each location will be visually inspected for items or conditions that would negatively affect the sample results. Historic water elevations will also be reviewed within the area of the proposed soil gas probes to confirm that the vapor monitoring points will be installed above the anticipated high water table.

Arcadis will subcontract with a drilling firm to use a direct-push drill rig to install up to seven permanent soil gas monitoring points. Boring locations will be hand cleared to five feet below ground surface (bgs). A direct-push rig will be used to advance 2-inch external diameter rods into the subsurface. Continuous Macrocore (or equivalent) soil samples will be retrieved from the subsurface, opened, screened for volatile organic compounds with a photoionization detector and characterized. The soil type and photoionization detector readings from the soil

screening will be recorded on a field log. If saturated soils are encountered, the interval will be plugged with granulated bentonite up through the last dry interval. The probe will be advanced to 8 feet bgs at each borehole with the recovered soil characterized to confirm that water is not present. The hole will then be backfilled with clean silica sand to 7.5 ft bgs where the sample screen and tubing will be installed. After installation of sample tubing and screen (anticipated to be 6-inches in length), the borehole will be backfilled with clean silica sand to 1-foot above the top of screen. Six inches of dry granulated bentonite will be placed on top of the sand layer, followed by hydrated granular bentonite to 24-inches bgs. The remaining annulus to ground surface will be filled with non-shrink grout cement. Each soil gas monitoring point will be finished with a stick-up protective casing. Each protective casing cover will be secured using a padlock. Sample tubing will be cut long enough to allow the tubing to be connected to a 4-gas meter and will be terminated using an airtight plug or valve. Sample probes and protective casing will be clearly labeled with a sample ID. The minimal amount of soil cuttings that will be generated (estimated at approximately 0.17 cubic feet per boring) will be spread on the ground around each established soil vapor monitoring point as the soil has not come into contact with leachate or landfill waste. If evidence of contamination is observed in recovered soils, such as elevated photoionization detector readings, staining, or odors, they will be containerized and characterized for disposal and NYSDEC will be notified within 48 hours.

Pertinent information that will be noted include personnel present on site, times of arrival and departure, significant weather conditions, timing of installation activities, soil descriptions, construction specifications (backfill material and borehole diameter, tubing length, screen details, seal type), and quantities of materials used. In addition, the locations of newly-installed soil vapor probes will be documented photographically or in a site sketch. A Single Soil Vapor Probe Construction Diagram, included in Appendix A, will be completed for each soil gas monitoring point. If appropriate, a measuring wheel or engineer's tape will be used to determine approximate distances between important site features. The locations of exterior soil vapor sampling points will be surveyed relative to the North American Vertical Datum of 1988 (NAVD 88) and North American Datum of 1983 (NAD 83) for northing and easting positions.

Down-hole drilling equipment and non-dedicated/non-disposable drilling and sampling equipment will be decontaminated with a brush and liquid detergent (e.g. Alconox) and then rinsed with clean water prior to use at the site, in between each well location, and prior to leaving the site.

2.3 Soil Gas Monitoring

Sampling logs will be used to record site conditions, local weather information for the sampling period, and any other pertinent observations. The following information will also be recorded on the sampling log:

- Sample identification number;
- Date and time of sample collection;
- Field personnel;
- Sampling methods and devices;
- Soil gas and ambient air landfill gas (carbon monoxide, hydrogen sulfide, percent Lower Explosive Limit, and oxygen) readings.

Landfill gases at each soil gas monitoring point will be measured quarterly, concurrent with the landfill inspections.

3 Scheduling and Reporting

The installation of the soil gas monitoring points will occur following snow melt in the spring of 2025, pending driller availability. The first soil gas monitoring event is anticipated take place during the June 2025 landfill inspection event. Subsequent soil gas monitoring will occur during the quarterly landfill inspection events. The measurements will be reported in the annual landfill environmental monitoring reports. If elevated readings are detected, such as more than 10% of the lower explosive limit, Arcadis will notify NYSDEC, NYSDOH, and USEPA within 48 hours of the quarterly landfill inspection events. If there are concerns with the monitoring data from the seven initial soil gas monitoring locations, the need for additional soil gas monitoring or soil gas monitoring points will be discussed with NYSDEC.

