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SITE CHARACTERIZATION WORK PLAN FORMER KAL TOOL

**SITE CHARACTERIZATION WORK PLAN
FORMER KAL TOOL AND DIE [SITE NO. 828198]
ROCHESTER, NEW YORK**

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1. BACKGROUND AND PROJECT OBJECTIVES

1.1 Site Setting

The Former Kal Tool and Die Site (Site) is located at 1633 N. Clinton Avenue in Rochester, NY. The Site occupies approximately 0.25 acres which includes a parking lot on the eastern portion of the property and an approximately 12,000 square foot partial two-story building set on the western portion of the property. The Site is currently zoned commercial.

1.2 Background

From approximately 1940 through 2009, the Site was occupied by Kal Tool and Die Co. Currently, the Site is occupied by CNY Cleaners, a commercial cleaning company, and an automotive repair operation. The Site is bordered by commercial properties to the north, west, and south with North Clinton Avenue to the east.

A Site Characterization (SC) was conducted by HDR in 2018 in an effort to delineate the extent of subsurface contamination at the site. A draft Site Characterization Report (SCR) summarizing the characterization activities was submitted to the New York State Department of Environmental Conservation (NYSDEC) in September 2019 (HDR, 2019). The 2018 SC investigation included a passive soil gas survey, soil vapor intrusion (SVI) sampling, subsurface soil sampling, and the installation of six monitoring wells (three located on the Site and three located along the El Camino Bike Trail to the west of the Site). Of the six monitoring wells installed as part of the 2018 SC, the three wells located on the El Camino Bike Trail did not produce water and, as a result, were not developed or sampled.

Passive soil gas and SVI samples (indoor air and sub-slab) were analyzed for volatile organic compounds (VOCs). Soil and groundwater samples were analyzed for VOCs with a subset also analyzed for semi-volatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), and metals. Soil sample results were reported below both Protection of Groundwater standards and Commercial Use Soil Cleanup Objectives (SCOs). Chlorinated VOCs tetrachloroethene (PCE) and trichloroethene (TCE) were detected at elevated concentrations in soil vapor. Similarly, chlorinated VOCs were detected above NYSDEC Technical and Operational Guidance Series (TOGS) Ambient Water Quality Standards (AWQS) at monitoring well MW205 (both TCE and cis-1,2-dichloroethene [cis-1,2-DCE]), located on the southwestern portion of the property, and monitoring well MW204 (TCE), located approximately 30 ft north of MW205. No VOC detections were observed in upgradient monitoring well MW206.

Former Ridge Lumber Spill Site

A Phase I Environmental Site Assessment (ESA; Day, 2000a) and a Phase II ESA (Day, 2000b) were conducted at the Former Ridge Lumber site (located to the west of the Site) by Day Environmental Inc. (Day) in 2000 which resulted in the property being assigned a NYSDEC spill number (#0070445). Based on a request from NYSDEC to conduct additional sampling and determine a spill source, Day conducted a Supplemental Investigation (SI) in 2007 (Day, 2007) with additional supplemental groundwater sampling conducted in May 2008. While it was ultimately determined that the petroleum contamination was related to historic activities at the Former Ridge Lumber site (which would later be addressed as a separate remedial action [RA]),

the source of elevated concentrations of TCE (observed at 18,100 micrograms per liter [$\mu\text{g}/\text{L}$] at MW-11 located on the eastern portion of the property) was not identified.

1.2.1 Site Geology and Hydrogeology

The geology of the site consists of varying thicknesses of fill material (2 feet [ft] below ground surface [bgs] to 5 ft bgs) overlaying native material generally consisting of brown, fine to medium sand with a varying amount of silt and fine gravel (HDR, 2019). While bedrock was not identified as being encountered as part of the investigative activities at the Site, equipment refusal was encountered at approximately 14 ft bgs during the installation of monitoring well MW-1 at the Former Lumber site (Day, 2007).

The water table was encountered at a depth of 9 to 10 ft bgs during the 2018 SC. Based on the monitoring wells gauged as part of the 2018 SC, the general groundwater flow is to the west with a groundwater high observed at MW206, located east of the site building. This observation is generally consistent with groundwater flow direction observed during the Former Ridge Lumber SI in 2007. Three monitoring wells were installed along the El Camino Bike Trail to the west of the Site which sits, topographically, approximately 5 ft higher in elevation than both the Site to the east and the Former Ridge Lumber site to the west. As a result, these wells were not advanced deep enough to produce water and were unable to be gauged or sampled as part of the 2018 SC.

