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NYSEG

Soil Handling and Management Work Plan

Utility Pole Replacement Work

Kent, NY – Arsenic Mine Superfund Site

August 2021

Soil Handling and Management Work Plan

Utility Pole Replacement Work Kent, NY – Arsenic Mine Superfund Site

August 2021

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Version Control (optional)

Issue	Revision No.	Date Issued	Page No.	Description	Reviewed By

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Acronyms and Abbreviations

6 NYCRR	Title 6 of the Official Compilation of Codes, Rules, and Regulations of the State of New York
ATSDR	Agency for Toxic Substances and Disease Registry
CAMP	community air monitoring plan
CFR	Code of Federal Rules and Regulations
EPA	United States Environmental Protection Agency
HASP	health and safety plan
HAZWOPER	40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER)
LPM	liters per minute
MCE	mixed cellulose ester
mg/L	milligrams per liter
mg/m^3	milligrams per cubic meter
NYSDOH	New York State Department of Health
OSHA	Occupational Safety and Health Administration
PCDOH	Putnam County Department of Health
PEL	permissible exposure limit
PPE	personal protective equipment
PM_{10}	particulate matter less than 10 microns in diameter
ppm	parts per million
TCLP	Toxicity Characteristic Leaching Procedure

1 Introduction

This Soil Handling and Management Work Plan (Work Plan) has been prepared on behalf of New York State Electric and Gas (NYSEG), for utility pole work to be conducted within the defined boundaries of the Arsenic Mine Superfund Site in Kent, New York (the site; Superfund Site Identification Number: NYD982531469). NYSEG is neither a potentially responsible party for this Superfund Site nor responsible for any site contamination, required site investigation, or required remediation activities.

As part of routine maintenance of the local electric distribution system, NYSEG plans to replace existing utility poles and associated anchors along the section of Gipsy Trail Road passing through the site in 2021.

Shallow soil at the site contains elevated arsenic concentrations. Arsenic is an Occupational Safety and Health Administration (OSHA) regulated substance. During ground intrusive activities (i.e., setting a pole), there is potential for human exposure to arsenic-containing soil. Therefore, NYSEG has developed this Work Plan to present soil management and handling procedures and site controls to be protective of human health and the environment. Additionally, the potential for emergency-response worker exposure to arsenic-containing soil will be assessed during installation of the new utility poles, and based on the results of that assessment, procedures for future emergency work at the site (e.g., replacing a damaged pole) will be developed and submitted to the United States Environmental Protection Agency (EPA) under a separate cover.

Planned utility work conducted pursuant to this Work Plan will be conducted in accordance with the site-specific Health and Safety Plan (HASP; Appendix A) and Community Air Monitoring Plan (CAMP; Appendix B).

The organization of this Work Plan is presented below:

Table 1-1: Report Organization

Section		Purpose
Section 1	Introduction	Provides the objectives of this report and relevant introductory information.
Section 2	Site Background	Presents a description of the site setting and historical investigations.
Section 3	Soil Sampling and Waste Profile	Describes the pre-characterization soil sampling and results.
Section 4	Negative Exposure Assessment	Provides the objectives and procedures to perform a worker exposure assessment.
Section 5	Soil Handling and Management Procedures	Describes the proposed work activities to manage soil in ways to protect human health and the environment.
Section 6	Construction Completion Documentation	Specifies the documentation that will be provided to the EPA upon completion of the work.
Section 7	References	Provides references to the report

2 Site Background

The site is located in Kent, New York and includes an historic (1860s-1910s) arsenic mine, previously known as Pine Pond Mine, Silver Mine, and Brown's Serpentine Mine. There are two former entry shafts, the northern mine shaft, located on private property, and the southern mine shaft, located in the adjacent Nimham Mountain Multi-Use Area, a state recreational area that is not part of the site. Tailings from the mine and other refuse material generated from the mine were tracked or released on surface soil in the surrounding area. The site includes undeveloped and residential properties around and downslope from the northern mine shaft, near the intersection of Gipsy Trail Road and Mt. Nimham Court. The site Location is shown in Figure 1.

During the late 1980s and early 1990s, the Putnam County Department of Health (PCDOH), in conjunction with United States Environmental Protection Agency (EPA) and the New York State Department of Health (NYSDOH), conducted limited soil sampling on the properties near the northern mine entrance, revealing elevated arsenic concentrations in surface soil. PCDOH placed an elevated soil arsenic concentrations warning sign near the northern mine entrance. In August 2017 and June 2018, EPA collected soil and potable water samples from undeveloped and residential properties around and downslope from the northern mine shaft, and in May 2019, EPA initiated quarterly drinking-water assessments.

The EPA's surface soil sample arsenic results are shown on Figure 2, color-coded by concentration. Based on these results, arsenic concentrations in surface soil along the Gipsy Trail Road right-of-way where the utility poles are located were reported to range from 6 to 582 parts per million (ppm), with higher concentrations near the mine entrance. As a reference, the average background concentration of arsenic in soil in New York State is 16 ppm.

NYSDOH released a Health Consultation on April 30, 2019, in which it evaluated shallow residential soil at the site. NYSDOH concluded that children's short-term exposure to surface soil with the highest concentrations of arsenic poses an immediate and significant threat to human health, constituting an urgent public health hazard. It also concluded that long-term exposure of children and adults to arsenic in surface soil poses a significant threat to human health, constituting a public health hazard. EPA supported these conclusions in a Determination of Significant Threat memorandum, finding that all residential properties at the site contain exposure point concentrations at or above the threshold for unacceptable risk. Based on a request from the EPA, the Agency for Toxic Substances and Disease Registry (ATSDR) assessed the site, and on April 30, 2019, ATSDR issued a Public Health Advisory, recommending immediate short- and long-term measures to remove people, especially children, from exposure to arsenic in shallow soil at the site. The site was added to the National Priorities List on November 8, 2019 and EPA selected a remedy by Record of Decision dated June 29, 2020. EPA is conducting additional soil sampling in the area.

3 Soil Sampling and Waste Profiling

To identify appropriately protective soil work procedures and facilitate disposal of surplus soil, Arcadis collected and submitted 28 soil samples from the planned locations of replacement poles and associated anchor points. The samples were collected from 0 to 1 foot below grade for laboratory analysis of Toxicity Characteristic Leaching Procedure (TCLP) arsenic and total arsenic. Surface soil samples were collected below vegetation using a hand auger at each proposed power pole and associated anchor location (17 power pole and 11 anchor point locations). Sampling locations are shown on Figure 3 (2314 through 2325). Anchor points are designated with an "-A" suffix after the utility pole numbers.

Soil samples were submitted to SGS of Dayton, New Jersey for laboratory analysis for TCLP sample extraction (using EPA SW-846 Method 1311) and arsenic analysis using EPA SW-846 Method 6010D. In addition, soil samples from 24 of the sampling locations were analyzed for total arsenic using EPA SW-846 Method 6010D (there was insufficient sample volume for totals analysis for locations 2315-A, 2316-1-A, 2317-A, and 2324-A). The laboratory analytical reports are provided in Appendix C.

TCLP and total arsenic data is provided in Table 1. The results are summarized below:

- Out of the 28 sampling locations, TCLP arsenic concentrations were only detected at utility pole number 2315's anchor point (sample location 2315-A). At this location, TCLP arsenic was detected at a concentration of 0.56 milligrams per liter (mg/L), which is well below the 5 mg/L EPA arsenic toxicity characteristic presented in 40 Code of Federal Rules and Regulations (CFR) Subpart 261.24 Table 1.
- Total arsenic concentrations ranged from 12.2 to 736 ppm, which is consistent with the prior EPA data for surrounding soil. Arsenic was detected in 22 of the 24 soil samples at a concentration greater than the 16 ppm NYSDEC residential, restricted residential, commercial, industrial, and protection of groundwater soil clean up objectives (average New York State background concentrations).

Based on the TCLP arsenic results, any surplus soil generated during the proposed work activities can be handled and managed as non-hazardous waste. Soil analytical results will be provided to a landfill permitted to accept the waste and incorporated into a waste profile for potential excess soils to be disposed offsite.

4 Negative Exposure Assessment

A negative exposure risk assessment will be performed during the planned utility pole installation project across the site to assess potential worker exposure to soil arsenic during emergency repair activities of a single pole. The exposure assessment will be performed in accordance with 29 CFR 1910.1018(e) – Exposure Monitoring. To be conservative, the exposure assessment will be performed during the installation of utility pole 2316 and its anchor (i.e., the soil sampling location containing the most elevated arsenic concentrations), and the exposure assessment will be performed when soil is relatively dry. The result of the assessment would quantify worker exposure to arsenic-impacted soil.

The exposure assessment will be conducted as representative of emergency repair activities, and work will be performed using equipment and procedures anticipated for emergency work. However, during the worker exposure assessment, work will be performed in accordance with the site-specific HASP. As such, staff performing the work will have current OSHA 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) training and wear Level D personal protective equipment (PPE; e.g., hart hat, safety glasses, steel-toed boots, leather gloves). Air monitoring will be implemented in the worker breathing zone for particulate matter less than 10 microns in diameter (PM_{10}) and arsenic.

The exposure assessment will be performed under the direction of an American Board of Industrial Hygiene Certified Industrial Hygienist, and generally would involve:

- Segregating employees into similar exposure groups based on job duties and job classification for the task.
- Observing work practices by employees performing job duties for each job classification.
- Reviewing the routine exposure controls (e.g., process operations, PPE, work practices, housekeeping practices).

- Sampling airborne particulate and analyzing captured dust for arsenic per Section 4.1.
- Developing an Industrial Hygiene Exposure Assessment Report presenting the observations, conclusions, and applicable recommendations.

4.1 Airborne Particulate Sampling

Airborne particulate sampling will be performed at the workers' breathing zone for the duration of the appropriate tasks. Air will be routed through a mixed cellulose ester (MCE) filter and that filter (contained in a sample cassette) will be shipped to SGS Galson, an American Industrial Hygiene Association® accredited laboratory. SGS Galson will analyze the particulates captured in the MCE filter for arsenic using National Institute for Occupational Safety & Health Method 7303.

Prior to work activities, the pumping equipment will be pre-calibrated for a 2 liter per minute (LPM) flowrate. To begin sampling, the sample cassette will be connected to the pump with tubing, and the air inlet will be secured near the worker's face. A minimum air volume of 30 liters (15 minutes of pumping) is required for accurate sampling (i.e., sampling at 2 LPM for a shorter period collects an insufficient sample volume to achieve laboratory detection limits at or below the arsenic OSHA permissible exposure limit (PEL)). Once work activities are complete, the pump will be turned off and disconnected from the sample cassette. The sample cassette will be sealed, and the duration of pumping will be recorded. Post-sampling pump calibration will be performed, and the pump flowrate will be recorded. A field blank will be collected for quality assurance and quality control.

The arsenic results of the worker breathing zone air monitoring will be compared to OSHA's 0.01 milligrams per cubic meter (mg/m^3) PEL (based on a time weighted average) and an immediately dangerous to life and health concentration of 5 mg/m^3.

5 Soil Handling and Management Procedures

Soil containing arsenic at concentrations potentially posing a threat to human health may be generated during the installation of the utility poles and anchor points. An individual with specific education, training, and experience in supervising soil handling and managing activities at hazardous waste sites (such as superfund sites) will provide oversight of ground intrusive work. This individual will also have current OSHA 40-hour HAZWOPER training, and they will direct soil handling and management activities. In addition, work conducted pursuant to this work plan will be conducted in accordance with the procedures defined in the site-specific HASP (Appendix A) and Community CAMP (Appendix B).

As presented in Section 3, soil and other waste materials generated during the proposed work activities can be handled and managed as non-hazardous waste. The following subsections provide:

- An overview of work activities.
- Detail procedures for soil handling, managing, transportation, and disposal.
- A description of site controls to be protective of human health and the environment.

Soil disturbance activities will be short in duration (less than an hour per location), will use methods that are not anticipated to generate excessive dust, and will disturb minimal area around the pole (3 to 4 square feet).

5.1 Overview of Utility Pole Installation

Dig Safely, New York will be contacted a minimum of 3 business days prior to the start of planned ground intrusive work activities, to identify and mark the locations of underground utilities (e.g., electricity, natural gas, water, sewer, telephone) and structures, at and near the work areas.

Utility pole installation involves drilling an approximately 24-inch diameter borehole using a soil auger. Where rock is present and hinders the auger, a hydraulic hoe ram or similar device might also be used. Surface soil may be loosened by hand digging or use of a vac-truck. Boreholes are estimated to be extended to depths equal to 10% of the total utility poles height plus two additional feet (approximately 7 feet below grade).

At eleven of the utility pole locations, guy wires and anchors will be installed. Anchors consist of Kelly bars or auger style anchor rods drilled into the ground. Auger style anchors are anticipated to be used at this site. To the extent possible, NYSEG will reuse existing Kelly bars and anchors from existing infrastructure. New anchors will be drilled into place without removing soil or generating dirt. If an existing anchor is removed, the anchor will be decontaminated until determined “clean” by visually inspection, and reused, as appropriate.

5.2 Soil Staging, Reuse, and Disposal

In total, approximately 14 cubic yards of material is anticipated to be removed from the boreholes (assuming that boreholes will be drilled 7 feet below grade at 17 locations). Excavated soil will be temporarily staged during the work on a liner, mat, or other surface to prevent soil tracking. Any temporary stockpile will be covered with a tarp if left overnight. Based on the non-hazardous TCLP arsenic analytical results and the presence of arsenic in surrounding soil at concentrations similar to those generated during pole installation, the material will be reused onsite as backfill at the borehole where the soil originated (including either in the annulus surrounding the new pole or in the immediately adjacent hole where an existing pole is removed). However, soil will not be backfilled above surrounding ground level.

Surplus soil will be placed in either a lined and covered roll-off container or United States Department of Transportation-certified 55-gallon drums for transport. The surplus soil will be manifested as a non-hazardous waste based on the soil analytical data. Licensed trucking companies will be utilized, and trucks will be placarded and tarped/covered (as needed) in accordance with appropriate Federal, State, local, and NYSDOT requirements (and all other applicable transportation requirements). Waste materials will be free of standing water.

Soil will be disposed off-site at a Resource Conservation and Recovery Act (RCRA) Subtitle D permitted landfill in accordance with all local, State and Federal regulations. Unregulated off-site management of materials from this site will not occur without formal EPA project manager approval. Off-site disposal locations for generated soil cuttings will be identified prior to the start of intrusive activities. Actual disposal quantities and associated documentation will be reported to the EPA in an e-mail following completion of the work.

5.3 Soil Surface Restoration

Following backfill activities flush to surrounding grade, the area of soil disturbance will be seeded.

5.4 Decontamination

Equipment decontamination will be performed to control the transfer of soil generated during power pole installation. Equipment contacting site soil will be decontaminated at the end of a workday and before demobilization offsite.

Equipment will be decontaminated by either scrubbing with a long-stemmed bristled brush, soap, and water or a high-pressure/low-flow steam/wash to remove visible dirt and dust. Equipment will be determined “clean” by visual inspection. Generated solid waste and decontamination water will be containerized in DOT-certified 55-gallon drums for characterization and proper disposal. Minimal liquid waste is anticipated and will be mixed with solid wastes.

Specific decontamination techniques will be established based on site conditions and reviewed with onsite personnel prior to handling site soil.

5.5 Dust Control and Community Air Monitoring

Work activities will be performed to minimize fugitive dust. Work activities that have the potential to generate fugitive dust will be short in duration and minimal in area. A water mist or shroud will be used to suppress dust, as appropriate. At the one location where the negative exposure assessment is conducted, only routine dust suppression techniques (i.e., techniques typical for emergency situations) will be used.

PM_{10} dust monitoring will occur at one upwind and one downwind point for each work area (e.g., boring location). The air monitoring will be performed in accordance with NYSDOH’s generic CAMP. Per NYSDOH’s generic CAMP, if the downwind PM_{10} particulate level is 100 micrograms per cubic meter greater than upwind location for a 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques (e.g., water mist, shroud) will be employed. NYSDOH’s generic CAMP is included as Appendix B.

6 Construction Completion Documentation

Upon completion of the work activities, the EPA project manager will be provided: waste profiles, waste shipping manifests or bills of lading (as applicable), facility receipts (i.e., weight tickets), CAMP monitoring results, and the results of the emergency worker exposure assessment. This documentation will be attached to an e-mail that will briefly summarize the work performed, construction dates, and a description of deviations from this Work Plan (if any). The email will be submitted within six weeks after completion of work.

7 References

EPA, 2019. National Priorities List Nomination Package for the Arsenic Mine Site. EPA Region 2, New York, New York. May 14, 2019.

EPA, 2020. Record of Decision, Arsenic Mine Superfund Site Operable Unit 1, Kent, Putnam County, New York. EPA Region 2, New York, New York. June 2020.

NYSDEC. 2006. 6 NYCRR Subpart 375-6, Remedial Program Soil Cleanup Objectives. December 14, 2006.

NYSDEC. 2010. Final DER-10 Technical Guidance for Site Investigation and Remediation. May 3, 2010.

NYSDEC. 2017. 6 NYCRR Subpart 360, Solid Waste Management Facilities. Revised November 4, 2017.

Title 29 of the Code of Federal Regulations (CFR), Part 1910.

Title 29 of the Code of Federal Regulations (CFR), Subpart 261.24 Table 1.