4 Investigation-Derived Waste

Investigation-derived waste generated during field activities may include soil cuttings, decontamination fluids, personal protective equipment (PPE), and other disposable sampling materials. Soil with no evidence of contamination, such as no elevated photoionization detector readings, staining, or odors, will be spread on the ground around each established soil vapor monitoring point as discussed in Section 2.2. PPE (e.g., nitrile gloves, disposable supplies, paper, plastic) will be treated as municipal waste. Impacted soil cuttings derived from drilling and wastewater from decontamination procedures completed after contact with impacted materials will be placed in properly labelled DOT-approved 55-gallon drums. Containerized waste will be staged on site for waste characterization analysis. After containerized waste is properly profiled, drums will be disposed of in accordance with waste hauler, waste disposal facility, state, and federal requirements.

5 References

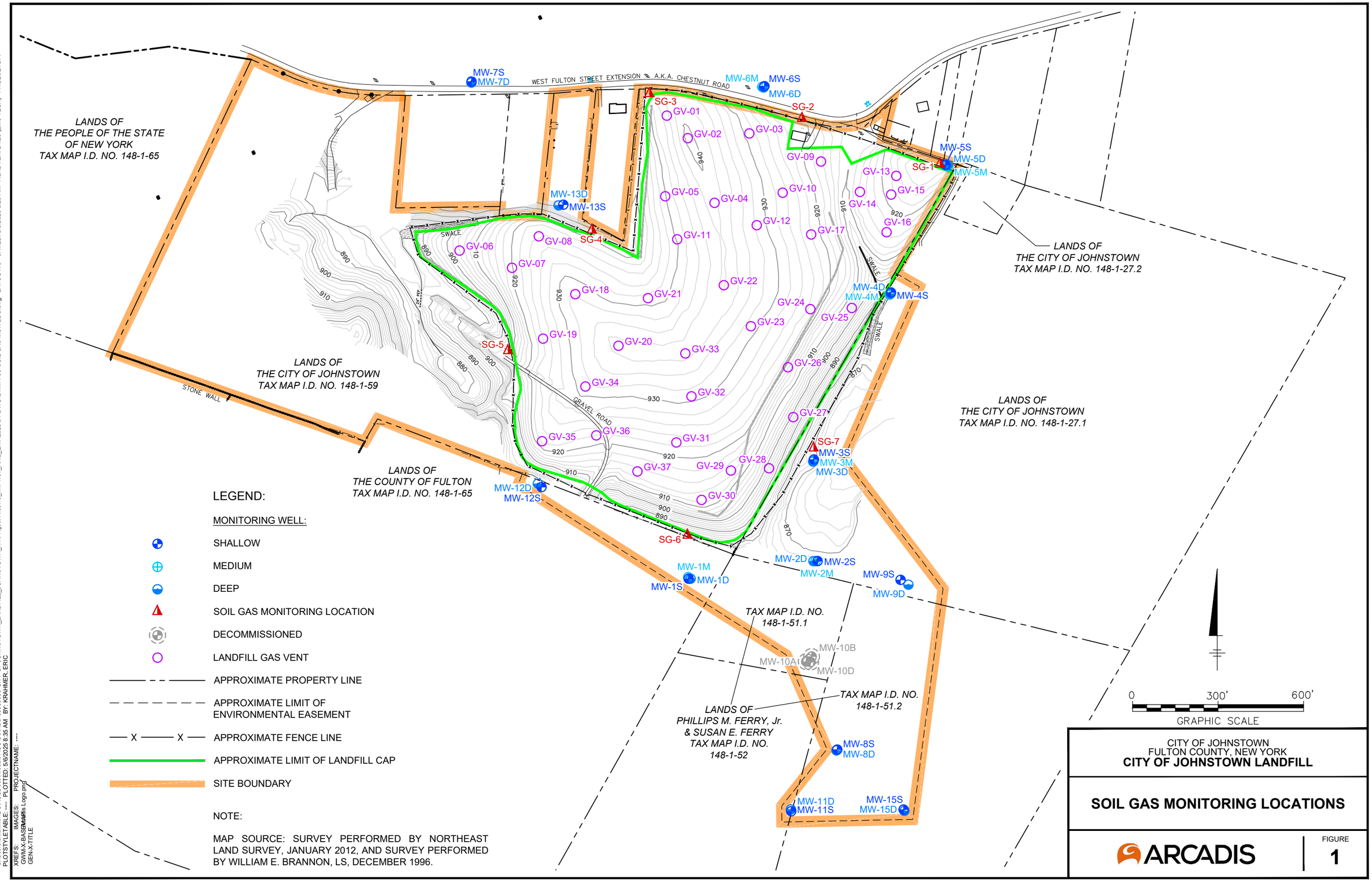
Arcadis. 2016. Site Management Plan. Johnstown Landfill, Fulton County, New York. NYSDEC Site Number: 518002. April 4, 2016.