1.2.2 Identified Contaminants of Potential Concern

Based on the results of the analyses completed during the 2018 SC, constituents identified in soil were reported below Commercial Use SCOs outlined in CRR-NY Part 375. While the concentrations reported were below both the Commercial Use SCOs and Protection of Groundwater SCOs, TCE was detected at 19 of the 20 soil boring locations at concentrations ranging from 0.0010 J (indicating value is estimated) micrograms per kilogram ($\mu\text{g}/\text{kg}$) to 0.15 T (indicating a quality control [QC] parameter exceeded laboratory limits) $\mu\text{g}/\text{kg}$.

Groundwater analytical results identified the presence of chlorinated VOCs above AWQSS at monitoring wells MW204 and MW205 located inside the western portion of the Site. TCE was detected at concentrations of 130 $\mu\text{g}/\text{L}$ and 500 $\mu\text{g}/\text{L}$, respectively, at MW204 and MW205. Cis-1,2-DCE was detected at a concentrations of 2.2 $\mu\text{g}/\text{L}$ (below the associated AWQS) and 7.1 J $\mu\text{g}/\text{L}$, respectively, at MW204 and MW205. Downgradient monitoring wells MW201, MW202, and MW203, located on the El Camino Bike Trail, did not produce groundwater and, as a result, were not sampled. No detections were reported in the groundwater sample collected at upgradient monitoring well MW206.

Indoor air and sub-slab samples contained a number of VOCs with TCE detected at a maximum concentration of 3,439 D (indicates sample was diluted upon analysis) $\mu\text{g}/\text{m}^3$ sub-slab.

Particular to sub-slab soil vapor concentrations, TCE was detected at concentrations ranging from 2.42 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) to 3,439 D (indicating the sample was diluted as part of laboratory analysis) $\mu\text{g}/\text{m}^3$. The most elevated TCE concentrations were observed at sub-slab locations SS8, SS9, and SS10, located within the central portion of the building (an area that is believed to be the oldest portion of the building on-Site), at respective concentrations of 90.8 $\mu\text{g}/\text{m}^3$, 698 D $\mu\text{g}/\text{m}^3$, and 3,439 D $\mu\text{g}/\text{m}^3$.

1.2.3 Project Objectives

The primary objectives of this work assignment are to:

- Complete the SC that was initiated under a former contract,
- Evaluate whether a link exists between the Former Kal Tool and Ridge Lumber spill site, if one exists, and/or identify source area(s) of contamination and
- Utilize SC findings to support a Class 2 listing, if necessary

The activities will include installation of new monitoring wells and collection of groundwater samples. A SCR will be prepared to document SC activities performed.

2. REMEDIAL INVESTIGATION

2.1 General

The SC activities discussed in this Work Plan include the following:

- Deepening of existing monitoring wells MW201, MW202, and MW203 located on the El Camino Bike Trail and installation of one monitoring well (MW207) within the Kal Tool Site building (east of MW204 and MW205 within the original building)
- Reinstallation of buried monitoring wells MW206 (Site) and MW-15 on the former Ridge Lumber site
- Collection of soil samples from monitoring wells MW201, MW202, MW203, and MW207
- Development of five newly installed monitoring wells and redevelopment of five existing monitoring wells located within the Former Ridge Lumber site
- Surveying of newly installed monitoring wells and resurveying of existing monitoring wells located at the Former Ridge Lumber site.
- Collection and analysis of samples from the following 13 wells:
 - One newly installed, one reinstalled, and two existing monitoring wells located at the Site
 - Three deepened/newly installed monitoring wells located on the El Camino Bike Trail
 - Five existing and one reinstalled monitoring wells located on the Former Ridge Lumber site.

Related activities will include a utility survey by a private contractor, Community Air Monitoring Plan (CAMP) monitoring during well installation, well survey, characterization and disposal of investigation derived waste, and data validation.

The following details the activities to be completed as part of the SC.

2.1.1 Utility Clearance

Dig Safely New York (DSNY) will be contacted by the subcontractor prior to invasive work to locate utilities at the Site prior to initiating the field program. It should be noted that DSNY will only coordinate the location of utilities for those companies subscribing to the service. Furthermore, the utilities will only identify the locations of subsurface lines on public property and rights-of-way. To minimize the potential for damaging of subsurface utilities, a private utility locator will be contracted to identify potential subsurface structures at each of the drilling locations.