Table

Table 1
TCLP and Total Arsenic Results

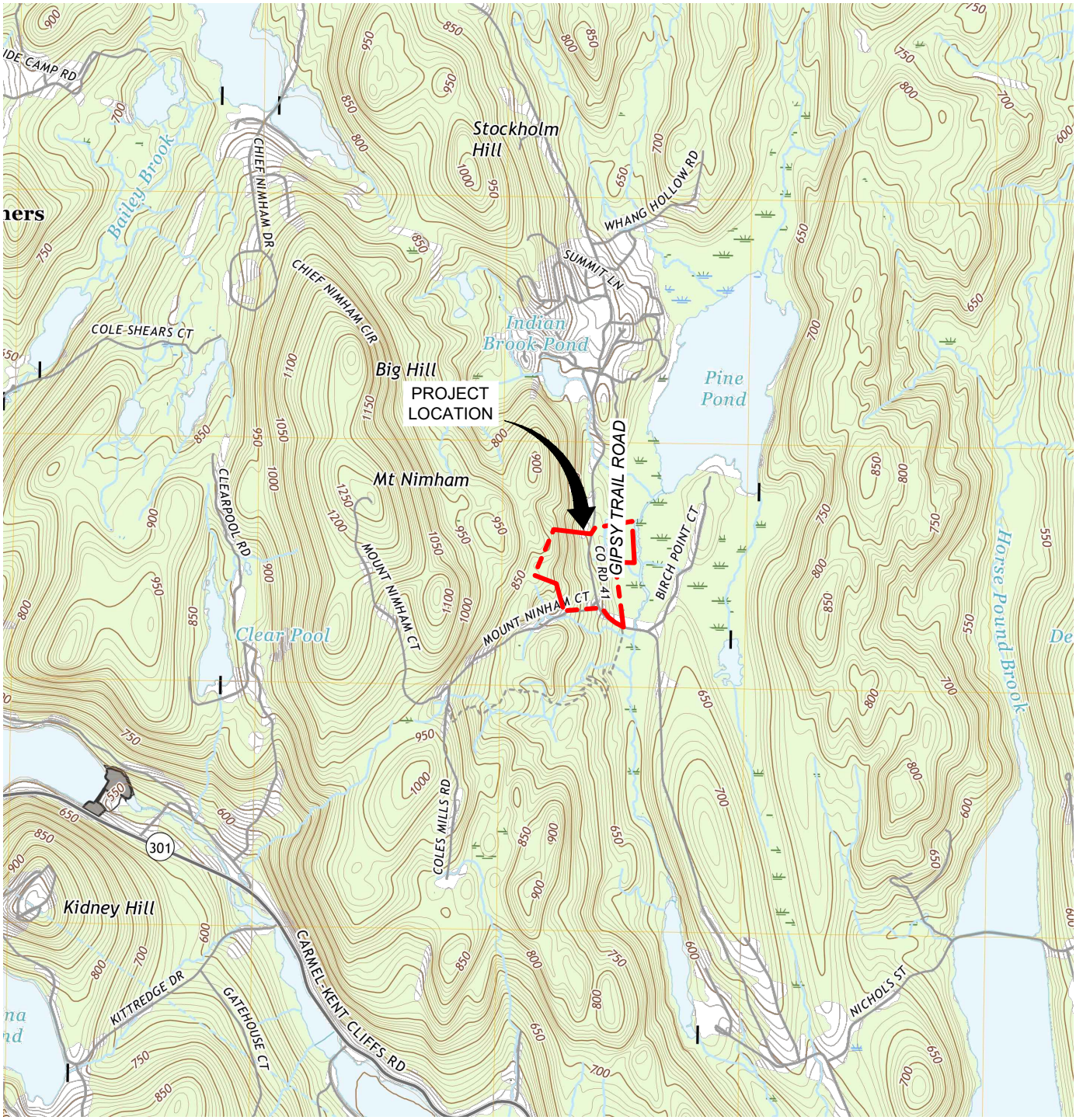
Kent, NY Superfund
Utility Pole Installation

Sample ID	TCLP Arsenic Concentration (mg/L)	Total Arsenic Concentration (mg/kg)
2314	<0.50	67.4
2314-A	<0.50	109
2315	<0.50	423
2315-A	0.56	NA
2315S	<0.50	84.6
2315S-A	<0.50	703
2316	<0.50	281
2316-A	<0.50	736
2316-1	<0.50	103
2316-1-A	<0.50	NA
2317	<0.50	467
2317-A	<0.50	NA
2317-1	<0.50	13.3
2317-1-A	<0.50	12.2
2318	<0.50	178
2318-A	<0.50	383
2319	<0.50	25.4
2319-A	<0.50	26.8
2320	<0.50	76.7
2321	<0.50	49.2
2321-A	<0.50	63
2322	<0.50	75.5
2322-1	<0.50	91.6
2322-1-A	<0.50	59.2
2323	<0.50	17.3
2324	<0.50	96.2
2324-A	<0.50	NA
2325	<0.50	29.4

Notes:

1. Samples were collected by Arcadis on June 8, 2021 and analyzed by SGS of Dayton, New Jersey in accordance with United Stated Environmental Protection Agency (EPA) SW-846 Method 6010D and extracted for toxicity characteristic leaching procedures (TCLP) in accordance with EPA SW-846 Methods 1311.
2. < = Indicates the compound was analyzed but not detected. The associated value is the compound quantitation limit.
3. NA = Not analyzed.
4. TCLP concentrations reported in the milligrams per liter (mg/L). Total concentrations are reported in milligrams per kilogram (mg/kg).
5. USEPA TCLP Regulation for arsenic toxicity is 5 mg/L as presented in Title 40 of the Codes of Federal Regulations Subpart 261.24 Table 1.
6. Data have not been validated.

Figures



TOPO SOURCE: USGS 7.5 MINUTE SERIES TOPOGRAPHIC QUADRANGLE
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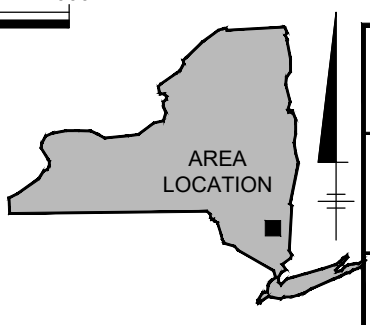
0 2000' 4000'
GRAPHIC SCALE



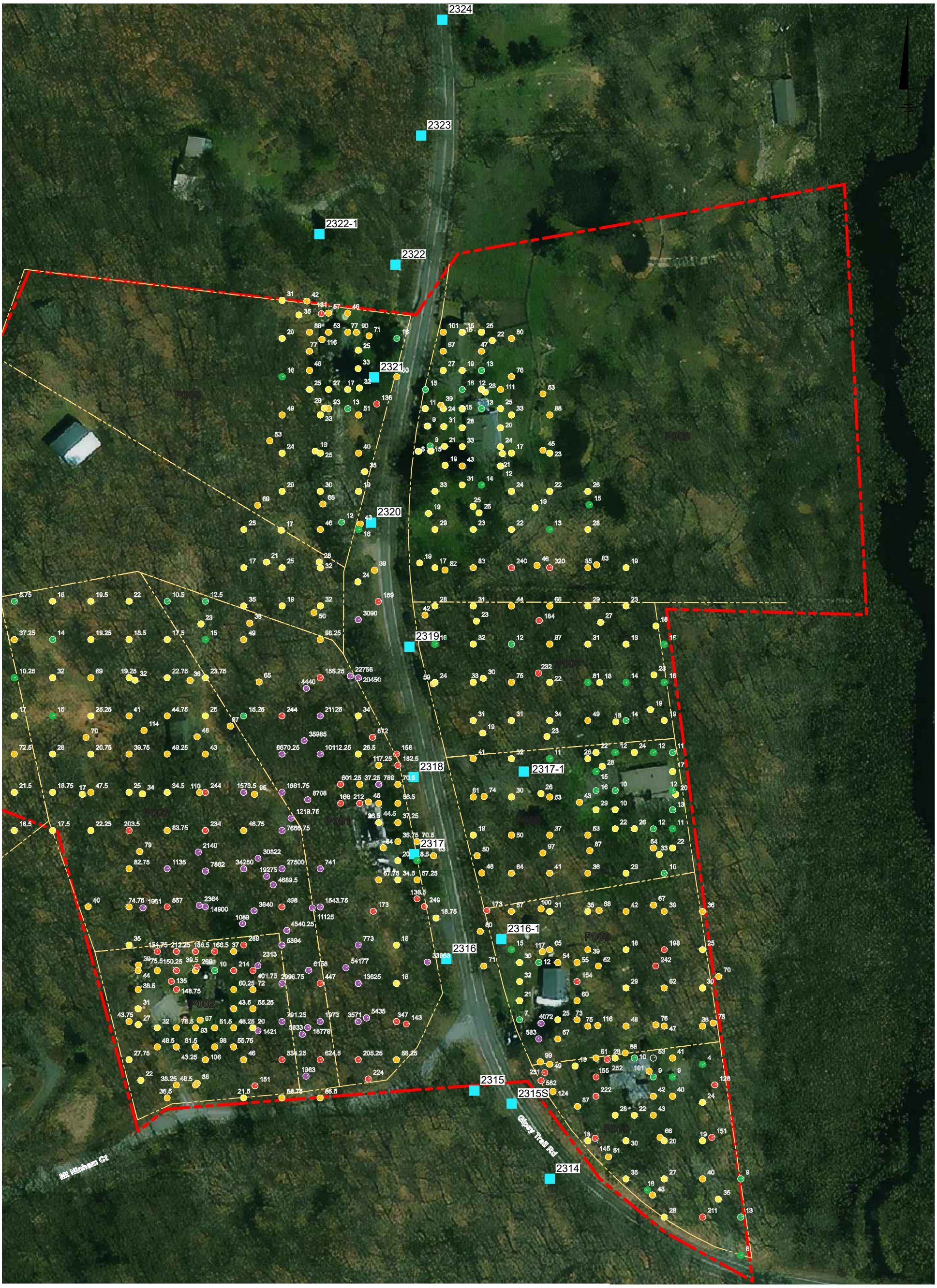
NYSEG
KENT, NY - ARSENIC MINE SUPERFUND SITE
SOIL HANDLING AND MANAGEMENT WORK PLAN

SITE LOCATION MAP

ARCADIS

FIGURE
1

CITY:CITY DIV/GROUP:ENV_CAD DB:ENV_CAD
C:\Users\barobita\ACCDocs\Arcadis\AUS-NYSEG-SUPERFUND SITE-KENT New York\Project Files\2021\01-In Progress\01-DWG\KENT NY SUPERFUND SITE.dwg LAYOUT: 2 TAB SAVED: 7/15/2021 1:35 PM PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 7/19/2021 12:09 PM BY: ROBITAILLE, BEVERLY



LEGEND:

2311 UTILITY POLE LOCATION AND ID

PARCEL BOUNDARY

KENT SUPERFUND BOUNDARY

ARSENIC CONCENTRATIONS IN SURFACE SOIL (EPA PUBLIC RECORD)

- <=16 ppm
- >16 ppm and <=35 ppm
- >35 ppm and <= 120 ppm
- >120 ppm and <= 625 ppm
- >625 ppm

NOTES:

1. SURFACE SOIL SAMPLING LOCATIONS, PROPERTY BOUNDARIES, AND SITE BOUNDARIES ARE APPROXIMATE. UTILITY POLE LOCATIONS ARE BASED ON SURVEY. UTILITY POLE IDs WITH SUFFIX "-A" ARE ANCHOR POINT LOCATIONS. IDs WITHOUT A SUFFIX ARE UTILITY POLE LOCATIONS.
2. SURFACE SOIL SAMPLING LOCATIONS AND ARSENIC CONCENTRATIONS ARE BASED ON FIGURE 3 OF THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY'S RECORD OF DECISION DATED JUNE 2020. ARSENIC CONCENTRATIONS ARE REPORTED IN PARTS PER MILLION (PPM) WHICH IS EQUIVALENT TO MILLIGRAMS PER KILOGRAM. NYSEG HAD NO INVOLVEMENT IN SAMPLE COLLECTION OR ANALYSIS AT THESE LOCATIONS.
3. AERIAL PHOTOGRAPH IS PROVIDED BY © 2021 MICROSOFT CORPORATION © 2021 MAXAR © CNES (2021) DISTRIBUTION AIRBUS DS © 2021 TOM TOM

0 120' 240'

GRAPHIC SCALE

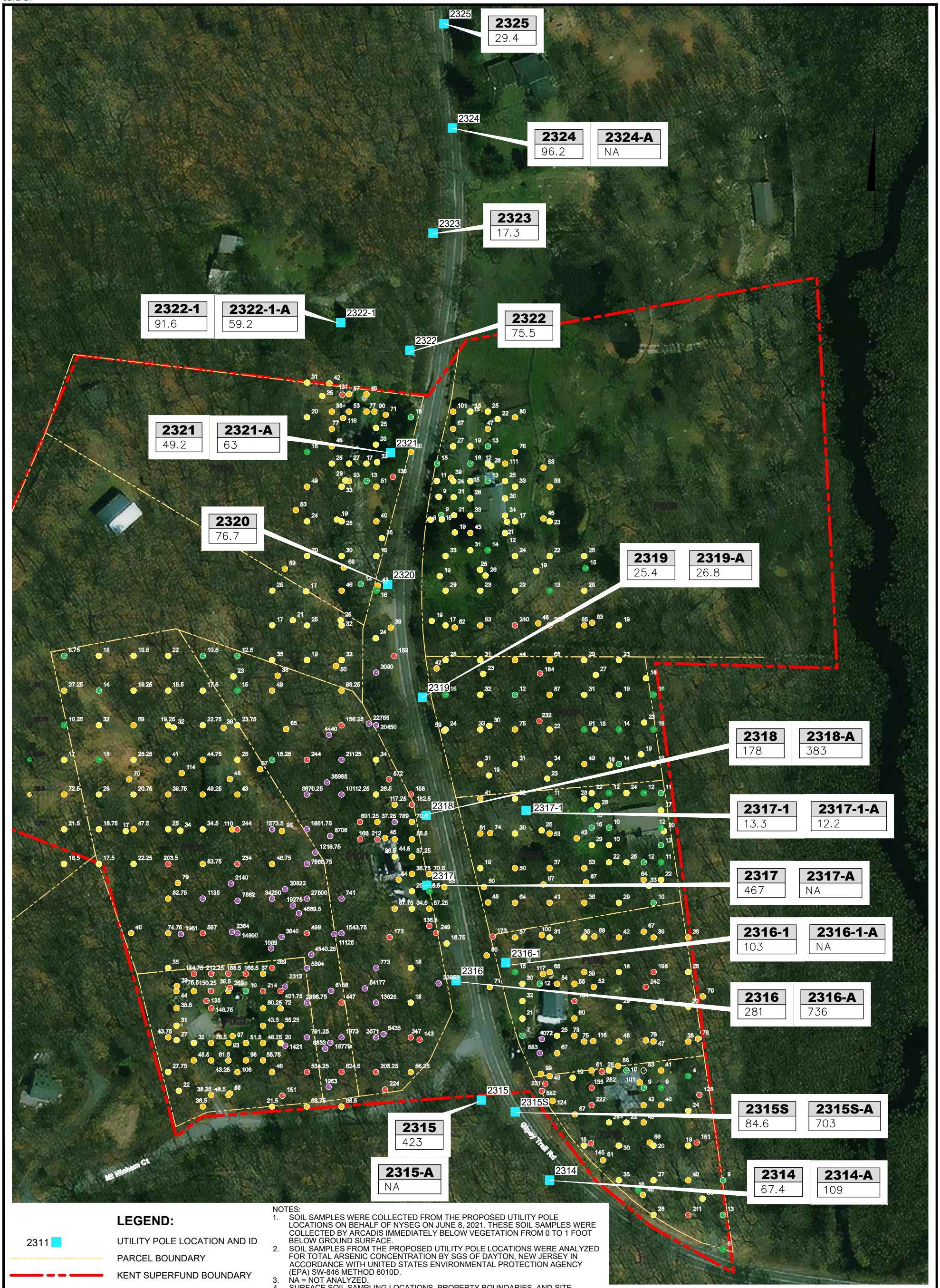
NYSEG
KENT, NY - ARSENIC MINE SUPERFUND SITE
SOIL HANDLING AND MANAGEMENT WORK PLAN

SITE PLAN

ARCADIS

FIGURE
2

CITY:CITY DIV/GROUP:ENV_CAD DB:ENV_CAD
C:\Users\barobita\ACCDocs\Arcadis\AUS-NYSEG-SUPERFUND SITE-KENT New York\Project Files\2021\01-In Progress\01-DWG\KENT NY SUPERFUND SITE.dwg LAYOUT: 3 SAVED: 7/15/2021 1:35 PM PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 7/19/2021 12:10 PM BY: ROBITAILLE, BEVERLY



LEGEND:

- 2311 — UTILITY POLE LOCATION AND ID
- PARCEL BOUNDARY
- KENT SUPERFUND BOUNDARY

ARSENIC CONCENTRATIONS IN SURFACE SOIL (EPA PUBLIC RECORD)

- <=16 ppm
- >16 ppm and <=35 ppm
- >35 ppm and <= 120 ppm
- >120 ppm and <= 625 ppm
- >625 ppm

2323
17.3

UTILITY POLE ID
ARSENIC CONCENTRATION (COLLECTED BY NYSEG)

NOTES:
1. SOIL SAMPLES WERE COLLECTED FROM THE PROPOSED UTILITY POLE LOCATIONS ON BEHALF OF NYSEG ON JUNE 8, 2021. THESE SOIL SAMPLES WERE COLLECTED BY ARCADIS IMMEDIATELY BELOW VEGETATION FROM 0 TO 1 FOOT BELOW GROUND SURFACE.
2. SOIL SAMPLES FROM THE PROPOSED UTILITY POLE LOCATIONS WERE ANALYZED FOR TOTAL ARSENIC CONCENTRATION BY SGS OF DAYTON, NEW JERSEY IN ACCORDANCE WITH UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (EPA) SW-846 METHOD 6010D.
3. NA = NOT ANALYZED.
4. SURFACE SOIL SAMPLING LOCATIONS, PROPERTY BOUNDARIES, AND SITE BOUNDARIES ARE APPROXIMATE. UTILITY POLE LOCATIONS ARE BASED ON SURVEY. UTILITY POLE IDs WITH SUFFIX "-A" ARE ANCHOR POINT LOCATIONS. IDs WITHOUT A SUFFIX ARE UTILITY POLE LOCATIONS.
5. AT LOCATIONS OTHER THAN THE PROPOSED UTILITY POLES, SURFACE SOIL SAMPLING LOCATIONS AND ARSENIC CONCENTRATIONS ARE BASED ON FIGURE 3 OF EPA'S RECORD OF DECISION DATED JUNE 2020. ARSENIC CONCENTRATIONS ARE REPORTED IN PARTS PER MILLION (PPM) WHICH IS EQUIVALENT TO MILLIGRAMS PER KILOGRAM. NYSEG HAD NO INVOLVEMENT IN SAMPLE COLLECTION OR ANALYSIS AT THESE LOCATIONS.
6. AERIAL PHOTOGRAPH IS PROVIDED BY © 2021 MICROSOFT CORPORATION © 2021 MAXAR © CNES (2021) DISTRIBUTION AIRBUS DS © 2021 TOM TOM

0 130' 260'
GRAPHIC SCALE

NYSEG
KENT, NY - ARSENIC MINE SUPERFUND SITE
SOIL HANDLING AND MANAGEMENT WORK PLAN

ARSENIC CONCENTRATIONS AT UTILITY POLES

ARCADIS

FIGURE
3

Appendix A

Site-Specific Health and Safety Plan

NYSEG

Site Specific Health and Safety Plan

Utility Pole Replacement Work

Kent, NY – Arsenic Mine Superfund Site

July 2021

Site-Specific Health and Safety Plan

Utility Pole Replacement Work Kent, NY – Arsenic Mine Superfund Site

July 2021

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Dan Zuck
HASP Reviewer

Jason Brien
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Version Control

This Health and Safety Plan (HASP) must be reviewed and revised when conditions on the project site change and the change is not addressed by this HASP or if a new task is conducted that is not addressed by this HASP.