NYSDEC. 2024. “RE: Subsurface Landfill Gas Monitoring and 2023 Annual Environmental Monitoring Report Johnstown City Landfill, Site ID: 518002 Johnstown (T), Fulton County.” Letter from Nicole Hinze of NYSDEC to Chris Vose of the City of Johnstown, dated September 18. 2024.

USEPA. 1993. “Superfund Record of Decision: Johnstown City Landfill, NY.” Dated March 13, 1993.

USEPA. 2021. Fifth Five-Year Review Report for Johnstown City Landfill Superfund Site, Fulton County, Town of Johnstown, New York. U.S. Environmental Protection Agency Region 2, New York, New York.

Figures



LEGEND:

MONITORING WELL:

- SHALLOW
- MEDIUM
- DEEP
- SOIL GAS MONITORING LOCATION
- DECOMMISSIONED
- LANDFILL GAS VENT
- APPROXIMATE PROPERTY LINE
- APPROXIMATE LIMIT OF ENVIRONMENTAL EASEMENT
- APPROXIMATE FENCE LINE
- APPROXIMATE LIMIT OF LANDFILL CAP
- SITE BOUNDARY

NOTE:

MAP SOURCE: SURVEY PERFORMED BY NORTHEAST LAND SURVEY, JANUARY 2012, AND SURVEY PERFORMED BY WILLIAM E. BRANNON, LS, DECEMBER 1996.