2.1.2 Monitoring Well Installation

Three existing groundwater monitoring wells located on the El Camino Bike Trail will be overdrilled and deepened and a fourth monitoring well will be installed within the Former Kal Tool and Die building (east of existing monitoring wells MW204 and MW205). Observations from a February 1, 2022 site visit revealed that monitoring wells MW206 and MW-15 were paved over during repaving of the driveways they were originally installed within. This scope of work includes the installation of replacements of these two monitoring wells.

The locations of the three existing monitoring wells, the proposed monitoring wells, and the two covered monitoring wells are shown on **Figure 1**. Monitoring wells will be advanced to top of bedrock which is anticipated to range from 15 to 20 ft bgs.

With exception of the three existing monitoring wells to be deepened, the upper 5 ft of each well boring will be advanced using hand clearing methods for the purpose of avoiding damage to potential utilities that were not identified by the utility clearance evaluation. Borings for the wells located on the El Camino Bike Trail and reinstalled wells will then be completed to the bedrock surface using conventional hollow stem auger drilling methods. The indoor monitoring well will be completed to bedrock utilizing direct push methods. Soil samples will be collected continuously.

The three El Camino Bike Trail wells and two reinstalled wells will be constructed with 2-inch diameter, 10 ft in length, 0.010-inch slotted polyvinyl chloride (PVC) well screen, flush-threaded to appropriate lengths of 2-inch diameter PVC riser casing necessary to bring the top of the well to grade. The well heads will be completed with flush-mounted, roadbox covers within a concrete pad.

Indoor monitoring well MW207 will be constructed of a 5-foot length of Schedule 40, 1-inch inside diameter, 0.010-inch slot well screen flush-threaded to Schedule 40, 1-inch inside diameter PVC riser of sufficient length to bring the top of the well to ground surface. The well head will be completed with a flush-mounted cover.

One soil sample will be collected from the borings for monitoring wells MW201, MW202, MW203, and MW207 and submitted to the laboratory for analysis. Each sample will be selected for laboratory analysis based on photoionization detector (PID) readings or other observations suggestive of impacts, with the highest PID reading being selected for analysis, if observed. If elevated PID readings aren't observed above background, the sample at MW207 will be taken from approximately 1-ft interval above the water table and the samples at MW201, MW202, and MW203 will be collected from the 1-ft interval above the top of bedrock (or boring termination depth). Soil samples will be analyzed for Target Compound List (TCL) VOCs. **Table 1** provides a summary of analytical parameters and associated methods, number of samples and associated quality assurance/quality control (QA/QC) samples.

Drilling equipment used for the well installation will be decontaminated between locations. A decontamination pad will be built at a location agreeable with the property owners.

2.1.3 Monitoring Well Development

Each newly installed monitoring well will be developed no earlier than 24 hours following installation. Additionally, up to six existing monitoring wells located at the Former Ridge Lumber site will be redeveloped. Development will be performed by surging and purging the well using a bailer or pump, as appropriate, to remove the fine-grained material which may have settled within the well and to provide hydraulic communication with the surrounding formation. Three to five well volumes will be removed as part of this process. Groundwater parameters will be measured and recorded prior to development, after removal of each well volume during development, and at the conclusion of development. Parameters will include turbidity, pH, temperature, and specific conductance. Water levels will be measured prior to and at the

conclusion of development. The well will be considered developed when the parameters stabilize, or when 5 well volumes of water has been removed, whichever occurs first. If the well goes dry during development, it will be allowed to partially recover and then bailed to dryness one more time to complete the development. Well development information will be recorded on a well development log.

2.1.4 Groundwater Sampling

One set of groundwater samples will be collected from a total of 13 monitoring wells as follows:

- One newly installed monitoring well (MW207), two existing monitoring wells (MW204 and MW205), and one reinstalled monitoring well (MW206) located at the Site
- Three deepened/newly installed monitoring wells (MW201, MW202, and MW203) located on the El Camino Bike Trail
- Five existing monitoring wells (MW-3, MW-8, MW-10, MW-11, and MW-18) and one reinstalled monitoring well (MW-15) located on the Former Ridge Lumber site.