Issue	Revision No.	Date Issued	Page No.	Description	Reviewed By

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Acronyms and Abbreviations

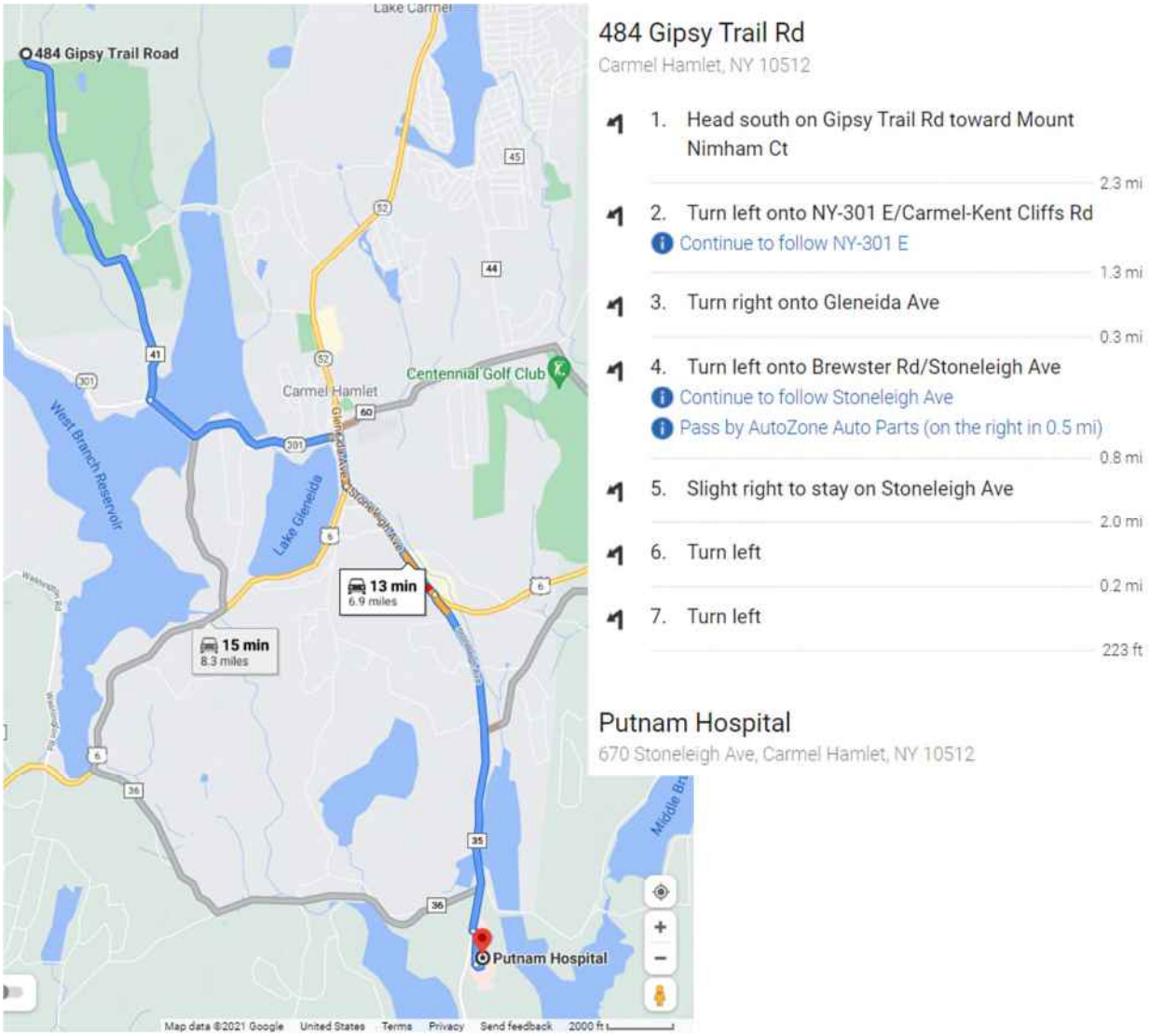
CFR	Code of Federal Rules and Regulations
CMV	commercial motor vehicles
COCs	constituents of concern
dBA	decibels
DOT	United States Department of Transportation
HMR	Hazardous Material Regulations
EAP	Emergency Action Plan
H&S	health and safety
HASP	Health and Safety Plan
HAZCOM/GHS	Hazard Communication/ Globally Harmonized System
HAZWOPER	Hazardous Waste Operations and Emergency Response

JSA	job safety analysis
mg/m^3	milligrams per cubic meter
OSHA	Occupational Safety and Health Administration
PPE	personal protective equipment
ROW	Right-of-Way
ROW TSP	Right-of-Way Traffic Safety Plan
SDS	safety data sheet
SSO	Site Safety Officer
TWA	time weighted average

1 Emergency Action Plan

1.1 Route to the Hospital

Figure 1 – Route to the Hospital



1.2 Hospital Information

The designated hospital for this project is provided below.

Hospital name: Putnam Hospital
Hospital address: 670 Stoneleight Ave, Carmel Hamlet, NY 10512
Hospital phone: 845.279.5711

1.3 Emergency Contact Information and Procedures

Table 1 – Emergency Contact Information

Local Police – Carmel Police Department	911 and 845.628.1300
Local Ambulance – Carmel Volunteer Ambulance Corps	911 and 845.225.7000
Local Fire Department – Carmel Fire Department	911 and 845.225.5100
Local Hospital – Putnam Hospital	911 and 845.279.5711
Local Weather Data	Weather.com
Poison Control	800.222.1222
National Response Center (all spills in reportable quantities)	800.424.8802
U.S. Coast Guard (spills to water)	800.424.8802
New York State One Call	811
NYSEG Call Center	800.572.1111
NYSEG Project Manager – Bev Allen	607.765.1583
NYSEG Coordinator – Andy Gumkowski	845.490.4834

Use the following notification procedure in the event of an emergency:

Step 1: Dial 911 (if necessary)

Step 2: Contact Project Manager / Task Manager

Step 3: Contact Project H&S Manager

Step 4: Contact NYSEG

1.4 Emergency Supplies and Equipment List

Emergency supplies and equipment for specific tasks are presented on job safety analyses (JSAs) for the task. The following supplies and equipment are applicable to all tasks performed on the project.

Table 2 – List of Emergency Supplies and Equipment

Emergency Supplies and Equipment (check all that apply)		Location on Project Site
X	First-Aid Kit (Class A)	Field Vehicle
X	Fire Extinguisher	Field Vehicle
X	Mobile Phone	Field Vehicle
	Satellite Phone	
X	Traffic Cones	Field Vehicle
	2-Way Radios	
	Water or Other Fluid Replenishment	
	Eye Wash/Quick Drench Station	
X	Eye Wash Bottle	Field Vehicle
	Wash and Dry Towelettes	
	Sunscreen (SPF 15 or higher)	
X	Insect Repellent	Field Vehicle
X	Chemical Spill Kit	Field Vehicle
	Other (specify):	

2 Introduction

All work on this project will be carried out in compliance with the Occupational Safety and Health Administration's (OSHA's) Hazardous Waste Operations and Emergency Response (HAZWOPER) regulation. The design of this Health and Safety Plan (HASP) conforms to the requirements of the 29 Code of Federal Rules and Regulations (CFR) Part 1926.65(b)(4). Specific H&S information for the project is contained in this HASP. All personnel working on hazardous operations or in the area of hazardous operations shall read and be familiar with this HASP before doing any work. All project personnel shall sign the Certification page acknowledging that they have read and understand this HASP.

Changes in the scope of the project or introduction of new hazards to the project shall require revision of the HASP by the HASP writer and reviewer, and approval by the Project Manager.

2.1 Objective

The objective of the site activities is to install utility poles within the bounds of the Arsenic Mine Superfund Site in Kent, NY, where soil is impacted with arsenic. . The utility poles will be installed along the Gipsy Trail Road right-of-way (ROW) passing through the site. This HASP supports the Soil Handling and Management Work Plan, and addresses the following project work tasks related to soil handling and management:

- Task 1 – Subsurface utility location and clearance.
- Task 2 – Drilling.
- Task 3 – Containing, segregating, and/or sampling waste material.
- Task 4 – Decontaminating drill rig and hand tools that come into contact with soil.

The objective of this HASP is to provide a mechanism for establishing safe soil working conditions at the site. The safety organization, procedures, and protective equipment have been established based on an analysis of potential physical, chemical, and environmental hazards. No specific hazard control methodologies have been evaluated and selected to minimize the potential of injury, illness, or other incident.

2.2 HASP Structure

This HASP contains important information related to this project in appendices. Review of relevant appendix information is important to ensure work is conducted safely on the project site. The following appendices are included in this HASP with a summary of their contents:

- Appendix A – Job Safety Analysis: This appendix contains all the project JSAs required to perform soil handling work on this project.
- Appendix B – Safety Data Sheets: This appendix contains safety data sheets (SDSs) applicable to the chemicals that may be used or present onsite.
- Appendix C – Field Forms: This appendix contains the field forms and checklists (including a utility clearance checklist) staff are expected to use on the project.
- Appendix D – Shipping Determination for shipping soil samples.

2.3 Hierarchy of Administrative Controls

This HASP references several documents that might be used in the field which contain requirements specific to the task and/or project. Staff utilizing these documents must implement the requirements (personal protective equipment [PPE], safety equipment, monitoring equipment, etc.) based on the hierarchy specified below (in order of decreasing priority):

1. Supplemental plan templates (if applicable to the task or project)
2. JSAs
3. HASP
4. H&S and/or OSHA Standards

During the tailgate safety briefing, the applicable administrative controls to be utilized for the task/project will be identified, communicated to the field staff, and documented. Requirement changes to a lesser control in a lower hierarchy document requires approval of the HASP reviewer.

3 Project Site History and Requirements

3.1 Site Background

Gipsy Trail Road is downslope of a former Arsenic Mine located in Kent, NY. The Arsenic Mine was previously known as Pine Pond Mine, Silver Mine, and Brown's Serpentine Mine. Nimham Mountain Multi-Use Area, a state recreational area, includes undeveloped and residential properties around and downslope from the northern mine shaft, near the intersection of Gipsy Trail Road and Mt. Nimham Court. Arsenic concentrations in surface soil along the ROW where work will be performed range from 6 to 736 parts per million.

3.2 Site Description

Table 3 – Site Description Categories

	Active		Inactive Industrial	**X**	Remote Area		Parking Lot/Private Roadway
	Bridge		Active Industrial	**X**	Residential	**X**	Public Roadway or Right of Way
	Buildings		Landfill		Retail		Security Risk Site/Location
	Commercial		Marine		Service Station		Non-Military Government Installation
	Construction		Mining	**X**	Utility		
	Military Installation		Railroad		Other		
	Other Specify:						

Gipsy Trail Road is a rural residential road with a 30 MPH speed limit. The ROW is somewhat overgrown with vegetation and limited shoulder space. Gipsy Trail Road has gentle rolling hills from north to south and some curves.

3.3 Required Health and Safety Training

Personnel working under this HASP are required to have the following training:

Table 4 – Required Training

All Staff	Select Staff	Staff Required to Have Training	Training
X			HAZCOM/GHS/EAP
X			PPE
X			Hearing Conservation/Protection
X			General Construction Awareness Training
X			General Arsenic Awareness Training
	X	Site-Safety Officer (SSO)	Hazwoper 40 Hour
	X	SSO	Hazwoper 8-Hour Annual Refresher

All Staff	Select Staff	Staff Required to Have Training	Training
	X	SSO	Hazwoper 8-Hour Supervisor
	X	Equipment Operators	Heavy Equipment
	X	SSO or Equipment Operators	Construction Safety - 10 Hour
	X	SSO or Designated NYSEG Representative	United States Department of Transportation (DOT) Hazardous Material Regulations (HMR) Training
	X	SSO or A General Worker	First Aid/CPR
	X	SSO or A General Worker	BBP (Bloodborne Pathogens)

4 Organization and Responsibilities

The roles of onsite personnel are outlined in the following subsections. Key project personnel and contacts are summarized in Table 1 in Section 1. The SSO needs to be established before each mobilization to the Site.

4.1 All Personnel

All onsite personnel (including subcontractors) must read and acknowledge their understanding of this HASP before commencing work and abide by the requirements of the HASP. All onsite personnel must sign the HASP Acknowledgement Form after reviewing this HASP. Every person is responsible for completing tasks safely and reporting any unsafe acts or conditions to their supervisor. No person may work in a manner that conflicts with these procedures. Prior to initiating site activities, all personnel will receive training in accordance with applicable regulations and be familiar with the requirements and standards referenced in this HASP.

In addition, all personnel will attend daily safety meetings (tailgate meetings) to discuss site specific hazards prior to beginning each day's work. Every contractor/subcontractor employee and NYSEG representative at the site has the responsibility to stop the work if the working conditions or behaviors are considered unsafe. Onsite personnel will immediately report the following to the SSO:

- Personal injuries and illnesses, no matter how minor.
- Unexpected or uncontrolled release of chemical substances.
- Unsafe or hazardous situations.
- Unsafe or malfunctioning equipment.
- Changes in site conditions that may affect the health and safety of project personnel.
- Damage to equipment or property.
- Situations or activities for which they are not properly trained.

4.2 Project Manager/Task Manager

The Project Manager is responsible for verifying that project activities are completed in accordance with the requirements of this HASP. The Project Manager is responsible for confirming that the project has the equipment, materials, and qualified personnel to fully implement the safety requirements of this HASP, and/or that subcontractors assigned to this project, meet the requirements established by this HASP. It is also the responsibility of the Project Manager to:

- Review all applicable OSHA standards and confirm that project activities conform to all requirements.
- Communicate with the Site Safety Officer (SSO) on H&S issues.
- Allocate resources for correction of identified unsafe work conditions.
- Confirm that site workers have all training necessary for the project.
- Report all injuries, illnesses, and near-misses to the NYSEG representative, lead incident investigations, and confirm that any recommendations made are implemented.

4.3 Site Safety Officer

The SSO has overall responsibility for the technical H&S aspects of the project. Inquiries regarding OSHA standards, project procedures, and other technical or regulatory issues should be addressed to this individual. It is also the responsibility of the SSO to:

- Review and work in accordance with the components of this HASP.
- Make sure that this HASP is available to and reviewed by all site personnel including subcontractors.
- Validate that necessary site-specific training is performed (both initial and “tailgate” safety briefings).
- Confirm site visitors have been informed of the hazards related to the work.
- Confirm that work is performed in a safe manner and has authority to stop work when necessary to protect workers and/or the public.
- Coordinate activities during emergency situations.
- Disseminate to other site personnel all necessary permits and safety information provided by NYSEG and confirm that the material is maintained in an organized manner.
- Communicate with the Project Manager, Associate Project Manager, and/or Task Manager on H&S issues.
- Report all injuries, illnesses, and near-misses to the Project Manager, Associate Project Manager, and/or Task Manager.
- Make sure that necessary safety equipment is maintained and used at the site.
- Monitor airborne particulates and use the air monitoring results to determine appropriate health and safety precautions.

The SSO will contact a H&S professional for assistance in establishing the respiratory cartridge change schedule as required.

4.4 Designated NYSEG Representative

The designated NYSEG representative will be responsible for signing bill of ladings and managing waste disposal documentation for the work. The designated NYSEG representative will also ensure that equipment leaving the site is properly decontaminated and that no dust is tracked outside the work area. The designated NYSEG representative can be the same person as the SSO.

4.5 Equipment Operator

The equipment operator will be responsible for the safe operation, monitoring, and maintenance of the heavy equipment they are operating onsite. Heavy equipment will be maintained per manufacturer instructions. The equipment operator will also have a spill kit available for deployment in the event a fuel leak or hydraulic fluid leak from the operated machinery.

5 Project Hazards and Control Measures

5.1 Task Hazard Analysis and Controls

A brief overview of the hazards and controls for each of the work tasks introduced in Section 2.1 is below.

5.1.1 General Work

The general work hazards associated with soil handling are generic and apply to all tasks on the project. General work includes driving, walking, working outside, and potential contact with flora and fauna. Project personnel will walk the work areas to confirm the existence of anticipated hazards, and identify safety and health issues that may have arisen since the writing of this plan.

Hazards – The hazards of this phase of activity are associated with heavy equipment movement, manual materials handling, installation of temporary on-site facilities, and manual site preparation. Manual materials handling and manual site preparation may cause blisters, sore muscles, and joint and skeletal injuries; and may present eye, contusion and laceration hazards. The work area presents slip, trip and fall hazards from scattered debris and irregular walking surfaces. Rainy weather may cause wet, muddy, slick walking surfaces, and unstable soil. Freezing-weather hazards (if applicable) include frozen, slick and irregular walking surfaces. Installation of temporary field support facilities may expose personnel to electrical hazards, underground and overhead utilities, and physical injury due to manual lifting and moving of materials.

Environmental hazards include plants, such as poison ivy and poison oak; aggressive fauna, such as ticks, fleas, mosquitoes, wasps, spiders, rats, and snakes; weather, such as sunburn, lightning, rain, heat and cold-related illnesses; and pathogens, such as rabies, Lyme disease, and blood-borne pathogens.

Control – Control procedures for the above-mentioned hazards are discussed in Section 13.

5.1.2 Task 1 – Subsurface Utility Location and Clearance

The Underground/Overhead Utility Checklist (Appendix C) or NYSEG-approved equivalent shall be used to document that nearby utilities have been marked on the ground, and that the drill site has been cleared.

Hazards – Inhalation and ingestion of constituents of concern (COCs) and/or dust, and proximity of operations to the breathing zone are the primary routes of entry associated with manual excavation of potentially impacted subsurface soils. The hazards directly associated with manual hand auguring include strains, sprains, pinching, and potential eye hazards.

Control – Level D protection will be worn during utility clearance activities. If necessary, based on field observations and site conditions, air monitoring may be conducted during hand clearing or vacuum excavation activities to assess the potential for exposure to airborne COCs. Section 8.1, Air Monitoring, describes air monitoring requirements and action levels. Vacuum excavation, for utility clearance test pitting purposes, will be used if worker breathing zone air monitoring and community air monitoring are being performed. OSHA regulations for PPE are found in 29 CFR 1910 Subpart I (132, 133, 135, 136, 138). Each level of personal protection anticipated for this project is described in Section 5.3, Personal Protective Equipment. Control procedures for environmental and general hazards are discussed in Section 13.