CITY OF JOHNSTOWN
FULTON COUNTY, NEW YORK
CITY OF JOHNSTOWN LANDFILL

SOIL GAS MONITORING LOCATIONS

ARCADIS

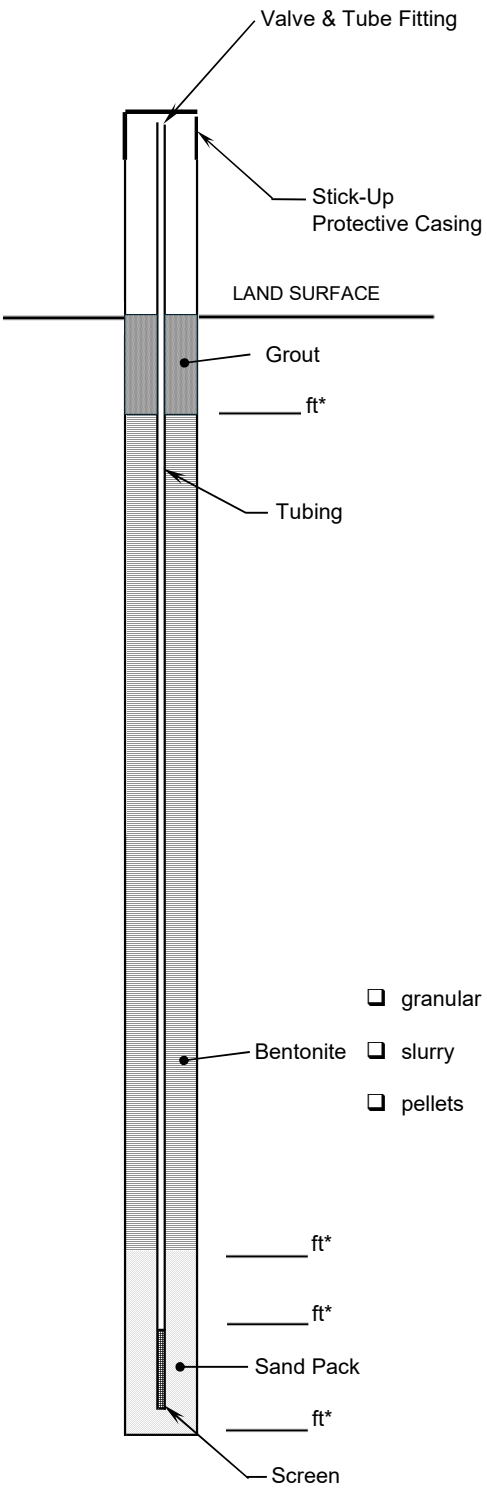
FIGURE
1

Appendix A

Single Soil Vapor Probe Construction Diagram

ARCADIS

SINGLE SOIL VAPOR PROBE CONSTRUCTION DIAGRAM



* Depth Below Land Surface

Project: _____ Port: _____

City: _____

County: _____ State: _____

GPS Coordinates:

Latitude: _____

Longitude: _____

Land-Surface Elevation and Datum:

_____ feet

❑ Surveyed

❑ Estimated

Installation Date: _____

Weather Conditions at Installation: _____

_____

Drilling Contractor: _____

Driller: _____

Drilling Method: _____

Screen:

Construction: _____

Length: _____

Tubing:

Construction: _____

Diameter: _____

End Valve:

Type/Construction: _____

End Connection: _____

Remarks: _____

_____

_____

_____

_____

_____

_____

_____

Prepared by: _____

Appendix B

Site Specific Community Air Monitoring Plan

Community Air Monitoring Plan

Johnstown Landfill

Fulton County, New York

USEPA ID # NYD 980506927

NYSDEC Site Number: 518002

May 2025

Community Air Monitoring Plan

Johnstown Landfill
Fulton County, New York

May 2025

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Table (in text)

Attachment

1 Introduction

This Community Air Monitoring Plan (CAMP) has been prepared on behalf of the City of Johnstown Landfill in support of the soil gas monitoring point installation activities at the Johnstown Landfill (NYSDEC site # 518002) located on West Fulton Street Extension in Fulton County, New York. Soil gas monitoring and installation activities are detailed in the 2025 Soil Gas Work Plan (Arcadis 2025).

The purpose of this CAMP is to describe the monitoring activities that will be conducted by Arcadis to monitor for potential airborne releases of constituents of concern (COCs) during intrusive soil gas monitoring point installation activities. This CAMP specifies the air emission action levels, air monitoring procedures, monitoring schedule, data collection and reporting to be performed during the implementation of the field activities.

Arcadis is responsible for providing all labor, materials, and equipment necessary to implement the community air monitoring program specified herein. Arcadis's contractor (Labella Associates) is ultimately responsible for confirming that all corrective measures associated with the community air monitoring program (including the control of dust, vapors, and odors) are conducted in accordance with this CAMP.