The locations of the 13 monitoring wells to be sampled are shown on **Figure 1**.

Prior to the collection of groundwater samples, groundwater levels will be measured to the nearest 0.01 foot from the well to be sampled using an electronic water level probe. The water level measurements will be recorded from a reference point to be marked on each well casing.

Due to the minimal water column present and variation of well diameter of existing monitoring wells, groundwater samples will be collected with peristaltic pumps using low-flow methods. The wells will be purged at flow rate not to exceed 500 milliliters per minute (ml/min) and water quality parameters will be monitored. The samples will be collected once the water quality measurements have stabilized as outlined below:

- Temperature \pm 3% of measurement
- pH \pm 0.1 pH units
- Specific conductance \pm 3% of measurement
- Redox \pm 10 millivolts (mV)
- Dissolved Oxygen (DO) \pm 10% of measurement
- Turbidity \pm 10% of measurement

If a stable groundwater level cannot be maintained at a yield of at least 100 ml/min, the well will be dewatered to the intake of the pump and water will be allowed to recover and the groundwater sample will be collected.

Samples collected at each of the 13 monitoring wells will be analyzed for TCL VOCs. **Table 1** provides a summary of analytical parameters and associated methods, number of samples and associated QA/QC samples.

2.1.5 Air Monitoring

Consistent with the CAMP provided in Appendix 1A of NYSDEC's Division of Environmental Remediation (DER) Technical Guidance for Site Investigation and Remediation (DER-10) (NYSDEC, 2010), air monitoring will be conducted during advancement of soil borings and

monitoring wells. Accordingly, one upwind and one downwind station equipped with PID and particulate monitoring equipment will be housed in enclosures and mounted on tripods. The specific locations of the equipment will be based on wind direction and the location of the potential exposure populations at the time the field activities are completed. Adjustments to monitoring will be made to satisfy CAMP "Special Requirements for Work Within 20 Feet of Potentially Exposed Individuals or Structures".

CAMP data will be downloaded from the instruments and provided to NYSDOH following the completion of the well installation portion of the scope. Any identified exceedances of action levels will be reported to NYSDEC and NYSDOH the same day or next business day if after hours along with information documenting the reason for exceedance, correction measures implemented, if needed, and a statement pertaining to the effectiveness of the corrective measure, if implemented. A copy of the CAMP monitoring guidance and CAMP "Special Requirements for Work Within 20 Feet of Potentially Exposed Individuals or Structures" are included as **Attachment 1**.

2.2 Sample Analysis and Validation

Table 1 provides a summary of the environmental media to be sampled, analytical parameters and associated methods, number of samples and associated QA/QC samples.

The collected samples will be shipped to a National Environmental Laboratory Accreditation Program (NELAP)-certified laboratory designated by NYSDEC for this project. Ramboll personnel will coordinate with the laboratory to arrange for the sample containers and associated shipping. The laboratory will provide an analytical data package that is consistent with the requirements of NYS ASP Category B. In addition, the laboratory will submit analytical data as an Electronic Data Deliverable (EDD) in the NYSDEC format.

Laboratory generated analytical data, except for waste characterization sample results, will be validated in accordance with the Quality Assurance Project Plan (QAPP) and a data usability summary report (DUSR) conforming to Appendix 2B of DER-10 will be prepared.

2.2.1 Decontamination

Decontamination will take place on-Site. It is assumed that no water or power will be available for use. Water generated will need to be contained for off-site disposal. A temporary decontamination pad will be used for decontamination of augers and drill rods by use of steam cleaner. Decontamination (other than augers and drill rods) will be completed using non-phosphate detergent (e.g.alconox[®], liquinox[®], simple green[®]) bucket wash and potable water rinse.

2.2.2 Survey

A location and elevation survey will be completed following completion of the field activities. It is assumed that the survey activities will be performed in one event and will include horizontal location and vertical elevation of new and existing monitoring wells (grade and top of PVC).

The survey will be completed by a New York State-licensed surveyor. Horizontal datum will be referenced to North American Datum (NAD) 83 (2007) New York State Plane Eastern Zone and

vertical datum to North American Vertical Datum (NAVD) 88. Elevation will be surveyed to 0.01-foot accuracy.