5.1.3 Task 2 – Drilling

Drilling operations will be conducted in accordance with this section and appropriate federal and state regulations. OSHA regulations for Heavy Equipment Operation, including drill rigs, are found in 29 CFR 1926 Subpart O (600, 601, 602). Precautions will be taken to protect the public during drilling operations. These precautions may include flaggers, spotters, cones, or barricades.

The physical hazards involved with working near drill rigs relate to the equipment itself and the site environment. There exists a potential for incidents involving personnel being struck by or against heavy equipment or materials, resulting in fractures, cuts, punctures, or abrasions. Drill operation may present noise and vibration hazards, and a potential for contact with moving parts or hot surfaces to equipment operators. Walking and working surfaces may involve slip, trip, and fall hazards. Slippery work surfaces can increase the likelihood of back injuries, overexertion injuries, and slips and falls. Noise may also present a hazard.

Audible Alarms

The drill rig should be equipped with a warning device that operates automatically while the vehicle is backing. The warning sound must be of such magnitude that it will normally be audible from a distance of 200 feet and will sound immediately on backing. In lieu of the above requirements, administrative controls must be established such as:

- A spotter or flagger in clear view of the operator who must direct the backing operation
- Other procedures that will require the operator to dismount and circle the vehicle immediately prior to starting a backup operation
- Prohibiting all foot traffic in the work area
- Other means must be provided that will provide safety equivalent to the foregoing for personnel working in the area.

The operator of all vehicles must not leave the controls of the vehicle while it is moving under its own engine power.

Equipment Inspection and Maintenance

All vehicles in use must be checked at the beginning of each shift to confirm that parts, equipment, and accessories are in safe operating condition and free of apparent damage that could cause failure while in use.

All defects affecting safe operation must be corrected before the vehicle is placed in service.

No repairs must be attempted on power equipment until arrangements are made to eliminate the possibility of injury caused by sudden movements or operation of the equipment or its parts.

Equipment Parking and Loading

Whenever equipment is parked, the parking brake must be set. Equipment parked on inclines must have the wheels chocked and parking brake set, or be otherwise prevented from moving by effective mechanical means.

Equipment Fueling

No internal combustion engine fuel tank must be refilled with a flammable liquid while the engine is running. Fueling must be done in such a manner that the likelihood of spillage is minimal. If a spill occurs, it must be contained and cleaned, or equivalent action taken to control vapors before restarting the engine. Fuel tank caps

must be replaced before starting the engine. Good metal to metal contact must be kept between fuel supply tank or nozzle of supply hose and the fuel tank. Smoking is not permitted at or near the gasoline storage area or on equipment being fueled. No repairs must be made to equipment while it is being fueled.

Each fuel storage tank or drum must have the word “flammable” conspicuously marked thereon and should also have a similarly sized word indicating the contents of the container. A fire extinguisher rated 20:BC or larger must be in a location accessible to the fueling area. All fuel storage tanks, drums, or safety cans must be properly marked and of the proper type.

Additional Safety Requirements

To protect onsite personnel against hazards associated with materials handling and to prevent injury due to unsafe drill operation, only properly trained and authorized personnel will be allowed to operate drill rigs. All materials handling equipment will be maintained in a safe operating condition and inspected daily prior to use.

Additional heavy equipment safety requirements include, but are not limited to:

- Prior to operating any heavy equipment, the authorized operator must conduct a pre-operation inspection to determine if the heavy equipment is in safe operating condition prior to each work shift.
- All mobile equipment must be equipped with an audible back-up alarm.
- Personnel will not be allowed to stand or pass under the elevated portion of any heavy equipment, whether loaded or empty.
- Personnel will not place arms and legs between pinch or scissor points of the equipment, or outside the operator enclosure.
- Operators will maintain sufficient clearance under overhead utilities, installations, lights, pipes, etc.
- The operator is required to look in the direction of, and maintain a clear view of the path of travel.
- Heavy equipment must not be driven up to anyone standing in front of any object.
- Stunt driving and horseplay are strictly prohibited.
- Operators will yield the right-of-way to other site vehicles.
- Other heavy equipment traveling in the same direction at intersections, blind spots, or other dangerous locations, must not be passed.
- A safe distance must be maintained from other heavy equipment, and the equipment must be kept under control at all times.
- The heavy equipment operator must slow down for wet and slippery conditions. Under all travel conditions, the equipment will be operated at a speed that will permit it to be brought to a stop safely.
- Grades and ramps must be ascended and descended slowly.
- The operator will slow down and sound the horn at intersections and other locations where vision may be obstructed.
- While negotiating turns, speed will be reduced to a safe rate, and turning will be in done a smooth, sweeping motion to avoid abrupt turns and potential equipment or load upset.

- When a piece of heavy equipment is left unattended, hydraulics will be fully lowered, controls will be neutralized, power will be shut off, and brakes set. Wheels will be blocked or chocked if the heavy equipment is parked on an incline.

5.1.4 Task 3 – Containing, Segregating, and/or Sampling Waste Material

Waste surplus soil will be managed in DOT-approved 55-gallon steel drums or roll-off containers. Types of waste will include surplus drill cuttings, decontamination fluids, and sampling material. The physical hazards of these operations are primarily associated with moving and storing the steel drums. In addition, personnel may be exposed to hazards associated with working near heavy equipment and exposure to COCs during disposal characterization sampling, if additional sampling is needed. NYSEG will dispose of waste generated. Vendors transporting waste from the site will either transport the materials directly to the disposal facility or to a permitted temporary storage facility prior to final disposal.

Hazards – Inhalation and ingestion of COCs are the primary routes of entry associated with waste management due to the transport of waste into drums or roll-offs. The hazards directly associated with drum handling procedures include strains, sprains, crushing injuries, pinching, and potential eye hazards. Exposure to waste containing COCs is also possible. In addition to the safety hazards specific to sampling operations, hazards associated with the operation of vehicles (especially large vehicles with limited operator visibility), is a concern.

Control – Level D protection will be worn during waste management activities.

Specific drum handling procedures include the following:

- Tightly secure all bung holes in the drum so that contents do not leak.
- Inspect the drum handling area for laceration hazards.
- Secure the drum on a surface that is accessible by the dollie or forklift.
- Clear a path for moving the drums.
- Clear slip, trip, and fall hazards from the path.
- If the drum will be moved while on a pallet, secure the drum to the pallet prior to moving.
- Use a drum dollie, forklift, or other acceptable method to move the drums and do not attempt to move them without an acceptable device.
- Separate the drums by what the contents may be so that the drums do not have to be moved more than once to prevent accidents.
- Do not remove drums from pallets unless the pallet is in such a condition it is unsafe to move the drum while it is on it.
- Use a pallet jack or forklift to move pallet with drums on it to the designated area.
- Avoid having to move the drum more than once to prevent accidents.

Control procedures for environmental and general hazards are discussed in Section 13, General Safety Practices.

5.1.5 Task 4 – Decontaminating Drill Rig and Hand Tools

Equipment/materials decontamination will be performed to control the transfer of COCs from the site. All equipment that comes into contact with soil is decontaminated before arriving at and leaving the site. Equipment will be decontaminated by either scrubbing with a mild detergent/citrus solvent or a high pressure steam/wash to remove visible dirt and dust. COC-impacted equipment will be determined "clean" by visually inspecting all equipment. All wastewater and waste materials generated onsite will be contained in the decontamination system for characterization and proper disposal.

Work will be performed on or near roadways. This may make a separate decontamination area impractical. To minimize the need for decontamination and to reduce the risk of spread of contaminants into public areas, contamination minimization and control practices should be implemented to minimize and control contamination during drilling and other work tasks. All operations that have the potential to generate or release hazardous material will be conducted in a controlled area using the appropriate engineering controls. This includes covering areas and equipment with tarps, minimizing the spread of potentially contaminated soil and water, and minimizing the size of the work zone.

Hazards – Sources of chemical hazards from decontaminating equipment are decontamination detergents or solvents, foreign matter and COCs on the equipment prior to decontamination, and rinsate from the decontamination process. Physical hazards associated with this activity are back strain, slippery surfaces, cuts and burns from the high-pressure steam wash and hearing loss due high levels of noise generated by the equipment.

Control – All equipment shall be decontaminated before arriving at and leaving the site. In addition, all operations that have the potential to generate or release hazardous material will be conducted in a controlled area using the appropriate engineering controls. Specific decontamination techniques will be established based onsite conditions. Decontamination procedures will be reviewed with all personnel onsite. A 55-gallon drum on a suitable surface (concrete or paved area) or other appropriate containment system will be established, if needed.

The decontamination setup will be inspected before use for potential leaks. If any deficiencies are noted they will be corrected immediately.

Personnel involved in decontamination activities may be exposed to skin contact with contaminated materials and chemicals brought to the site as part of the project work. All personnel will review the operating procedures and PPE prior to decontamination. Personnel involved in decontamination activities must wear PPE that is appropriate for the task. OSHA regulations for PPE are found in 29 CFR 1910 Subpart I (132, 133, 135, 136, 138). Each level of personal protection anticipated for this project is described in Section 5.3, Personal Protective Equipment.

5.2 Job Safety Analyses, Permits, and Health and Safety Standards

5.2.1 Job Safely Analyses

A JSA has been completed for each safety-critical task and is included in Appendix A. Hazards identified in the table above are addressed specifically in the JSAs, as well as control methods to protect employees and property

from hazards. The JSA also lists the type of PPE required for the completion of the task or activity. PPE listed in the task-specific JSA will take precedence over PPE requirements listed in Section 5.3.1 of this HASP.

5.2.2 Permits

Permits will be obtained in accordance with applicable laws and regulations. For work within roadways and sidewalks, a permit will be required, as issued by the Putnam County Department of Transportation. PPE and equipment prescribed by health and safety permits take precedence over JSA and HASP requirements.

5.2.3 H&S Standard

OSHA H&S regulations are found in 29 CFR Parts 1910 and 1926. Applicable OSHA H&S regulations addressing safety critical work activities are listed in Table 5 below. These OSHA regulations should be reviewed by the Project Manager, Associate Project Manager and/or Task Manager, and site personnel prior to start of the project to confirm that all requirements are met.

Table 5 – H&S Standards

Applicable Task (Section 2.1)	General Work Activity	OSHA Regulation (Part and Supart)
1, 2, 3, 4, 5	Hazard Identification, Risk Assessment and Risk Control	1910 Subpart I App B
1, 2, 3, 4, 5	Stop Work Authority	1926.1418 Extended to All Workers
1, 2, 3, 4, 5	Personal Protective Equipment	1910 Subpart I (132, 133, 135, 136, 138)
1,4	Hazard Communication	1910.1200 and 1926.59
1,5	Hand Tools	1910 Subpart P (241, 242) and 1926.301
3	Hearing Conservation	1910.95 and 1926.101
1, 3	Motor Vehicle Safety	1926.601
3, 4, 5	Heavy and Mechanized Equipment	1926 Subpart O (600, 601, 602)
1, 2, 3	Utility Location Procedures	-

5.3 Personal Protective Equipment

5.3.1 General Requirements

PPE requirements are specified in task-specific JSAs and/or permits listed in Appendix A. During soil handling and management activities all project workers working onsite outside of a cabbed vehicle must wear, at a minimum:

- Hard hat.
- Safety glasses.
- Safety-toed boot.
- Class II traffic vest.

Regardless of the requirements above, the following PPE marked “R” is required to be available onsite for this project:

Table 6 – Required PPE

Description (Put Specific Material or Type in Box)	R=Required O=Optional
Coveralls	
Chemical Protective Suit (include type in cell, e.g., Tyvek, Saranex, PVC, etc.)	
Splash Apron	
Rain Suit	
Traffic Safety Vest (Class II minimum)	R
Hard Hat (if does not create another hazard)	R
Head Warmer (depends on temperature and weather conditions)	
Safety Glasses (incorporate sun protection, as necessary)	R
Goggles (based on hazard)	
Splash Guard (based on hazard)	
Ear Plugs	R
Ear Muffs	
Outer Chemical Resistant Gloves (specify the type of glove based on chemical hazard)	
Inner Chemical Resistant Gloves (Nitrile)	O
Insulated Gloves	
Work Gloves	R
Safety Boots (steel toe and shank)	R
Rubber, Chemical-Resistant Boots	

Description (Put Specific Material or Type in Box)	R=Required O=Optional
Rubber Boots	
Disposable Boot Covers	
Snake Chaps or Guards	
Briar Chaps	
Other:	

Note: Subcontractors are required to have the same PPE available onsite as the PPE listed above.

5.3.2 Levels of PPE Protection

The following is a summary of the different levels of PPE protection which may be referred to in this HASP, project-related JSAs/permits, or in H&S Standards:

- Level D – Standard work clothing consisting of long pants, shirt with at least a quarter sleeve, hard hat, safety glasses, safety-toed boots, protective gloves, hearing protection (e.g., ear plugs), and Class II retroreflective vest (traffic vest).
- Level D Modified – All of the PPE listed above plus coveralls (standard or flame-resistant coveralls or Tyvek).

6 Hazard Communication / Global Harmonization System

All project-required chemicals must be handled in accordance with DOT HMR, 29 CFR 1910.1200, and 29 CFR 1926.59. Chemicals that may be brought, used, and/or stored on the site are Alconox (for decontamination), gasoline products (to power equipment), and sodium hydroxide (as a potential laboratory sample container preservative). SDSs for these chemicals are included in Appendix B. SDSs for any additional chemicals brought onsite will need to be added to Appendix B as an addendum.

All staff must be made aware of the location of and have ready access to the SDS information onsite. All project workers will be notified of the SDS location in their initial safety briefing.

7 Tailgate Meetings

Tailgate safety briefings must be conducted at least once daily. The tailgate safety briefing must be documented on the form included in Appendix C or documented on an equivalent form and maintained with the project files. The tailgate safety briefing will serve as a final review for hazard identification and controls to be utilized. JSA should be reviewed as part of the briefing to ensure hazard controls are adequate for planned work. A tailgate safety briefing should be conducted again and documented during the same work shift if site conditions change from anticipated conditions.

8 Personal Exposure Monitoring and Respiratory Protection

8.1 Air Monitoring Requirements

Air monitoring will be conducted during soil disturbing activities to evaluate potential exposure to airborne constituents. The monitoring results will dictate work procedures and dust control measures. The SSO will be responsible for utilizing the air monitoring results to determine appropriate health and safety precautions. Personal and area exposure monitoring will be documented on the Air Monitoring Log provided in Appendix C. All monitoring equipment will be maintained and calibrated in accordance with manufacturer's recommendations. All pertinent monitoring data will be logged on the form or digitally and maintained on site for the duration of project activities. Calibration of all monitoring equipment will be conducted daily and logged on the same form.

Air monitoring is required for airborne particulates due to the presence of arsenic in soil, and arsenic is an OSHA regulated substance, with a time weighted average (TWA) of 0.01 milligram per cubic meter (mg/m^3) and an immediately dangerous to life and health concentration of 5 mg/m^3. Air monitoring will be implemented in the worker breathing zone for particulate matter less than 10 microns in diameter.

Air monitoring must be conducted using a portable dust monitor (e.g. TSI DustTRAK II or equivalent) during all activities that have the potential to generate airborne particulates. Readings should be taken in the breathing zone of site workers. Portable dust monitoring equipment provides "total dust" levels, and do not differentiate between contaminated and non-contaminated dust particulates. Action levels are based upon total dust and not respirable dust levels. Action levels are in excess of background levels, as measured either prior to activities in work areas or off-site.

The action levels for airborne particulates considering the potential for arsenic impacted soil are provided in Table 7 below.

Table 7 – Airborne Particulate Action Levels (mg/m^3)

<	1.5	Continue working
	1.5 - 3	Levels sustained > 5 minutes, monitor continuously and review engineering controls and PPE. Proceed with caution.
>	3	Stop work and contact Project Manager

Action levels are for exposure monitoring with real-time air monitoring instruments as specified in the table. Air monitoring data will determine the required respiratory protection levels at the site during scheduled intrusive activities. The action levels are based on sustained readings indicated by the instrument(s). Breathing zone air monitoring using the above instruments will be performed at 15-minute intervals. A community air monitoring plan is provided in Section 9.

If elevated concentrations are indicated, the monitoring frequency will be increased, as appropriate. If sustained measurements are observed during this time, the following actions will be instituted, and the Project Manager will be notified. For purposes of this HASP, sustained readings are defined as the average airborne concentration maintained for a period of one (1) minute. For situations where sustained air monitoring measurements are above the TWA for arsenic, the SSO will contact a Certified Industrial Hygienists or Certified Safety Professional for assistance.

Data logging instruments are preferred for this monitoring frequency. Staff using these instruments must be trained in data logging procedures for the actual instrument(s) used. Data logging results must be backed up daily. If manually logging, all results (including non-detects) must be documented.

If an instrument is found to be inoperative or suspected of giving erroneous readings, the SSO must be responsible for immediately removing the instrument from service and obtaining a replacement unit. If the instrument is essential for safe operation during a specific activity, that activity must cease until an appropriate replacement unit is obtained. The SSO will be responsible for confirming that a replacement unit is obtained and/or repairs are initiated on the defective equipment.

9 Medical Surveillance

Medical surveillance requirements prescribed by OSHA's HAZWOPER regulations apply to 40-hour HAZWOPER trained workers. Medical surveillance will be performed for site workers in accordance with applicable laws and regulations. All medical surveillance requirements as indicated must be completed and site personnel medically cleared before being permitted on the project site.

10 Sanitation

The project scope is a mobile work operation. The project field team will have reasonable access to restroom facilities within 10 minutes of the work area where the mobile work activity is actively taking place.

An adequate supply of potable water must be provided on the site. Portable containers used to dispense drinking water shall be capable of being tightly closed. Water shall not be dipped from containers. Any container used to distribute drinking water shall be clearly marked as to the nature of its contents and not used for any other purpose.

Potable water will be carried by the field team in the vehicle used for the project. Unless alternate requirements are stipulated in a plan supplement (i.e. Heat Injury and Illness Prevention Plan), permit or JSA, bottled or water coolers with potable water will be provided to project workers at 1 gallon/worker/day.

11 General Decontamination and Site Control Procedures

11.1 General Decontamination

Site workers should exercise good hygiene practices by washing hands and face with soap and water prior to consumption of food, drink, or use of tobacco products. Ready access to an adequate supply of potable water, soap, and disposable towels is expected to be maintained on site. Exposed skin in contact with potentially impacted environmental media, site chemicals, decontamination materials (i.e., Alconox), or calibration solutions should promptly wash the affected area with soap and water to reduce potential for contamination or skin irritation.

11.2 Site Control

Site control is required for all field work. The primary purpose of site control is to minimize worker exposure to known or potentially harmful constituents of concern in environmental media, remediation, or process chemicals or waste materials. Site control also serves to protect members of the public from potential contamination. Finally, site control can be used to prevent theft and vandalism of equipment.