1.1 Site Location and Description

The Johnstown Landfill site (NYSDEC Site No. 518002) is located in the Town of Johnstown, Fulton County, New York and is identified as Block 148 and Lot 1-59 on the Johnstown Tax Map. The site is located approximately 1.5 miles northwest of the City of Johnstown and 1.75 miles west of the City of Gloversville. The site is an approximately 68-acre area bounded by low density residential areas along West Fulton Street Extension to the north, and mixed wooded and agricultural lands to the east, south, and west.

The Johnstown Landfill (site) was used as an open refuse disposal facility from 1947 to 1960 before being converted to a sanitary landfill. The landfill accepted industrial wastes from local tanneries and textile plants until April 1979, and sludge from the Gloversville-Johnstown Joint Sewage Treatment Plant from 1973 to April 1979. Landfill operations ceased in June 1989. The tannery wastes contained elevated levels of chromium and the wastewater sludge contained chromium, iron, and lead.

In June 1986, the site was placed on the National Priorities List of Superfund Sites by the United States Environmental Protection Agency (USEPA) (I.D. No. NYD980506927), and the New York State Registry of Inactive Hazardous Waste Disposal Sites by the New York State Department of Environmental Conservation (NYSDEC) (I.D. No. 518002). The City of Johnstown entered into an interim Order on Consent with the NYSDEC to remediate the property in 1988. Under the Order on Consent and the Record of Decision, known soil contamination associated with the site was consolidated into the on-site landfill. Remedial activities were completed in July 1997. In a September 18, 2024 letter (NYSDEC 2024), NYSDEC requested that Arcadis implement a program to monitor perimeter subsurface gases between the landfill and the adjacent properties to be in compliance with the Record of Decision (USEPA 1993).

1.2 Summary of Activities

The anticipated intrusive site activities include installation of seven (7) soil gas monitoring points using direct-push drilling. The goal of this proposed scope is to fulfill a request made by the NYSDEC in September 2024 to implement a program to monitor perimeter subsurface gasses between the landfill and the adjacent properties to

be in compliance with the Record of Decision (USEPA 1993). Additional details regarding the field activities are provided in the 2025 Soil Gas Work Plan (Arcadis 2025).

2 Odor, Vapor, and Dust Control

As defined in the New York State Department of Health (NYSDOH) Generic CAMP (included as Attachment 1), intrusive remedial activities to be performed at the site have the potential to generate localized impacts to air quality. Field activities that have the potential to generate air emissions include, but may not be limited to, the following:

- Overburden drilling;
- Installation of sub-slab soil vapor points;
- Material handling (e.g., offloading of materials, and loading of materials for transport to an off-site disposal facility); and
- Other ancillary intrusive activities.

Odor, vapor, and dust emissions resulting from these activities will be controlled using a combination of the following (as deemed necessary):

- Water spray during saw cutting and sub-slab vapor point installation;
- Drilling with water; and
- Polyethylene sheeting (for covering well construction materials).

Odor, vapor, and dust controls will be proactively utilized by the contractor during the work to:

- Prevent exceedances of the total volatile organic compounds (VOCs) and Particulate Matter of 10 microns in diameter or smaller (PM10) action levels specified Section 3.4 of this CAMP; and
- Mitigate odor emissions to the extent practicable and to the satisfaction of Arcadis, New York State Department of Environmental Conservation (NYSDEC), and NYSDOH.

3 Air Monitoring Procedures

The community air monitoring program is intended to be a discrete program that will be operated in conjunction with the exclusion zone (i.e., work zone) air monitoring program. Arcadis will conduct real-time community air monitoring during the intrusive soil gas monitoring point installation activities. Monitoring will be conducted at representative locations at the perimeter of the work zone for VOCs and PM_{10}. However, particulate monitoring will not be performed during precipitation events.

Additional information regarding the monitoring locations, equipment, and action levels is presented below.

3.1 Monitoring Location Selection and Deployment

A monitoring station will be required at the perimeter of the work zone (i.e., one upwind and one downwind station). Monitoring station locations will be determined daily based on the nature of the anticipated field activities. An upwind location for both VOC and PM_{10} monitoring will be selected at the start of each workday and one downwind location (based on predominant wind direction) for both VOC and PM_{10} monitoring will also be selected. 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-degree compass change from the original wind direction), the monitoring stations will be relocated so that the upwind and downwind locations are maintained. Air monitoring location changes will be documented in a field logbook.