2.2.3 Investigation Derived Waste (IDW) Management

IDW, including personal protective equipment (PPE), tubing, excess soil samples, soil cuttings, decontamination rinsates, well development water, and well purge water will be placed in Department of Transportation (DOT)-approved 55-gallon drums and staged on the Site, as approved by the property owners. Materials will be segregated by media for characterization and disposal. The soil and water will be transported to a regulated facility for disposal based on the waste characterization results. The PPE and other material used will be disposed as solid waste. Ramboll will contract with a waste disposal company to develop the waste profile and associated manifest documents in addition to transportation and disposal of the materials.

3. SITE CHARACTERIZATION REPORT

A SCR will be prepared following receipt of the analytical results and the DUSR. This report will discuss the investigation activities and the results. Conclusions based on this data will be provided and may include the following components based on the information generated:

Site Description: This will include a discussion of current use of the site and a summary of pertinent background information if available.

Site investigation Summary: This section will describe the activities completed as part of the SC investigation and include any deviations or modifications to the work scope defined in this Work Plan.

Site Geology: A brief description of the subsurface soil and depth to groundwater and groundwater flow direction will be provided.

Nature of Contamination: This section will include a discussion of the presence of constituents detected and those that are detected at concentrations above regulatory criteria. The latter will be identified as constituents of potential concern (COPC). The detected constituents in soil will be compared to 6 New York Codes, Rules and Regulations (NYCRR) Part 375 Commercial Use SCOs and to Protection of Groundwater for compounds detected in groundwater. The detected constituents in groundwater will be compared to Class GA water quality standards and guidance values as compiled in Technical and Operational Guidance Series 1.1.1 (NYSDEC, 1998) and associated addenda.

The following data presentations will be included as appropriate based on the results:

- Data tables for detected constituents compared to criteria as applicable for groundwater
- Figure showing constituents detected above soil and groundwater criteria
- Attachments will include logs of soil borings and monitoring wells, and groundwater sampling logs.

Summary and Conclusions: This section will present a summary of the COPCs identified and their respective concentrations. Data gaps will be presented if identified.

4. REFERENCES

Day, 2000a. *Phase I Environmental Site Assessment Report*. September, 2000.

Day, 2000b. *Phase II Environmental Study, 610 Hollenbeck Street, Rochester, New York*. November, 2000.

Day, 2007. *Project Status Report, 620 Hollenbeck Street, Rochester, New York, NYSDEC Spill No. 0070445*. October, 2007.

HDR, 2019. *Draft Site Characterization Report, Former Kal Tool and Die*. HDR. September 2019.

NYSDEC, 1998. Division of Water Technical and Operational Guidance Series (TOGS) – *Ambient Water Quality Standards and Guidance Values and Ground Water Effluent Guidelines (TOGS 1.1.1)*. June 1998.

NYSDEC, 2010. *Technical Guidance for Site Investigation and Remediation (DER-10)*. Division of Environmental Remediation. May 3, 2010.

NYSDOH, 2006 (amended 2017). *Guidance for Evaluating Soil Vapor Intrusion in the State of New York, Soil Vapor/Indoor Air Matrix A*. May, 2017.