All visitors to the project work area are required to sign in and out on the visitor's log (located in Appendix C) for the project and must receive a safety briefing described in Section 7 of this HASP.

For Level D projects, formal establishment of site control zones is not ordinarily required unless specified by the task hazard assessment or task-specific JSA. Simple controls such as cones and caution tape should be utilized in areas with high pedestrian traffic. Site control zones are highly variable based on-site conditions; but, at a minimum zone, the zone established should be at least 10 feet in all directions from the work activity to the extent practical. Site control may be integrated with other supplemental plans such as Non-ROW traffic safety plan (TSP), as applicable.

12 General Safety Practices

General safety rules for site activities include, but are not limited to, the following:

- At least one copy of this HASP must be in a location at the site that is readily available to personnel, and all project personnel must review the plan prior to starting work.
- Wash hands before eating, drinking, smoking, or using toilet facilities.
- Wear all PPE as required, and stop work and replace damaged PPE immediately.
- Upon skin contact with materials that may be impacted by COCs, remove contaminated clothing and wash the affected area immediately.
- Practice contamination avoidance. Avoid contact with surfaces either suspected or known to be impacted by COCs, as possible. Equipment must be stored on elevated or protected surfaces to reduce the potential for incidental contamination.
- Remove PPE as required to limit the spread of COC-containing materials.
- At the end of each shift, or as required, dispose of all single-use items.
- Do not remove soil containing site COCs from protective clothing or equipment with compressed air, by shaking, or by any other means that disperses contaminants into the air.
- Inspect all non-disposable PPE for contamination. Any PPE found to be contaminated must be decontaminated or disposed of appropriately.
- Recognize emergency signals used for evacuation, injury, fire, etc.
- Report all injuries, illnesses, near misses, and unsafe conditions or work practices to the SS.
- Use, adjust, alter, and repair equipment only if trained and authorized to do so and in accordance with the manufacturer's directions.
- Personnel are to perform only tasks for which they have been properly trained, and will advise their supervisor if they have been assigned a task for which they are not trained.
- The presence or consumption of alcoholic beverages or illicit drugs during the workday, including breaks, is strictly prohibited. Notify your supervisor if you must take prescription or over-the-counter drugs that list drowsiness as a side-effect or indicate that heavy equipment should not be operated while taking the medication.
- Remain upwind during site activities whenever possible.

12.1 Traffic Safety

The work area is located within or adjacent to a public roadway where exposure to vehicular traffic is possible. For work within roadways and sidewalks, a permit will be required, as issued by the Putnam Department of Transportation. Signage and other control measures stipulated by the permitting authority or authorities will be applied during field activities. This may include the closure of a travel lane or lanes or sidewalks, and erection of signs, cones, barricades, or flashing lights, as applicable.

In addition, during activities along or within a roadway, equipment will be aligned parallel to the roadway to the extent feasible, facing into the oncoming traffic so as to place a barrier between the work crew and the oncoming traffic. All crewmembers must remain behind the equipment and the traffic barrier.

The flow of traffic must be assessed, and precautions taken to warn motorists of the presence of workers and equipment. Where possible, vehicles should be aligned to provide physical protection to people and equipment.

12.2 Commercial Motor Vehicles

Vehicles with a gross vehicle weight rating ≥10,001 pounds (alone or when attached to a trailer) are commercial motor vehicles (CMVs) and will be registered with the Federal Motor Carrier Safety Administration. CMVs will have a DOT Number and use will follow all applicable DOT regulations.

12.3 Tick Hazard Control

Tick exposure is a potential hazard associated with tasks completed on this project. Use of insect repellent (permethrin on clothing in combination with 20%-40% DEET on skin) is recommended. Pretreat clothing with permethrin, as directed. Wear light-colored clothing to help identify presence of ticks on staff. Complete “clothing and exposed skin “buddy checks” periodically throughout day. Perform personal self-tick check each day after work is completed.

12.4 Poisonous Plant Hazard Control

Poisonous plant exposure is a potential hazard associated with tasks completed on this project. Plan work to avoid areas of identified poisonous plants. Evaluate and implement poisonous plant elimination (mowing, clear cutting) and control, as practicable. Workers known to have a sensitivity to poisonous plants should be assigned tasks that will not have poisonous plant exposure. If unavoidable, workers known to have a sensitivity should use a pre-exposure lotion on exposed skin. First aid kits must be equipped with post-exposure soap. Inspect work area for presence of hazard prior to initiating work at the location. Wear disposable gloves during work and while removing outer footwear. Use of clothing with long sleeves to protect forearms is expected.

12.5 Noise

Exposure to noise louder than the appropriate action level can cause temporary impairment of hearing; prolonged and repeated exposure can cause permanent damage to hearing. The risk and severity of hearing loss increase with the intensity and duration of exposure to noise. In addition to damaging hearing, noise can impair voice communication, thereby increasing the risk of accidents on site.

All personnel must wear hearing protection, with a noise reduction rating of at least 20, when noise levels exceed 85 decibels (dBA). When it is difficult to hear a co-worker at normal conversation distance, the noise level is approaching or exceeding 85 dBA and hearing protection is necessary. Whenever possible, equipment that does not generate excessive noise levels will be selected. If using noisy equipment is unavoidable, barriers or increased distance will be used to minimize worker exposure to noise, if feasible.

12.6 Heat Stress

Heat stress is caused by several interacting factors, including environmental conditions, clothing, and workload, as well as the physical and conditioning characteristic of the individual. Since heat stress is one of the most common illnesses associated with heavy outdoor work conducted with direct solar load and because wearing PPE can increase the risk of developing heat stress, workers must be able to recognize the signs and symptoms of heat-related illnesses. Personnel must be aware of the types and causes of heat-related illnesses and be able to recognize the signs and symptoms of these illnesses in themselves and their co-workers.

12.6.1 Heat Rashes

Heat rashes are one of the most common problems in hot work environments. Commonly known as prickly heat, a heat rash is manifested as red papules and usually appears in areas where the clothing is restrictive. As sweating increases, these papules give rise to a prickling sensation. Prickly heat occurs in skin that is persistently wetted by sweat, and heat rash papules may become infected if they are not treated. In most cases, heat rashes will disappear when the affected individual returns to a cool environment.

12.6.2 Heat Cramps

Heat cramps are usually caused by performing hard physical labor in a hot environment. These cramps have been attributed to an electrolyte imbalance caused by sweating. It is important to understand that cramps can be caused both by too much and too little salt.

Cramps appear to be related to a lack of water replenishment. Because sweat is a hypotonic solution (plus or minus 0.3% NaCl), excess salt could build up in the body if the water lost through sweating is not replaced. Thirst cannot be relied on as a guide to the need for water; instead, water must be taken every 15 to 20 minutes in hot environments.

12.6.3 Heat Exhaustion

Heat exhaustion occurs from increased stress on various body organs due to inadequate blood circulation, cardiovascular insufficiency, or dehydration. Signs and symptoms include:

- Pale, cool, moist skin
- Heavy sweating
- Dizziness
- Nausea
- Headache
- Vertigo
- Weakness
- Thirst
- Giddiness

This condition responds readily to prompt treatment.

Heat exhaustion should not be dismissed lightly, however, for several reasons. One is that the fainting associated with heat exhaustion can be dangerous because the victim may be operating machinery or controlling an

operation that should not be left unattended; moreover, the victim may be injured when he or she faints. Also, the signs and symptoms seen in heat exhaustion are similar to those of heat stroke, which is a medical emergency.

Workers suffering from heat exhaustion should be removed from the hot environment, given fluid replacement, and be encouraged to get adequate rest.

12.6.4 Heat Stroke

Heat stroke is the most serious form of heat stress. Heat stroke occurs when the body's system of temperature regulation fails, and the body's temperature rises to critical levels. This condition is caused by a combination of highly variable factors and its occurrence is difficult to predict.

Heat stroke is a medical emergency. The primary signs and symptoms of heat stroke are:

- Confusion
- Irrational behavior
- Loss of consciousness
- Convulsions
- A lack of sweating (usually)
- Hot, dry skin
- An abnormally high body temperature (e.g., a rectal temperature of 41°C [105.8°F])

If body temperature is too high, it causes death. The elevated metabolic temperatures caused by a combination of workload and environmental heat load, both of which contribute to heat stroke, are also highly variable and difficult to predict.

If a worker shows signs of possible heat stroke, professional medical treatment should be obtained immediately. The worker should be placed in a shady area and the outer clothing should be removed. The worker's skin should be wetted and air movement around the worker should be increased to improve evaporative cooling until professional methods of cooling are initiated and the seriousness of the condition can be assessed. Fluids should be replaced as soon as possible. The medical outcome of an episode of heat stroke depends on the victim's physical fitness and the timing and effectiveness of first-aid treatment.

Regardless of the worker's protestations, no employee suspected of being ill from heat stroke should be sent home or left unattended unless a physician has specifically approved such an order.

Proper training and preventive measures will help avert serious illness and loss of work productivity. Preventing heat stress is particularly important because once someone suffers from heat stroke or exhaustion, that person may be predisposed to additional heat injuries.

12.6.5 Heat Stress Safety Precautions

Heat stress monitoring and work rest cycle implementation should commence when the ambient adjusted temperature exceeds 72°F. Screening criteria for heat stress exposure are described in Table 4-2 and examples of activities within metabolic rate categories are provided in Table 9.

Table 8 – Screening Criteria for Heat Stress Exposure for 8-Hour Work Day 5 Days per Week

	Acclimatized	Unacclimatized

Work Demands	Light	Moderate	Heavy	Very Heavy	Light	Moderate	Heavy	Very Heavy
100% Work	85.1ºF (29.5ºC)	81.5ºF (27.5ºC)	78.8ºF (26ºC)		81.5ºF (27.5ºC)	77ºF (25ºC)	72.5F (22.5ºC)	
75% Work; 25% Rest	86.9ºF (30.5ºC)	83.3ºF (28.5ºC)	81.5ºF (27.5ºC)		84.2ºF (29ºC)	79.7ºF (26.5ºC)	76.1ºF (24.5ºC)	
50% Work; 50% Rest	88.7ºF (31.5ºC)	85.1ºF (29.5ºC)	83.3ºF (28.5ºC)	81.5ºF (27.5ºC)	86ºF (30ºC)	82.4ºF (28ºC)	79.7ºF (26.5ºC)	77ºF (25ºC)
25% Work, 75% Rest	90.5ºF (32.5ºC)	87.8ºF (31ºC)	86ºF (30ºC)	85.1ºF (29.5ºC)	87.8ºF (31ºC)	84.2ºF (29ºC)	82.4ºF (28ºC)	79.7ºF (26.5ºC)

Source: 2004 TLVs and BEIs - Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices. Cincinnati: American Conference of Governmental Industrial Hygienists (ACGIH), 2004 - page 171.

Table 9 – Examples of Activities within Metabolic Rate Categories

Categories	Example Activities
Resting	Sitting quietly
	Sitting with moderate arm movements
Light	Sitting with moderate arm and leg movements
	Standing with light work at machine or bench while using mostly arms
	Using a table saw
	Standing with light or moderate work at machine or bench and some walking about
Moderate	Scrubbing in a standing position
	Walking about with moderate lifting or pushing
	Walking on a level at 6 Km/hr while carrying 3 Kg weight load
Heavy	Carpenter sawing by hand
	Shoveling dry sand
	Heavy assembly work on a non-continuous basis
	Intermittent heavy lifting with pushing or pulling (e.g., pick-and-shovel work)
Very Heavy	Shoveling wet sand

Source: 2004 TLVs and BEIs - Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices. Cincinnati: American Conference of Governmental Industrial Hygienists (ACGIH), 2004 - page 172.

Acclimatization is a set of physiological adaptations, which allows the body to react to heat stress conditions. Full-heat acclimatization requires up to 3 weeks of continued physical activity under heat-stress conditions similar to those anticipated for the work. Its loss begins when the activity under those heat-stress conditions is discontinued, and a noticeable loss occurs after 4 days. With a recent history of heat stress exposures (e.g., 5 of the last 7 days), a worker can be considered acclimatized for the purpose of using the table Screening Criteria for Heat Stress Exposure.

Additionally, one or more of the following control measures can be used to help control heat stress and are mandatory if any site worker has a heart rate (measure immediately prior to rest period) exceeding 115 beats per minute:

- Site workers will be encouraged to drink plenty of water and electrolyte replacement fluids throughout the day.
- Onsite drinking water will be kept cool (50 to 60°F).

- A work regimen that will provide adequate rest periods for cooling down will be established, as required.
- All personnel will be advised of the dangers and symptoms of heat stroke, heat exhaustion, and heat cramps.
- Cooling devices, such as vortex tubes or cooling vests, should be used when personnel must wear impermeable clothing in conditions of extreme heat.
- Employees should be instructed to monitor themselves and co-workers for signs of heat stress and to take additional breaks as necessary.
- A shaded rest area or air-conditioned car must be provided. All breaks should take place in the shaded rest area.
- Employees must not be assigned to other tasks during breaks.
- Employees must remove impermeable garments during rest periods including white Tyvek-type garments.

All employees must be informed of the importance of adequate rest, acclimation, and proper diet in the prevention of heat stress disorders.

12.7 Lifting Safety

Using proper lifting techniques may prevent back strain or injury. The fundamentals of proper lifting include:

- Consider the size, shape, and weight of the object to be lifted. A mechanical lifting device or additional persons must be used to lift an object if it cannot be lifted safely alone.
- The hands and the object should be free of dirt or grease that could prevent a firm grip.
- Gloves must be used and the object inspected for metal slivers, jagged edges, burrs, or rough or slippery surfaces.
- Fingers must be kept away from points that could crush or pinch them, especially when putting an object down.
- Feet must be placed far enough apart for balance. The footing should be solid and the intended pathway should be clear.
- The load should be kept as low as possible, close to the body, with the knees bent.
- To lift the load, grip firmly and lift with the legs, keeping the back as straight as possible.
- A worker should not carry a load that he or she cannot see around or over.

When putting an object down, the stance and position are identical to that for lifting; the legs are bent at the knees and the back is straight as the object is lowered.

12.8 Material Handling

In general, the following guidelines will be used for material handling activities. This may include the movement of drums, equipment, or debris.

- Whenever possible heavy objects will be lifted and moved by mechanical devices rather than by manual effort.

- The mechanical devices will be appropriate for the lifting or moving task and will be operated only by trained and authorized personnel.
- Objects that require special handling or rigging will only be moved under the guidance of a person who has been specifically trained to move such objects.
- Lifting devices (including equipment, slings, ropes, chains and straps) will be inspected, certified, and labeled to confirm their weight capacities. Defective equipment will be taken out of service immediately and repaired or destroyed.
- The wheels of any trucks being loaded or unloaded will be chocked to prevent movement.
- Outriggers will be extended on a flat, firm surface during operation.
- The lift and swing path of equipment will be watched and maintained clear of obstructions.
- Personnel will not pass under a raised load, nor will a suspended load be left unattended.
- Personnel will not be carried on lifting equipment, unless it is specifically designed to carry passengers.
- All reciprocating, rotating, or other moving parts will be guarded at all times.
- Accessible fire extinguishers will be available in all mechanical lifting devices.
- Verify all loads/material are secure before transportation.

Materials handling tasks that are unusual or require specific guidance will need a written addendum to this HASP. The addendum must identify the lifting protocols and must be submitted to NYSEG for acceptance before the tasks are performed. Upon acceptance, the plan must be reviewed with all affected employees and documented.

13 Supplemental Plans and Requirements

13.1 Supplemental Plan

A ROW TSP will be provided by NYSEG and will conform to a roadway permit issued by the Putnam Department of Transportation. Signage and other control measures stipulated by the permitting authority or authorities will be applied during field activities. This may include the closure of a travel lane or lanes or sidewalks, and erection of signs, cones, barricades, or flashing lights, as applicable.

During activities along or within a roadway, equipment will be aligned parallel to the roadway to the extent feasible, facing into the oncoming traffic so as to place a barrier between the work crew and the oncoming traffic. All crewmembers must remain behind the equipment and the traffic barrier.

The flow of traffic must be assessed, and precautions taken to warn motorists of the presence of workers and equipment. Where possible, vehicles should be aligned to provide physical protection to people and equipment.

13.2 Hazardous Materials Shipping Determinations

A shipping determination is required for all equipment, chemical, battery, and sample shipments. A shipping determination for soil samples is provided in Appendix D.

14 Subcontractors

Subcontractors are responsible for the H&S of their employees at all times and have the authority to halt work if unsafe conditions arise.

A copy of this HASP is to be provided to all subcontractors prior to the start of work so that the subcontractor is informed of the hazards at the site. This HASP is the minimum H&S requirements for the work completed and, each subcontractor, is expected to perform its operations in accordance with its own HASP, policies, and procedures unique to the subcontractor's work to ensure that hazards associated with the performance of the work activities are properly controlled. Copies of any required safety documentation for a subcontractor's work activities will be provided to Project Manager for review prior to the start of on-site activities.

In the event that the subcontractor's procedures/requirements conflict with requirements specified in this HASP, the more stringent guidance will be adopted after discussion and agreement between the subcontractor and the Project Manager. Hazards not listed in this HASP but known to the subcontractor or known to be associated with the subcontractor's services, must be identified and addressed to the Project Manager, Associate Project Manager and/or Task Manager, and SSO prior to beginning work operations.

The Project Manager, Associate Project Manager, and/or Task Manager, along with the SSO (or authorized representative) has the authority to halt the subcontractor's operations and to remove the subcontractor or subcontractor's employee(s) from the site for failure to comply with established H&S procedures or for operating in an unsafe manner.

15 Project Personnel HASP Certification

All site project personnel will sign the HASP Acknowledgement Form after reviewing this HASP.

Signatures

I have read, understand and agree to abide by the requirements presented in this health and safety plan. I understand that I have the absolute right to stop work if I recognize an unsafe condition affecting my work until corrected.

Printed Name	Signature	Date

Add additional sheets if necessary

You have an absolute right to STOP WORK if unsafe conditions exist!

Appendix A

Job Safety Analyses

Job Safety Analysis

General

JSA ID	HASP 1	**Status**	Complete
Job Name	General Industry-Driving - passenger vehicles	**Created Date**	6/3/2021
Task Description	Driving a car, van, or truck on public roadways.	**Completed Date**	06/03/2021

Client / Project

Client	NYSEG
Project Number	30091602
Project Name	Kent Superfund Site
Project Manager	#REF!