3.2 Volatile Organic Compound Monitoring

A real-time VOC monitor equipped with a photoionization detector and calibrated per manufacturer's specifications, will be used to monitor for VOCs. As required by the NYSDOH Generic CAMP (Attachment 1), VOCs will be monitored continuously during intrusive and/or potential dust-generating activities (e.g., drilling, monitoring well installation, and saw cutting or coring) using instrumentation equipped with electronic data-logging capabilities. All time-weighted average (TWA) concentrations (calculated for 15-minute increments [e.g., 08:00 to 08:15, 08:15 to 08:30]) and any instantaneous readings taken to facilitate activity decisions will be recorded in the field logbook.

3.3 Total Suspended Particulate Monitoring

Real-time monitoring for PM_{10} will be conducted during investigative activities at the site. As required by the NYSDOH Generic CAMP and requirements for Fugitive Dust and Particulate Monitoring (Attachment 1), real-time airborne PM_{10} monitoring will be conducted continuously during intrusive and/or potential dust-generating activities (e.g., drilling, monitoring well installation, and saw cutting or coring) using instrumentation equipped with electronic data-logging capabilities (upwind and downwind). A real-time PM_{10} monitor will be used for PM_{10} monitoring. All TWA concentrations (calculated for continuous 15-minute increments [e.g., 08:00 to 08:15, 08:15 to 08:30]) and any instantaneous readings taken to assess an appropriate course of action will be recorded using an electronic data logger and/or in the field logbook.

Fugitive dust migration will be visually assessed during all work activities, and reasonable dust-suppression techniques will be used during any site activities that may generate fugitive dust (as discussed in Section 2).

3.4 Alert and Action Levels

Alert and action levels for VOCs and ambient air PM_{10} concentrations are provided in Table 1. Alert and action levels 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 alert levels. Additional details are provided in the following subsections.

Table 1. Community Air Monitoring Alert and Action Levels

Parameter	Basis of Measurement	Alert Level	Action Level
Total VOCs	15-Minute TWA Concentration	2.5 ppm	5.0 ppm
PM_{10}	15-Minute TWA Concentration	100 µg/m^3	150 µg/m^3

Notes:
1. ppm – parts per million
2. µg/m3 – micrograms per cubic meter
3. TWA – time weighted average

3.4.1 Alert and Action Levels for VOCs

As outlined in the NYSDOH Generic CAMP (Attachment 1) if the ambient air concentration for VOCs exceeds 2.5 parts per million (ppm) above background (i.e., upwind location) for the 15-minute TWA, work may continue. The contractor will attempt to identify the potential source of the exceedance and employ additional vapor, and/or dust controls, as necessary, to abate emissions.

If the ambient air concentrations for VOCs persist at levels in excess of 5 ppm but less than 25 ppm above background, all work activities will be halted, NYSDEC will be immediately notified, the source of the elevated VOC concentrations identified, corrective actions to reduce or abate the emissions will be completed or modify construction techniques, as necessary, and continue air monitoring. Work activities may resume provided that the 15-minute average VOC concentration remains below the alert levels.

If the ambient air concentrations for VOCs exceed 25 ppm above background, work shall not resume until authorized by NYSDEC.

3.4.2 Alert and Action Levels for PM10

As outlined in the NYSDOH Generic CAMP (Attachment 1), if the ambient air concentration for PM_{10} exceeds 100 micrograms per cubic meter ($\mu g/m^3$) above average background (i.e., upwind location) for the 15-minute TWA, or visible dust is observed leaving the work area, work may continue if dust suppression techniques are implemented. The contractor will attempt to identify the potential source of the exceedance and shall employ additional dust controls, or modify construction techniques, to abate emissions.