TABLE 1

Table 1
Sample Analysis and QA/QC Summary
Former Kal Tool and Die
Rochester, NY

| Task | Matrix | Analyses | Method | Number of Samples | Trip Blank | Equipment Blank | Field Duplicate | MS | MSD | Estimated Total Number of Samples | Deliverable | Validated (Y/N) | |
|--|--------------|-----------------------------|-------------------------|-------------------|------------|-----------------|-----------------|----|-----|-----------------------------------|-------------|-----------------|---|
| Groundwater Samples | Water | TCL Volatiles | USEPA Method 8260C | 13 | 2 | 1 | 1 | 1 | 1 | 19 | Category B | Y | |
| Soil Samples | Soil | TCL Volatiles | USEPA Method 8260C | 4 | 0 | 1 | 1 | 1 | 1 | 8 | Category B | Y | |
| Waste Characterization Sampling | Soil | TCLP Method 1311 | | | | | | | | | Category A | N | |
| | | TCLP Volatiles | USEPA Method 8260C | 1 | | | | | | 1 | | | |
| | | TCLP Semivolatiles | USEPA Method 8270D | | | | | | | | | | |
| | | TCLP Pesticides | USEPA Method 8080 | | | | | | | | | | |
| | | TCLP Chlorinated Herbicides | USEPA Method 8150 | | | | | | | | | | |
| | | TCLP Metals | USEPA Method 6010C/9014 | | | | | | | | | | |
| | | TCL PCBs | USEPA Method 8082 | | | | | | | | | | |
| | TCL PCBs | USEPA Method 8082 | 1 | | | | | | | | | | |
| | Corrosivity | USEPA Method 1110 | 1 | | | | | | 1 | | | | |
| | Ignitability | USEPA Method 1030 | 1 | | | | | | 1 | | | | |
| | Reactivity | USEPA Method 9010/9030 | 1 | | | | | | 1 | | | | |
| | Water | TCL Volatiles | USEPA Method 8260C | 1 | | | | | | | 1 | Category A | N |
| | | TCL Semivolatiles | USEPA Method 8270D | | | | | | | | 0 | | |
| | | TCL Pesticides | USEPA Method 8081B | | | | | | | | 0 | | |
| | | TCL PCBs | USEPA Method 8082 | | | | | | | | 0 | | |
| | | TCL Chlorinated Herbicides | USEPA Method 8150 | | | | | | | | 0 | | |
| | | Corrosivity | USEPA Method 1110 | | | | | | | | 0 | | |
| Ignitability | | USEPA Method 1030 | | | | | | | | 0 | | | |
| Reactivity | | USEPA Method 9010/9030 | | | | | | | | 0 | | | |

Notes:

FIGURE 1



- ◆ MONITORING WELL
- ◆ PROPOSED MONITORING WELL
- ◆ MONITORING WELL (DEEPENING REQUIRED)
- ◆ MONITORING WELL (REINSTALLATION REQUIRED)
- ◆ MONITORING WELL (ASSUMED DESTROYED)
- WELL TO BE SAMPLED

Notes
 Locations MW201-MW205 were located via surveyed coordinates. All additional locations were located via georeferenced images.



MONITORING WELL AND SAMPLING LOCATION PLAN

Kal Tool and Die Site
 Hollenbeck Street & N. Clinton Avenue
 Rochester, New York

FIGURE 01



ATTACHMENT 1
NYSDEC CAMP & CAMP SPECIAL REQUIREMENTS

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.

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Special Requirements for Work Within 20 Feet of Potentially Exposed Individuals or Structures

When work areas are within 20 feet of potentially exposed populations or occupied structures, the continuous monitoring locations for VOCs and particulates must reflect the nearest potentially exposed individuals and the location of ventilation system intakes for nearby structures. The use of engineering controls such as vapor/dust barriers, temporary negative-pressure enclosures, or special ventilation devices should be considered to prevent exposures related to the work activities and to control dust and odors. Consideration should be given to implementing the planned activities when potentially exposed populations are at a minimum, such as during weekends or evening hours in non-residential settings.

- If total VOC concentrations opposite the walls of occupied structures or next to intake vents exceed 1 ppm, monitoring should occur within the occupied structure(s). Background readings in the occupied spaces must be taken prior to commencement of the planned work. Any unusual background readings should be discussed with NYSDOH prior to commencement of the work.
- If total particulate concentrations opposite the walls of occupied structures or next to intake vents exceed 150 mcg/m³, work activities should be suspended until controls are implemented and are successful in reducing the total particulate concentration to 150 mcg/m³ or less at the monitoring point.
- Depending upon the nature of contamination and remedial activities, other parameters (e.g., explosivity, oxygen, hydrogen sulfide, carbon monoxide) may also need to be monitored. Response levels and actions should be pre-determined, as necessary, for each site.

Special Requirements for Indoor Work With Co-Located Residences or Facilities

Unless a self-contained, negative-pressure enclosure with proper emission controls will encompass the work area, all individuals not directly involved with the planned work must be absent from the room in which the work will occur. Monitoring requirements shall be as stated above under “Special Requirements for Work Within 20 Feet of Potentially Exposed Individuals or Structures” except that in this instance “nearby/occupied structures” would be adjacent occupied rooms. Additionally, the location of all exhaust vents in the room and their discharge points, as well as potential vapor pathways (openings, conduits, etc.) relative to adjoining rooms, should be understood and the monitoring locations established accordingly. In these situations, it is strongly recommended that exhaust fans or other engineering controls be used to create negative air pressure within the work area during remedial activities. Additionally, it is strongly recommended that the planned work be implemented during hours (e.g. weekends or evenings) when building occupancy is at a minimum.