User Roles

Role	Employee	Due Date	Completed Date
Developer	L. Carey Healy	6/3/2021	6/3/2021
HASP Reviewer	Zuck, Daniel	6/3/2021	6/3/2021
Quality Reviewer			

Job Steps

Job Step No.	Job Step Description		Potential Hazard	Critical Action	H&S Reference
1	Pre-Trip Inspection	1	Failing to perform pre-trip inspections may cause mechanical failure, accident or injury.	Perform walk around of vehicle with particular attention to tire inflation and condition. Check lights, wipers, seatbelts for proper operating condition. Properly adjust seat and mirrors prior to vehicle operation. Use or review vehicle inspection checklist as required under the MVSP.	ARC HSGE024 Motor Vehicle Safety Standard (MVSP)
		2	Scrapes, cuts, burns to hand if inspecting engine fluids and/or tires. Eye splash hazard if inspecting engine fluids. Pinch or crush hazards when opening or closing hood, trunk, or tailgate.	Wear protective gloves and safety glasses as described below when checking under hood or tires. Use TRACK and keep hands clear when opening/closing hood, trunk, or tailgate to avoid crush or pinch hazard.	
		3	Struck by other vehicles while walking around vehicle performing inspections.	Wear high visibility vest, shirt, or coat while performing inspections in parking lots or other areas with a traffic hazard. Remain vigilant of moving vehicles or equipment in area, face oncoming vehicles to extent practical.	
		4	Improperly secured cargo may dislodge creating injury, property damage, or road hazard.	Ensure all cargo is properly secured to prevent movement while the vehicle is in operation. This includes cargo in the cab of the vehicle.	
2	Driving a motor vehicle on public streets	1	Failing to observe traffic flow ahead increases risk of hard braking resulting in potential impact of vehicle ahead, being struck by another vehicle from behind, and decreases decision making time.	Use Smith System Key #1, "Aim High in Steering". **Look ahead (15 seconds if possible) to observe traffic flow and traffic signals.** Adjust speed accordingly to keep vehicle moving and avoid frequent braking. Select lane of least traffic and adjust speed based on observed signal timing when possible. Avoid following directly behind large vehicles that obscure view ahead.	Smith System "5-Keys" is a registered trademark of Smith System Driver Improvement Institute, Inc.

		2	Failing to observe vehicles, pedestrians, bicyclists, and other relevant objects in vicinity of your vehicle increases risk of side swipes, rear ending, and third party injury.	Use Smith System Key #2, "Get the Big Picture". **Maintain 360 degrees of awareness around vehicle.** Check a mirror every 6-8 seconds, maintain space around the vehicle, choose a lane that avoids being boxed in. Look for pedestrian activity ahead in crosswalks or sidewalks. Watch for construction zone approach signs and act early by executing lane changes and reducing speed.	
		3	Failing to keep your eyes moving increases risk of not seeing relevant vehicles, pedestrians, and objects in your vicinity that may impair your ability to make timely and appropriate driving decisions and also increases risk of accident.	Use Smith System Key #3, "Keep Your Eyes Moving". **Move your eyes every 2 seconds and avoid staring while evaluating relevant objects.** Scan major and minor intersections prior to entering them. Check mirrors.	
		4	Failing to maintain space around and in front of your vehicle increases risk of striking another vehicle or being struck by another vehicle. Insufficient space shortens time for effective driving decision making resulting in increased accident risk.	Use Smith System #4, "Leave Yourself an Out". **Use 4 second rule when following a vehicle.** Avoid driving in vehicle clusters by adjusting speed and using lanes that permit maximum space and visibility. When stopped, keep one car length space in front of vehicle ahead or white line.	
		5	Failing to communicate with other drivers and pedestrians increases risk of striking vehicles, pedestrians, or being struck by other vehicles, especially from the rear.	Use Smith System Key #5, "Make Sure They See You". **Brake early and gradually when stopping to reduce potential of being rear ended.** Keep foot on brake while stopped. Use turn signals and horn effectively. Establish eye contact with other drivers and pedestrians to extent practical. Use vehicle positioning that promotes being seen.	
		6	Distractions within the vehicle takes focus off driving, increases risk of accident decreases time for making effective driving decisions.	**Cell phone use (any type or configuration) is prohibited while the vehicle is in motion.** Familiarize yourself with vehicle layout and controls (radio, temperature controls, etc.) prior to operating unfamiliar vehicles. Set controls prior to operating vehicle. Use GPS in unfamiliar areas to avoid use of paper maps/directions while driving. Set GPS prior to vehicle operation. Pull over and stop to modify GPS functions. Avoid consuming food or drink while driving.	
3	Parking	1	Parking vehicle in areas of clustered parked vehicles or near facility entrance may impair visibility to oncoming traffic in lot and increase exposure to pedestrian traffic.	**Use pull through parking or back into parking space when permitted or practical.** When practical and safe to do so, park away from other vehicles and avoid parking near the facility entrance or loading docks. If available, use a spotter to aid in backing activity. Back no further than necessary and back slowly. Get out and look (GOAL) if uncertain of immediate surroundings. Tap horn prior to backing.	

PPE Personal Protective Equipment

Type	Personal Protective Equipment	Description	Required
Eye Protection	safety glasses	While checking engine or tires	Required
Hand Protection	work gloves (specify type)	Leather or equivalent checking engine or	Required

Supplies

Type	Supply	Description	Required
Communication Devices	mobile phone		Required
	other	Vehicle kit (applies to company trucks)	Required
Miscellaneous	fire extinguisher	Applies to company trucks	Required
	first aid kit	Applies to company trucks	Required

Job Safety Analysis

General

JSA ID	18252	**Status**	(2) Review
Job Name	General Industry-Roadway work	**Created Date**	6/3/2021
Task Description	sampling soil and installing utility poles along the Gipsy Trail Road in Carmel Hamlet, NY	**Completed Date**	
Template	False	**Auto Closed**	False

Client / Project

Client	New York State Electric & Gas
Project Number	30091602
Project Name	NYSEG - Kent Arsenic Superfund
PIC	White, Keith
Project Manager	Brien, Jason

User Roles

Role	Employee	Due Date	Completed Date	Supervisor	Active
Developer	Healy, Lawrence	6/24/2021	6/3/2021	Brien, Jason	☑
HASP Reviewer	Zuck, Daniel	6/17/2021		Johnston, Sandra	☑

Job Steps

Job Step No.	Job Step Description		Potential Hazard	Critical Action	H&S Reference
1	Deployment and removal of traffic control devices	1	Lifting hazards and awkward body positions from moving warning signs and control devices	Avoid excessive force pushing or pulling devices from vehicle; use the buddy system for heavier items; lift with legs and not back; avoid lifting and twisting motions.	ARCADIS H&S Handbook Section 3.3.4
		2	Struck by vehicle during placement	Wear high visibility clothing and Class II (minimum) traffic vest. Choose lime green color to avoid motorist confusion with traffic barrels. Always face oncoming traffic, use spotter if performing work that keeps focus off traffic. Ensure vehicle equipped with light bars and/or other warning devices and ensure they are activated, including vehicle flashers.	
		3	Increased risk of injury (ergonomic from reacted moving or impact from increased vehicle exposure) from poor traffic control planning and implementation	Develop traffic control plan consistent with Manual of Uniform Traffic Control Devices, ensure lane closure tapers are computed properly, place devices in a manner that offers protection as other devices are deployed, place early warning devices first to warn drivers of pending work zone.	
2	Working in work zone	1	Struck by vehicle while performing work	Always stay behind protective barriers or channeling devices, never park vehicle that exposes workers to on coming traffic outside of barriers and channeling devices. Wear clothing and PPE described in step one above. Park vehicles within work zone to act as barriers to oncoming traffic when possible.	ARCADIS H&S Handbook Section 3.3.4
		2	Slips, trips and falls on wet or uneven surfaces in road right of way.	Wear proper footwear with good tread and ankle support. Plan route when walking on sloped surfaces. When walking along roadway stay as far off roadway as possible to avoid falling into traffic if tripped.	

PPE — Personal Protective Equipment

Type	Personal Protective Equipment	Description	Required
Dermal Protection	long sleeve shirt/pants		Required
	On road - HASP prescribed PPE		Required
Foot Protection	steel-toe boots		Required
Hand Protection	chemical resistant gloves (specify type)	Nitrile	Required
	work gloves (specify type)	Leather	Recommended
Head Protection	hard hat		Recommended
Miscellaneous PPE	traffic vest--Class II or III	Class II	Required

Supplies

Type	Supply	Description	Required
Communication Devices	mobile phone		Recommended
Miscellaneous	fire extinguisher		Required
	first aid kit		Required
Traffic Control	Other	Orange strobe light for vehicle	Required
	traffic cones	Channelizing Cones with red flags	Required

Job Safety Analysis

General

JSA ID	18255	**Status**	(2) Review
Job Name	Environment-Drilling, soil sampling, well installation	**Created Date**	6/3/2021
Task Description	Oversight of Utility Pole Drilling	**Completed Date**	
Template	False	**Auto Closed**	False

Client / Project

Client	New York State Electric & Gas
Project Number	30091602
Project Name	NYSEG - Kent Arsenic Superfund
PIC	White, Keith
Project Manager	Brien, Jason

User Roles

Role	Employee	Due Date	Completed Date	Supervisor	Active
Developer	Healy, Lawrence	6/24/2021	6/3/2021	Brien, Jason	☑
HASP Reviewer	Zuck, Daniel	6/17/2021		Johnston, Sandra	☑

Job Steps

Job Step No.	Job Step Description		Potential Hazard	Critical Action	H&S Reference
1	Set up necessary traffic and public access controls	1	Struck by vehicle due to improper traffic controls	Use a buddy system, if available, for placing site control cones and/or signage. Position vehicle so that you are protected from moving traffic. Wear Class II traffic vest	US Employee Field Health and Safety handbook Sections 3.3.4
2	Utility Clearance	1	Potential to encounter underground or above ground utilities while drilling.	Complete utility clearance in accordance with the ARCADIS Utility Clearance H&S Standard.	ARCADIS H&S Standard ARCHSFS019
3	General drill rig operation	1	Excessive noise is generated by rig operation.	When the engine is used at high RPMs or soil samples are being collected, use hearing protection.	US Employee Field Health and Safety handbook Sections 3.9, 3.15, 3.22, 3.36, & 4.5
		2	During drill rig operation, surfaces will become hot and cause burns if touched, and COCs in the soils more readily vaporize generating airborne contaminates.	Due to friction and lack of a drilling fluid, heat will be produced during this method. Mainly drill augers. Be careful handling split spoons. Wear proper work gloves. When soils and parts become heated, the COC could volatilize. Air monitoring should always be performed in accordance with the HASP.	
		3	Moving parts of the drilling rig can pull you in causing injury. Pinch points on the rig and auger connections can cause pinching or crushing of body parts.	Stay at least 5 feet away from moving parts of the drill rig. Know where the kill switch is, and have the drillers test it to verify that it is working. Do not wear loose clothing, and tie long hair back. Avoid wearing jewelry while drilling. Cone off the work area to keep general public away from the drilling rig.	
		4	Dust and debris can cause eye injury and soil cuttings and/or water could contain COCs.	Wear safety glasses and stay as far away from actual drilling operation as practicable. Wear appropriate gloves to protect from COCs.	
		5	Drilling equipment laying on the ground (i.e. augers, split spoons, decon equipment, coolers, etc), create a tripping hazard. Water from decon buckets generate mud and cause a slipping hazard.	Keep equipment and trash picked up, and store away from the primary work area.	
		6	The raised derrick can strike overhead utilities, tree limbs or other elevated items	Never move the rig with the derrick up. Ensure there is proper clearance to raise the derrick, and that you are far enough away from overhead power lines. See the Utility Clearance H&S Standard for guidance.	

4	Hollow stem auger drilling	1	All hazards in step 3 apply. Additionally,The raised derrick can strike overhead utilities, tree limbs or other elevated items	Never move the rig with the derrick up. Ensure there is proper clearance to raise the derrick, and that you are far enough away from overhead power lines. See the Utility Location H&S policy and procedure for guidance.	S Employee Field Health and Safety handbook Sections 3.36 & 4.5
		2	Hands or fingers can get caught and crushed if trying to clean by hand or with tools while the auger is still turning.	Auger should always be stopped and clutch disengaged prior to cleaning.	

PPE — Personal Protective Equipment

Type	Personal Protective Equipment	Description	Required
Eye Protection	safety glasses		Required
	safety goggles		Recommended
Foot Protection	steel-toe boots		Required
Hand Protection	chemical resistant gloves (specify type)	Nitrile	Required
	work gloves (specify type)	leather	Required
Head Protection	hard hat		Required
Hearing Protection	ear plugs		Required
Miscellaneous PPE	traffic vest--Class II or III	Class II	Required
Respiratory Protection	dust mask		Recommended

Supplies

Type	Supply	Description	Required
Communication Devices	mobile phone		Required
Decontamination	Decon supplies (specify type)	Driller to provide and manage	Recommended
Miscellaneous	fire extinguisher		Required
	first aid kit		Required
Personal	eye wash (specify type)	bottle	Required
	water/fluid replacement		Recommended
Traffic Control	traffic cones		Required

Job Safety Analysis

General

JSA ID	18253	**Status**	(2) Review
Job Name	Environment-Sample cooler handling	**Created Date**	6/3/2021
Task Description	Sample cooler handling for 8-ounce soil sample bottles	**Completed Date**	
Template	False	**Auto Closed**	False

Client / Project

Client	New York State Electric & Gas
Project Number	30091602
Project Name	NYSEG - Kent Arsenic Superfund
PIC	White, Keith
Project Manager	Brien, Jason

User Roles

Role	Employee	Due Date	Completed Date	Supervisor	Active
Developer	Healy, Lawrence	6/24/2021	6/3/2021	Brien, Jason	☑
HASP Reviewer	Zuck, Daniel	6/17/2021		Johnston, Sandra	☑

Job Steps

Job Step No.	Job Step Description		Potential Hazard	Critical Action	H&S Reference
1	Transfer field samples to sample packing area	1	Lifting heavy coolers may result in muscle strain especially to lower back.	Use proper lifting techniques and keep back straight. Use buddy system for large coolers, Use mechanical aids like hand trucks if readily available to move coolers. Do not over fill coolers with full sample containers for temporary movement to the sample prep area. Ensure an adequate supply of sample coolers are in field.	US Employee Field Health and Safety handbook Sections 3.3.1, 3.22, & 3.29
		2	Hazards to hands from broken glass caused by over tightening lids or improper placement in cooler	Inspect all bottles and bottle caps for cracks/leaks before and after filling container. Do not over tighten sample lids. Clean up any broken bottles immediately, avoid contact with sample preservatives. Wear ANSI Level 2 Cut Resistant gloves when handling broken glass.	
		3	Exposure to chemicals (acid preservatives or site contaminants) on the exterior of sample bottles after filling.	Wear protective gloves for acid preservatives and safety glasses with side shields during all sample container handling activities (before and after filling), Once filled follow project specific HASP PPE requirements for skin and eye protection.	
		4	Samples containing hazardous materials may violate DOT/IATA HazMat shipping regulations	All persons filling a sample bottle or preparing a cooler for shipment must have complete ARCADIS DOT HazMat shipping training. Compare the samples collected to the materials described in the Shipping Determination for the Project and ensure consistent. Re-perform all Shipping determinations if free product is collected and not anticipated during planning.	
2	Sample cooler selection	1	Sample coolers with defective handles, lid hinges, lid hasps cracked or otherwise damaged may result in injury (cuts to hands, crushing of feet if handle breaks etc)	Only use coolers that are new or in like new condition, No rope handled coolers unless part of the manufacturer's handle design.	ARCADIS Shipping Guide US-001. US Employee Field Health and Safety handbook Sections 3.3.1 & 3.29
		2	Selection of excessively large coolers introduces lifting hazards once the cooler is filled.	Select coolers and instruct lab to only provide coolers of a size appropriate for the material being shipped. For ordinary sample shipping sample coolers should be 48 quart capacity or smaller to reduce lifting hazards.	

3	Pack Samples	1	Pinch points and abrasions to hands from cooler lid closing unexpectedly	Beware that lid could slam shut; block/brace if needed; be wary of packing in strong winds. New coolers may be more prone to self closing, tilt cooler back slightly to facilitate keeping lid open.	US Employee Field Health and Safety handbook Sections 3.22 & 3.29
		2	Awkward body positions and contact stress to legs and knees when preparing coolers on irregular or hard ground surfaces.	Plan cooler prep activities. Situate cooler where neutral body positions can be maintained if practical, like truck tailgate. Avoid cooler prep on rough gravel surfaces unless knees and legs protected during kneeling.	
4	Sealing, labeling and Marking Cooler	1	Cuts to hands and forearms from strapping tape placement or removing old tape and labels	Do not use a fixed, open-blade knife to remove old tags/labels, USE SCISSORS or other safety style cutting device. Only use devices designed for cutting. Do not hurry through task.	US Employee Field Health and Safety handbook Sections 3.3.1, 3.22, & 3.29
		2	Lifting and awkward body position hazards from taping heavy coolers, dropping coolers on feet during taping.	Do not hurry through the taping tasks, ensure samples in cooler are evenly distributed in cooler to reduce potential for overhanging cooler falling off edge of tailgate/table when taping.	
		3	Improper labeling and marking may result in violation of DOT/IATA HazMat shipping regulations delaying shipment or resulting in regulatory penalty	Do not deviate from ARCADIS Shipping Guide or Shipping Determination marking or labeling requirements.	
5	Offering sample cooler to a carrier or lab courier for shipment.	1	Lifting heavy coolers may result in muscle strain especially to lower back.	See lifting hazard controls above.	US Employee Field Health and Safety handbook Sections 3.3.1 & 3.29
		2	Carrier refusal to accept cooler may cause shipping delay and/or result in violation of DOT HazMat shipping regulations.	Promptly report all rejected and refused shipments to the ARCADIS DOT Program Manager. Do Not re-offer shipment if carrier requires additional labels markings or paperwork inconsistent with your training or Shipping Determination without contacting the ARCADIS DOT Compliance Manager.	