If the ambient air concentration for PM_{10} exceeds 150 $\mu g/m^3$ above average background for the 15-minute TWA, or visible dust is observed leaving the work area, the contractor shall stop all work activities, immediately notify NYSDEC, identify the source of elevated PM_{10} concentrations, complete corrective actions to reduce or abate the emissions or modify construction techniques, as necessary, and continue air monitoring. Work activities may resume provided that the 15-minute TWA concentration remains below the action levels.

3.5 Odor Monitoring

During working hours, Arcadis will conduct periodic walks around the perimeter of the work area(s) to monitor for odors originating from the intrusive activities. These perimeter checks will be performed more frequently, as necessary, depending on the work being performed and meteorological factors such as change in wind direction. Meteorological factors that can influence odor generation and dissemination generally include temperature, humidity, precipitation, atmospheric pressure, wind direction, and wind speed. These factors can work synergistically with a positive or negative impact on odor generation and transport/dispersion. For example, odors generally tend to be less prevalent with lower temperatures, precipitation, or high humidity. Additionally, odor dissemination is greatly influenced by wind direction and wind speed. Meteorological factors, including wind direction, will be monitored during the intrusive activities.

If odors are noticed along the perimeter of the work area, work will continue and odor-, vapor-, and dust-suppression techniques employed to abate emissions. Additionally, drilling techniques will be evaluated and modified, if necessary and appropriate, and more frequent checks of the work area perimeter for odors will be performed.

Odor complaints (if any) will be directed to Arcadis. The legitimacy of the complaint will be verified based on the work activities being performed, the predominant wind direction, and other meteorological factors. In response to

verified odor complaints, perimeter monitoring will continue, and additional odor, vapor, and dust controls will be employed to abate emissions. Additionally, construction techniques will be evaluated and modified, if necessary and appropriate.

If odors continue to be noticed at the perimeter of the work area, work will be stopped while activities are reevaluated. The source or cause of the odors will be identified and additional modifications of construction techniques or additional methods to abate emissions will be implemented. Work will resume provided the measures are successful at abating the odors noticed along the work area perimeter. If the odor complaint cannot be resolved through implementation of the stated controls, NYSDEC will then investigate the complaint further.

3.6 Instrument Calibration

Arcadis shall calibrate air monitoring equipment daily (at a minimum), or other frequency recommended by the manufacturer. All instrument readings, field reference checks, and calibrations will be recorded in the field logbook.

4 Monitoring Schedule and Reporting

The following subsections identify the monitoring schedule and data collection/reporting requirements.

4.1 Monitoring Schedule

Air monitoring will be conducted prior to initiation of the field activities/intrusive work to establish adequate baseline data and until the seven subsurface soil gas monitoring points have been installed and there is no longer a potential for airborne releases of COCs during the installation activities. As previously indicated, real-time VOC and PM_{10} monitoring will be performed during intrusive and/or potential dust-generating activities (e.g., drilling and soil gas monitoring point installation).

The frequency of 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 PM_{10} may be discontinued during periods of heavy precipitation that would otherwise result in unreliable data or damage to the monitoring equipment.

4.2 Reporting

If requested, Arcadis will prepare a summary of the 15-minute average community air monitoring results (for VOCs and PM_{10}). The summary will also include, but not be limited to, a description of community air monitoring exceedances (if any), work activities associated with the exceedances, and corrective actions implemented to address the exceedances.

The time and outcome of each odor perimeter check will be documented in a daily log, specifically noting the presence or absence of odors and identifying the general location(s) along the perimeter where odors (if any) are noticed. These daily logs, as well as documentation of any odor complaints received from the public, will be included in the aforementioned daily CAMP reports.

Attachment 1

NYSDOH Generic Community Air Monitoring Plan

Attachment 1 A
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 mcg/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 mcg/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 mcg/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.

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Attachment 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^{o} C (14 to 122^{o} 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.

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