PPE **Personal Protective Equipment**

Type	Personal Protective Equipment	Description	Required
Eye Protection	safety glasses		Required
	safety goggles		Required
Foot Protection	steel-toe boots		Required
Hand Protection	chemical resistant gloves (specify type)	nitrile	Required
	work gloves (specify type)	ANSI Level 2 Cut Resistant	Required
Miscellaneous PPE	traffic vest--Class II or III	Class II	Required

Supplies

Type	Supply	Description	Required
Miscellaneous	first aid kit		Required
	Other	Scissors	Required
Personal	eye wash (specify type)	bottle	Required

Job Safety Analysis

General

JSA ID	18288	**Status**	(2) Review
Job Name	Environment-Drum sampling/handling	**Created Date**	6/23/2021
Task Description	Drum Handling	**Completed Date**	
Template	False	**Auto Closed**	False

Client / Project

Client	New York State Electric & Gas
Project Number	30091602
Project Name	NYSEG - Kent Arsenic Superfund
PIC	White, Keith
Project Manager	Brien, Jason

User Roles

Role	Employee	Due Date	Completed Date	Supervisor	Active
Developer	Healy, Lawrence	7/14/2021	6/23/2021	Brien, Jason	☑
HASP Reviewer	Zuck, Daniel	7/7/2021		Johnston, Sandra	☑

Job Steps

Job Step No.	Job Step Description		Potential Hazard	Critical Action	H&S Reference
1	Inspect Drums for signs of Bulging and Leaking	1	Exposure to chemicals stored in drum or container.	Read drum labels for information about contents. Review all relevant MSDSs about chemical contents. If labels are not attached, call PM or Local H&S Representative.	ARCADIS H&S Handbook Section 3.33
2	Remove lids from Drums	1	Hand Injuries can occur from sharp edges, pinch points, and from use of hand tools.	Wear appropriate work gloves. When removing ring from drum, fingers can get pinched between ring and drum. Keep fingers clear of this space. Select proper tool for task. If large amount of drums will be encountered, use a speed or drum wrench.	ARCADIS H&S Handbook Sections 3.22, 3.33
		2	Rapid depressurization from empty or partially full drums can cause flying parts or volatile COCs releasing on staff.	Do not handle or open bulging drums (contact Corp H&S for assistance). Bleed any built up pressure by carefully loosening bung prior to removing ring. Keep face and arms away from bung opening when loosening. Slightly lift lid, insert end of air monitoring device to monitor air inside drum.	
		3	Use of mechanical tools to remove bolts from drum lids causes excessive noise.	Wear hearing protection.	
3	Sample Contents from Drums	1	Exposure to COCs can occur by contacting impacted contents.	Select proper dermal protection for task, at a minimum nitrile gloves should be worn. Wear appropriate eye face and body protection as outlined in the HASP.	ARCADIS H&S Handbook Sections 3.22, 3.33
		2	Sharp edges and broken sample containers can cause lacerations.	Discard any broken sample ware or glass properly. Do not over tighten sample containers.	
		3	Chemical burns or skin irritation can occur from contact with sample preservatives.	Wear chemical protective gloves when collecting samples, or when handling damaged sample containers.	
4	Replace drum lids	1	Hand Injuries can occur from sharp edges, pinch points, and from use of hand tools.	see step 2 above	ARCADIS H&S Handbook Sections 3.22, 3.33
5	Moving and Storing Drums	1	Drum storage areas can be accessed by the general public, or may not be secure.	Calculate how many drums will be stored in new location. Ensure that drums are not easily accessed by the general public. Do not store such that drums impede pedestrian or vehicular traffic.	ARCADIS H&S Handbook Sections 3.29, 3.33

5	Moving and Storing Drums	2	Muscle strain can occur when lifting/pulling/pushing drums.	Drums that are full can weigh as much as 800 lbs. Use a lift assist device whenever possible, and use a team lift approach. When moving soil drum generated by drilling, have drillers use their equipment to move the drums. Using dolly, slightly lift drum away from dolly to install forks under drum. Slowly let drum come back down and rest on dolly. Using hook on top of dolly, ensure it latches on top of drum bung.	
		3	Body parts can be pinched between lift device, or drum and the ground.	Be aware of hand and foot placement during drum staging. Do not hurry through task.	
		4	When moving, the drum can tip or the dolly could become unstable from uneven ground surface.	Plan travel route with drum prior to moving. With drum secure on dolly, have one employee pull back on dolly, and other employee slowly push back on drum toward dolly. Have second worker act as spotter for traffic, pedestrians, and any trip hazards along the way.	

PPE — Personal Protective Equipment

Type	Personal Protective Equipment	Description	Required
Dermal Protection	coveralls	Tyvex	Recommended
	long sleeve shirt/pants		Required
Eye Protection	faceshield		Required
	safety goggles		Required
Hand Protection	chemical resistant gloves (specify type)	Nitrile	Required
	work gloves (specify type)	ANSI Level 2 Cut Resistant	Required
Hearing Protection	ear plugs		Required

Supplies

Type	Supply	Description	Required
Miscellaneous	Other	dolly	Required
Traffic Control	traffic cones		Required

Job Safety Analysis

General

JSA ID	18254	**Status**	(2) Review
Job Name	Environment-Air Monitoring	**Created Date**	6/3/2021
Task Description	DustTrak Air Monitoring for CAMP	**Completed Date**	
Template	False	**Auto Closed**	False

Client / Project

Client	New York State Electric & Gas
Project Number	30091602
Project Name	NYSEG - Kent Arsenic Superfund
PIC	White, Keith
Project Manager	Brien, Jason

User Roles

Role	Employee	Due Date	Completed Date	Supervisor	Active
Developer	Healy, Lawrence	6/24/2021	6/3/2021	Brien, Jason	☑
HASP Reviewer	Zuck, Daniel	6/17/2021		Johnston, Sandra	☑

Job Steps

Job Step No.	Job Step Description		Potential Hazard	Critical Action	H&S Reference
1	Mobilization/Demobilization	1	Heavy lifting	Utilize appropriate lifting techniques. Team lift object heavier than 50 lbs. Utilize material handling equipment whenever possible.	US Employee Field Health and Safety handbook Sections 3.4 & 3.29
		2	Abrasions	Use work gloves when handling equipment and supplies.	
		3	Motor vehicle accident	Use Smith System defensive driving techniques.	
2	Tailgate Safety Meeting	1	Unaware of job site hazards, conditions and critical safety actions.	Conduct a tailgate safety briefing each day prior to the start of work and if job site and/or conditions change during the day. Review appropriate sections of the Field Safety & Health Handbook. Ensure that all employees are fully aware of all hazards and are wearing all necessary PPE. Ensure all employees are aware of the locations of emergency equipment and contacts.	ARCHSGE001
3	General Environmental Conditions	1	Heat Stress	a. Dress appropriately for the weather. b. Take frequent breaks as necessary to cool off. c. Stay hydrated by drinking plenty of water. d. Stay out of direct sunlight when possible.	US Employee Field Health and Safety handbook Sections 3.12, 3.16, 3.17.2, & 3.17.11
		2	Severe weather	a. Monitor the weather forecast for each day's activities. b. Take immediate shelter in a protected structure or field vehicle in the event of lightning, hail, high winds, or flooding.	
		3	Bites/Stings - Insects/Spiders/Snakes	a. Wear insect repellant during outdoor activities. b. Avoid disturbing area that may be a habitat for insects, spiders, or snakes. Use caution when moving rocks, equipment, or other items that may be providing shelter for these animals. c. Wear sturdy boots to protect from snake bites.	
		4	Heavy equipment operation in vicinity	a. Establish clearly marked work areas using barrier tape, cones, or other highly visible material. b. Wear safety vests when working in areas within 200 ft of heavy equipment operation. c. Notify the site contact of the work area.	
		5	Uneven terrain	a. Survey the working area prior to set up. Mark any holes, pits, or other hazardous terrain. b. Wear sturdy safety shoes.	

4	Equipment/Site Set Up	1	Materials handling/heavy lifting	Utilize appropriate lifting techniques. Team lift objects over 50 lbs. Utilize materials handling equipment whenever possible.	US Employee Field Health and Safety handbook Sections 3.29
		2	Electricity- shock or electrocution	a. Inspect all extension cords prior to use. Mark all damaged cords and take them out of service. b. Protect cords in use from traffic or other damage. c. Ensure cords are appropriate for the load.	

PPE — Personal Protective Equipment

Type	Personal Protective Equipment	Description	Required
Dermal Protection	long sleeve shirt/pants		Recommended
Eye Protection	safety glasses		Required
Foot Protection	steel-toe boots		Required
Hand Protection	work gloves (specify type)	leather or cotton	Required
Miscellaneous PPE	traffic vest--Class II or III	Class II	Required

Supplies

Type	Supply	Description	Required
Communication Devices	mobile phone		Required
Miscellaneous	first aid kit		Required
	Other	Cones/Traffic control	Required
Personal	insect repellent		Recommended
	sunscreen		Recommended

Appendix B

Safety Data Sheets

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006
Version 5.0 Revision Date 29.10.2012
Print Date 19.04.2017
GENERIC EU MSDS - NO COUNTRY SPECIFIC DATA - NO OEL DATA

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifiers

Product name : Arsenic

Product Number : 267961
Brand : Aldrich
Index-No. : 033-001-00-X
CAS-No. : 7440-38-2

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Israel Ltd.
3 PARK RABIN, PLAUT
7670603 REHOVOT
ISRAEL

Telephone : +972 8948-4222
Fax : +972 8948-4200

1.4 Emergency telephone number

Emergency Phone # : +972 (8) 948-4222

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]
Acute aquatic toxicity (Category 1)
Chronic aquatic toxicity (Category 1)
Acute toxicity, Inhalation (Category 3)
Acute toxicity, Oral (Category 3)

Classification according to EU Directives 67/548/EEC or 1999/45/EC
Toxic by inhalation and if swallowed. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

2.2 Label elements

Labelling according Regulation (EC) No 1272/2008 [CLP]
Pictogram

Signal word Danger

Hazard statement(s)
H301 Toxic if swallowed.
H331 Toxic if inhaled.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statement(s)
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P273 Avoid release to the environment.
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/

physician.

P311	Call a POISON CENTER or doctor/ physician.
P501	Dispose of contents/ container to an approved waste disposal plant.

Supplemental Hazard Statements none

According to European Directive 67/548/EEC as amended.

Hazard symbol(s)

R-phrase(s)

R23/25	Toxic by inhalation and if swallowed.
R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

S-phrase(s)

S20/21	When using do not eat, drink or smoke.
S28	After contact with skin, wash immediately with plenty of soap and water.
S45	In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S60	This material and its container must be disposed of as hazardous waste.
S61	Avoid release to the environment. Refer to special instructions/ Safety data sheets.

2.3 Other hazards - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Formula : As
Molecular Weight : 74,92 g/mol

Component		Concentration
Arsenic		
CAS-No.	7440-38-2	-
EC-No.	231-148-6	
Index-No.	033-001-00-X	

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact
Flush eyes with water as a precaution.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

Absorption into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours or longer.

4.3 Indication of any immediate medical attention and special treatment needed

no data available

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Arsenic oxides

5.3 Advice for firefighters
Wear self contained breathing apparatus for fire fighting if necessary.

5.4 Further information
no data available

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Wear respiratory protection. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections
For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid formation of dust and aerosols.
Provide appropriate exhaust ventilation at places where dust is formed.

7.2 Conditions for safe storage, including any incompatibilities
Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

7.3 Specific end uses
no data available

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters

8.2 Exposure controls

Appropriate engineering controls
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Personal protective equipment

Eye/face protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Immersion protection
Material: Nitrile rubber
Minimum layer thickness: 0,11 mm
Break through time: > 480 min
Material tested:Dermatril® (Aldrich Z677272, Size M)

Splash protection
Material: Nitrile rubber
Minimum layer thickness: 0,11 mm
Break through time: > 30 min
Material tested:Dermatril® (Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 873000, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an Industrial Hygienist familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection
Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N99 (US) or type P2 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: powder Colour: grey
b)	Odour	no data available
c)	Odour Threshold	no data available
d)	pH	no data available
e)	Melting point/freezing point	Melting point/range: 817 °C - lit.
f)	Initial boiling point and boiling range	613 °C - lit.
g)	Flash point	not applicable
h)	Evaporation rate	no data available
i)	Flammability (solid, gas)	no data available
j)	Upper/lower flammability or explosive limits	no data available
k)	Vapour pressure	no data available
l)	Vapour density	no data available
m)	Relative density	5,727 g/mL at 25 °C
n)	Water solubility	no data available
o)	Partition coefficient: n-octanol/water	no data available

p)	Autoignition temperature	no data available
q)	Decomposition temperature	no data available
r)	Viscosity	no data available
s)	Explosive properties	no data available
t)	Oxidizing properties	no data available

9.2 Other safety information
no data available

10. STABILITY AND REACTIVITY

10.1 Reactivity
no data available

10.2 Chemical stability
no data available

10.3 Possibility of hazardous reactions
no data available

10.4 Conditions to avoid
Heat. Exposure to air may affect product quality.

10.5 Incompatible materials
Oxidizing agents, Halogens, Palladium undergoes a violent reaction with arsenic, Zinc, Platinum oxide, Nitrogen trichloride, Bromine azide

10.6 Hazardous decomposition products
Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - rat - 763 mg/kg
Remarks: Behavioral:Ataxia. Diarrhoea

LD50 Oral - mouse - 145 mg/kg
Remarks: Behavioral:Ataxia. Diarrhoea

Inhalation: no data available

Skin corrosion/irritation
no data available

Serious eye damage/eye irritation
no data available

Respiratory or skin sensitization
no data available

Germ cell mutagenicity
no data available

Carcinogenicity

This is or contains a component that has been reported to be carcinogenic based on its IARC, OSHA, ACGIH, NTP, or EPA classification.

IARC: 1 - Group 1: Carcinogenic to humans (Arsenic)

Reproductive toxicity
no data available

Specific target organ toxicity - single exposure
no data available

Specific target organ toxicity - repeated exposure
no data available

Aspiration hazard
no data available

Potential health effects

Inhalation	Toxic if inhaled. May cause respiratory tract irritation.
Ingestion	Harmful if swallowed.
Skin	May be harmful if absorbed through skin. May cause skin irritation.
Eyes	May cause eye irritation.

Signs and Symptoms of Exposure
Absorption into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours or longer.

Additional Information
RTECS: CG0525000

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to fish	LC50 - Pimephales promelas (fathead minnow) - 9,9 mg/l - 96,0 h
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 3,8 mg/l - 48 h

12.2 Persistence and degradability
no data available

12.3 Bioaccumulative potential
no data available

12.4 Mobility in soil
no data available

12.5 Results of PBT and vPvB assessment
no data available

12.6 Other adverse effects
Very toxic to aquatic life with long lasting effects.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

14.1 UN number
ADR/RID: 1558 IMDG: 1558 IATA: 1558

14.2 UN proper shipping name
ADR/RID: ARSENIC
IMDG: ARSENIC
IATA: Arsenic

14.3 Transport hazard class(es)

ADR/RID: 6.1	IMDG: 6.1	IATA: 6.1

14.4 Packaging group

ADR/RID: II	IMDG: II	IATA: II

14.5 Environmental hazards

ADR/RID: yes	IMDG Marine pollutant: yes	IATA: no

14.6 Special precautions for user

no data available

15. REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

no data available

15.2 Chemical Safety Assessment

no data available

16. OTHER INFORMATION

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

Safety Data Sheet
according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and GHS

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ALCONOX

1 Identification of the Substance/mixture and of the Company/Undertaking

1.1 Product identifier
Trade name: ALCONOX
Application of the substance / the preparation: Cleaning material/ Detergent

1.2 Relevant identified uses of the substance or mixture and uses advised against:
No additional information available.

1.3 Details of the supplier of the Safety Data Sheet
Manufacturer/Supplier:
Alconox, Inc.
30 Glenn St., Suite 309
White Plains, NY 10603
Phone: 914-948-4040

Further information obtainable from: Product Safety Department

1.4 Emergencytelephone number:
ChemTel Inc.: (800)255-3924, +1 (813)248-0585

2 Hazards Identification

2.1 Classification of the substance or mixture Classification according to Regulation (EC) No 1272/2008:

Eye Irrit. 2B; H320: Causes eye irritation.

Information concerning particular hazards for human and environment:
The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.
Classificationsystem:
The classification is according to the latest editions of the EU-lists, and extended by company and literature data

2.2 Label elements
Labelling according to Regulation (EC) No 1272/2008:
The product is classified and labelled according to the CLP regulation.

Hazardpictograms:

Signal word: Warning

Hazard-determining components of labelling:
Sodium Alkylbenzene Sulfonate
Hazard statements:
H320: Causes eye irritation.

Precautionary statements:
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P264: Wash thoroughly after handling.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses,if present and easy to do. Continue rinsing.
P337+P313: If eye irritation persists: Get medical advice/attention.

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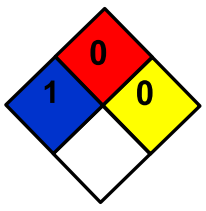
Other Hazard description:
WHMIS-classification and symbols:
D2B - Toxic material causing other toxic effects

NFPA ratings (scale 0 - 4)



Health = 1
Fire = 0
Reactivity = 0

HMIS-ratings (scale 0 - 4)

HEALTH	1	
FIRE	0	
REACTIVITY	0	

Health = 1
Fire = 0
Reactivity = 0

2.3 Other hazards
Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

3 Composition/Information on Ingredients

3.2 Chemical characterization: Mixture
Description: Hazardous ingredients of mixture listed below.

Identifying Nos.	Description	Wt. %
CAS: 68081-81-2	Sodium Alkylbenzene Sulfonate	10 - 25%
CAS: 497-19-8	Sodium Carbonate	5-15%
CAS: 7722-88-5	Tetrasodium pyrophosphate	5-15%
CAS: N/A	Proprietary (non-classified)	40-60%

Additional information: For the wording of the listed risk phrases refer to section 16.

4 First Aid Measures

4.1 Description of first aid measures
General information:
Contaminated individuals of chemical exposure must be taken for medical attention if any adverse effect occurs. Rescuers should be taken for medical attention, if necessary. Take copy of label and SDS to health professional with contaminated individual.
After inhalation:
Supply fresh air; consult doctor in case of complaints.
After skin contact:
Immediately wash with water and soap and rinse thoroughly. If skin irritation continues, consult a doctor.

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After eye contact:
Remove contact lenses if worn. Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.

After swallowing:
Rinse out mouth and then drink plenty of water. Do not induce vomiting; call for medical help immediately.

4.2 Most important symptoms and effects, both acute and delayed:
No additional information available.

4.3 Indication of any immediate medical attention and special treatment needed:
No additional information available.

5 Firefighting Measures

5.1 Extinguishing media:
Suitable extinguishing agents:
CO_2, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

5.2 Special hazards arising from the substance or mixture:
No additional information available.

5.3 Advice for firefighters:
Protective equipment:
Wear self-contained respiratory protective device.
Wear fully protective suit.

6 Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures:
Product forms slippery surface when combined with water.

6.2 Environmental precautions:
Do not allow product to reach sewage system or any water course.

6.3 Methods and material for containment and cleaning up:
Pick up mechanically.
Clean the affected area carefully; suitable cleaners are: Warm water

6.4 Reference to other sections:
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information

7 Handling and Storage

7.1 Precautions for safe handling:
Ensure good ventilation/exhaustion at the workplace.
Keep receptacles tightly sealed.
Prevent formation of dust.
Information about fire - and explosion protection: No special measures required.

7.2 Conditions for safe storage, including any incompatibilities:
Storage:
Requirements to be met by storerooms and receptacles: No special requirements.
Information about storage in one common storage facility: None required.
Further information about storage conditions: Protect from humidity and water.

7.3 Specific end use(s): No additional information available.

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8 Exposure Controls/Personal Protection

8.1 Control parameters
Ingredients with limit values that require monitoring at the workplace: Not required.

Additional information: The lists valid during the making were used as basis.

8.2 Exposure controls:
Personal protective equipment:
General protective and hygienic measures:
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Avoid contact with the skin.
Avoid contact with the eyes and skin.

Respiratory protection:
Not required under normal conditions of use.
In case of brief exposure or low pollution use respiratory filter device.
In case of intensive or longer exposure use self-contained respiratory protective device.

Protection of hands:


Protective gloves

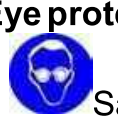
The glove material has to be impermeable and resistant to the product. Selection of the glove material should be based on the penetration time, rates of diffusion and the degradation of the glove material.

Material of gloves:
The selection of a suitable gloves does not only depend on the material, but also on the quality, and varies from manufacturer to manufacturer.

Penetration time of glove material:
The exact break through time has to be determined by the manufacturer of the protective gloves. DO NOT exceed the breakthrough time set by the Manufacturer.

For long term contact, gloves made of the following materials are considered suitable:
Butyl rubber, BR
Nitrile rubber, NBR
Natural rubber (NR)
Neoprene gloves

Eye protection:


Safety glasses

Body protection: Protective work clothing

9 Physical and Chemical Properties

9.1 Information on basic physical and chemical properties:

General Information:	
Appearance:	
Form:	Powder
Color:	White
Odor:	Odorless
Odor threshold:	Not determined.
pH-value (10 g/l) at 20 °C:	9.5 (NA for Powder form)
Change in condition:	
Melting point/Melting range:	Not determined.
Boiling point/Boiling range:	Not determined.

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Flash point:	Not applicable.
Flammability (solid, gaseous):	Not determined.
Ignition temperature:	Not determined.
Decomposition temperature:	Not determined.
Self-igniting:	Product is not selfigniting.
Danger of explosion:	Product does not present an explosion hazard.
Explosion limits:	
Lower:	Not determined.
Upper:	Not determined.
Vapor pressure:	Not applicable.
Density at 20°C:	1,1 g/cm³
Relative density:	Not determined.
Vapor density:	Not applicable.
Evaporation rate:	Not applicable.
Solubility in / Miscibility with water:	Soluble.
Segregation coefficient (n-octanol/water):	Not determined.
Viscosity:	
Dynamic:	Not applicable.
Kinematic:	Not applicable.
Solvent content:	
Organic solvents:	0.0 %
Solids content:	100 %
9.2 Other information:	No additional information available.

10 Stability and Reactivity

10.1 Reactivity:
10.2 Chemical stability:
Thermal decomposition / conditions to be avoided:
No decomposition if used according to specifications.
10.3 Possibility of hazardous reactions:
Reacts with acids.
Reacts with strong alkali.
Reacts with strong oxidizing agents.
10.4 Conditions to avoid:
No additional information available.
10.5 Incompatible materials:
No additional information available.
10.6 Hazardous decomposition products:
Carbon monoxide and carbon dioxide
Phosphorus compounds
Sulphur oxides (SOx)

11 Toxicological Information

11.1 Information on toxicological effects:
Toxicity data: No additional information available.
Primary irritant effect:
On the skin: Irritating to skin and mucous membranes.
On the eye: Strong irritant with the danger of severe eye injury.
Sensitization: No sensitizing effects known.

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Additional toxicological information:
The product shows the following dangers according to the calculation method of the General EU Classification Guidelines for Preparations as issued in the latest version: Irritant.
Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation ofesophagus and stomach.

12 Ecological Information

12.1 Toxicity:
Aquatic toxicity: No additional information available.
12.2 Persistence and degradability: No additional information available.
12.3 Bioaccumulative potential: Not worth-mentioning accumulating in organisms.
12.4 Mobility in soil: No additional information available.
Ecotoxical effects:
Remark: Harmful to fish
Additional ecological information:
General notes:
Water hazard class 2 (German Regulation) (Self-assessment): hazardous for water.
Do not allow product to reach ground water, water course or sewage system.
Danger to drinking water if even small quantities leak into the ground.
12.5 Results of PBT and vPvB assessment:
PBT: Not applicable.
vPvB: Not applicable.
12.6 Other adverse effects: No additional information available.

13 Disposal Considerations

13.1 Waste treatment methods:
Recommendation:
Smaller quantities can be disposed of with household waste.
Small amounts may be diluted with plenty of water and washed away. Dispose of bigger amounts in accordance with Local Authority requirements.
The surfactant used in this product complies with the biodegradability criteria as laid down in Regulation (EC) No. 648/2004 on detergents. Data to support this assertion are held at the disposal of the competent authorities of the Member States and will be made available to them, at their direct request or at the request of a detergent manufacturer.
Uncleaned packaging:
Recommendation: Disposal must be made according to official regulations.
Recommended cleansing agents: Water, together with cleansing agents, if necessary.

14 Transport Information

14.1 UN-Number:
DOT, ADR, ADN, IMDG, IATA: Not Regulated

14.2 UN proper shipping name:
DOT, ADR, IMDG, IATA: Not Regulated

14.3 Transport hazard class(es):
DOT, ADR, IMDG, IATA:
Class: Not Regulated
Label: -

14.4 Packing group:
DOT, ADR, IMDG, IATA: Not Regulated

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14.5 Environmentalhazards:
Marine pollutant: No

14.6 Special precautions for user: Not applicable.

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: Not applicable.

UN "Model Regulation": Not Regulated

15 Regulatory Information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture:
United States (USA):
SARA:
Section 355 (extremely hazardous substances): None of the ingredient is listed.
Section 313 (Specific toxic chemical listings): None of the ingredient is listed.
TSCA(Toxic Substances Control Act): All ingredients are listed.

Proposition 65 (California):
Chemicals known to cause cancer: None of the ingredient is listed.
Chemicals known to cause reproductive toxicity for females: None of the ingredient is listed.
Chemicals known to cause reproductive toxicity for males: None of the ingredient is listed.
Chemicals known to cause developmental toxicity: None of the ingredient is listed.

CarcinogenicCategories:
EPA (Environmental Protection Agency): None of the ingredient is listed.
TLV (Threshold Limit Value established by ACGIH): None of the ingredient is listed.
NIOSH-Ca (National Institute for Occupational Safety and Health): None of the ingredient is listed.
OSHA-Ca (Occupational Safety & Health Administration): None of the ingredient is listed.

Canadá:
Canadian Domestic Substances List (DSL): All ingredients are listed.
Canadian Ingredient Disclosure list (limit 0.1%): None of the ingredient is listed.
Canadian Ingredient Disclosure list (limit 1%):

497-19-8	Sodium Carbonate
7722-88-5	Tetrasodium pyrophosphate
151-21-3	Sodium dodecylsulphate

15.2 Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other Information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Relevantphrases:

H320: Causes eye irritation.

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ALCONOX

Abbreviations and Acronyms:

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.
IMDG: International Maritime Code for Dangerous Goods.
DOT: US Department of Transportation.
IATA: International Air Transport Association.
GHS: Globally Harmonized System of Classification and Labelling of Chemicals.
ACGIH: American Conference of Governmental Industrial Hygienists.
NFPA: National Fire Protection Association (USA).
HMIS: Hazardous Materials Identification System (USA).
WHMIS: Workplace Hazardous Materials Information System (Canada).
VOC: Volatile Organic Compounds (USA, EU).
LC50: Lethal concentration, 50 percent.
LD50: Lethal dose, 50 percent.

SDS Created by:
Global Safety Management, Inc.
10006 Cross Creek Blvd
Tampa, FL, 33647
Tel: 1-844-GSM-INFO (1-844-476-4636)
Website: www.GSMSDS.com

SAFETY DATA SHEET

SDS ID NO.: 0127MAR019
Revision Date: 06/01/2016

1. IDENTIFICATION

Product Name: Marathon Petroleum Gasoline - All Grades

Synonym: Gasoline; Regular Unleaded Gasoline; Conventional Regular Unleaded Gasoline; Mid Grade Unleaded Gasoline; Conventional Mid Grade Unleaded Gasoline; Premium Unleaded Gasoline; Conventional Premium Unleaded Gasoline; Sub-Octane Gasoline; Regular RBOB; Super RBOB; Premium RBOB; RBOB; Reformulated Blend Stock For Oxygenated Blending; 84 Octane Gasoline; CBOB; Premium CBOB; Conventional Blend Stock for Oxygenate Blending; Recreational Gasoline; Recreational Gasoline; Recreational Unleaded Gasoline; 89 Recreational Gasoline; Brand 89 Recreational Gasoline; 7.0 Max RVP 89 Recreational Gasoline; BR 7.0 Max RVP 89 Recreational Gasoline; 90 Recreational Gasoline; 90 Marina Gasoline; Brand 91 Recreational Gasoline; 91 Recreational Gasoline; 91 Marina Gasoline; 90 Octane Midgrade Gasoline with No Ethanol; 0125MAR019; 0126MAR019; 0134MAR019; 0313MAR019; 0314MAR019

Chemical Family: Complex Hydrocarbon Substance

Recommended Use: Fuel.
Restrictions on Use: All others.

Manufacturer, Importer, or Responsible Party Name and Address:

MARATHON PETROLEUM COMPANY LP
539 South Main Street
Findlay, OH 45840

SDS information: 1-419-421-3070

Emergency Telephone: 1-877-627-5463

2. HAZARD IDENTIFICATION

Classification

OSHA Regulatory Status
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids	Category 1
Skin corrosion/irritation	Category 2
Germ cell mutagenicity	Category 1B
Carcinogenicity	Category 1B
Reproductive toxicity	Category 2
Specific target organ toxicity (single exposure)	Category 3
Aspiration toxicity	Category 1
Acute aquatic toxicity	Category 2
Chronic aquatic toxicity	Category 2

Hazards Not Otherwise Classified (HNOC)

Static accumulating flammable liquid

Label elements

EMERGENCY OVERVIEW

Danger

EXTREMELY FLAMMABLE LIQUID AND VAPOR
May accumulate electrostatic charge and ignite or explode
May be fatal if swallowed and enters airways
Causes skin irritation
May cause respiratory irritation
May cause drowsiness or dizziness
May cause genetic defects
May cause cancer
Suspected of damaging fertility or the unborn child
Toxic to aquatic life with long lasting effects

Appearance Clear yellow liquid **Physical State** Liquid **Odor** Hydrocarbon

Precautionary Statements - Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Use explosion-proof electrical/ventilating/lighting/equipment
Use only non-sparking tools.
Take precautionary measures against static discharge
Avoid breathing mist/vapors/spray
Use only outdoors or in a well-ventilated area
Wear protective gloves/protective clothing/eye protection/face protection
Wash hands and any possibly exposed skin thoroughly after handling
Avoid release to the environment

Precautionary Statements - Response
IF exposed or concerned: Get medical attention
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
If skin irritation occurs: Get medical attention
Wash contaminated clothing before reuse
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Call a POISON CENTER or doctor if you feel unwell
IF SWALLOWED: Immediately call a POISON CENTER or doctor
Do NOT induce vomiting
In case of fire: Use water spray, fog or regular foam for extinction
Collect spillage

Precautionary Statements - Storage
Store in a well-ventilated place. Keep container tightly closed
Keep cool
Store locked up

Precautionary Statements - Disposal
Dispose of contents/container at an approved waste disposal plant

3. COMPOSITION/INFORMATION ON INGREDIENTS

Gasoline is a complex combination of hydrocarbons consisting of paraffins, cycloparaffins, aromatic and olefinic hydrocarbons having molecular chains ranging in length from four to ten carbons. May contain small amounts of dye and other additives (>0.02%) which are not considered hazardous at the concentrations used.

Composition Information:

Name	CAS Number	% Concentration
Gasoline	86290-81-5	100
Heptane (mixed isomers)	142-82-5	2.5-26
Pentane (mixed isomers)	78-78-4	6.5-19
Butane (mixed isomers)	106-97-8	0.5-14
Hexane Isomers (other than n-Hexane)	107-83-5	2-12
Toluene	108-88-3	3-9.5
Xylene (mixed isomers)	1330-20-7	3.5-9.5
n-Hexane	110-54-3	0.1-4.5
Cumene	98-82-8	0-4
1,2,4 Trimethylbenzene	95-63-6	1-4
Ethylbenzene	100-41-4	0.5-2.5
Benzene	71-43-2	0.1-1.5
Cyclohexane	110-82-7	0-1.5
Octane	111-65-9	0-1.5
1,2,3-trimethylbenzene	526-73-8	0-1
Naphthalene	91-20-3	0.1-0.5

All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume.

4. FIRST AID MEASURES

First Aid Measures

General Advice: In case of accident or if you feel unwell, seek medical advice immediately (show directions for use or safety data sheet if possible).

Inhalation: Remove to fresh air. If not breathing, institute rescue breathing. If breathing is difficult, ensure airway is clear, give oxygen and continue to monitor. If heart has stopped, immediately begin cardiopulmonary resuscitation (CPR). Keep affected person warm and at rest. If symptoms occur get medical attention.

Skin Contact: Immediately wash exposed skin with plenty of soap and water while removing contaminated clothing and shoes. May be absorbed through the skin in harmful amounts. Get medical attention if irritation persists. Any injection injury from high pressure equipment should be evaluated immediately by a physician as potentially serious (See NOTES TO PHYSICIAN).

Place contaminated clothing in closed container until cleaned or discarded. If clothing is to be laundered, inform the person performing the operation of contaminant's hazardous properties. Destroy contaminated, non-chemical resistant footwear.

Eye Contact: Flush immediately with large amounts of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Gently remove contacts while flushing. Get medical attention if irritation persists.

Ingestion: Do not induce vomiting because of danger of aspirating liquid into lungs, causing serious damage and chemical pneumonitis. If spontaneous vomiting occurs, keep head below hips, or if patient is lying down, turn body and head to side to prevent aspiration and monitor for breathing difficulty. Never give anything by mouth to an unconscious person. Keep affected person warm and at rest. GET IMMEDIATE MEDICAL ATTENTION.

Most important signs and symptoms, both short-term and delayed with overexposure

Adverse Effects: Irritating to the skin and mucous membranes. Symptoms may include redness, itching, and inflammation. May cause nausea, vomiting, diarrhea, and signs of nervous system depression: headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue. Aspiration hazard. May cause coughing, chest pains, shortness of breath, pulmonary edema and/or chemical pneumonitis. Repeated or prolonged skin contact may cause drying, reddening, itching and cracking.

Indication of any immediate medical attention and special treatment needed

Notes To Physician: INHALATION: This material (or a component) sensitizes the myocardium to the effects of sympathomimetic amines. Epinephrine and other sympathomimetic drugs may initiate cardiac arrhythmias in individuals exposed to this material. Administration of sympathomimetic drugs should be avoided.

SKIN: Leaks or accidents involving high-pressure equipment may inject a stream of material through the skin and initially produce an injury that may not appear serious. Only a small puncture wound may appear on the skin surface but, without proper treatment and depending on the nature, original pressure, volume, and location of the injected material, can compromise blood supply to an affected body part. Prompt surgical debridement of the wound may be necessary to prevent irreversible loss of function and/or the affected body part. High pressure injection injuries may be SERIOUS SURGICAL EMERGENCIES.

INGESTION: This material represents a significant aspiration and chemical pneumonitis hazard. Induction of emesis is not recommended.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
For small fires, Class B fire extinguishing media such as CO2, dry chemical, foam (AFFF/ATC) or water spray can be used. For large fires, water spray, fog or foam (AFFF/ATC) can be used. Firefighting should be attempted only by those who are adequately trained and equipped with proper protective equipment.

Unsuitable extinguishing media
Do not use straight water streams to avoid spreading fire.

Specific hazards arising from the chemical
This product has been determined to be an extremely flammable liquid per the OSHA Hazard Communication Standard and should be handled accordingly. May accumulate electrostatic charge and ignite or explode. Vapors may travel along the ground or be moved by ventilation and ignited by many sources such as pilot lights, sparks, electric motors, static discharge, or other ignition sources at locations distant from material handling. Flashback can occur along vapor trail. For additional fire related information, see NFPA 30 or the Emergency Response Guidebook 128.

Hazardous combustion products
Smoke, carbon monoxide, and other products of incomplete combustion.

Explosion data
Sensitivity to Mechanical Impact No.
Sensitivity to Static Discharge Yes.

Special protective equipment and precautions for firefighters
Firefighters should wear full protective clothing and positive-pressure self-contained breathing apparatus (SCBA) with a full face-piece, as appropriate. Avoid using straight water streams. Water may be ineffective in extinguishing low flash point fires, but can be used to cool exposed surfaces. Avoid excessive water spray application. Water spray and foam (AFFF/ATC) must be applied carefully to avoid frothing and from as far a distance as possible. Keep run-off water out of sewers and water sources.

Additional firefighting tactics
FIRES INVOLVING TANKS OR CAR/TRAILER LOADS: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with flooding quantities of water until well after the fire is out. Do not direct water at source of leak or safety devices; icing may occur. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire. For massive fire, use unmanned hose holders or monitor nozzles: if this is impossible, withdraw from area and let fire burn.

EVACUATION: Consider initial downwind evacuation for at least 1000 feet. If tank, rail car or tank truck is involved in a fire, ISOLATE for 5280 feet (1 mile) in all directions; also, consider initial evacuation of 5280 feet (1 mile) in all directions.

NFPA	Health 1	Flammability 3	Instability 0	Special Hazard -

6. ACCIDENTAL RELEASE MEASURES

Personal precautions:	Keep public away. Isolate and evacuate area. Shut off source if safe to do so. Eliminate all ignition sources.
Protective equipment:	Use personal protection measures as recommended in Section 8.
Emergency procedures:	Advise authorities and National Response Center (800-424-8802) if the product has entered a water course or sewer. Notify local health and pollution control agencies, if appropriate.
Environmental precautions:	Avoid release to the environment. Avoid subsoil penetration. Ethanol in gasoline phase seperates in contact with water. Monitor downstream for dissolved ethanol or other appropriate indicators.
Methods and materials for containment:	Contain liquid with sand or soil. Prevent spilled material from entering storm drains, sewers, and open waterways.
Methods and materials for cleaning up:	Use suitable absorbent materials such as vermiculite, sand, or clay to clean up residual liquids. Recover and return free product to proper containers. When recovering free liquids ensure all equipment is grounded and bonded. Use only non-sparking tools.

7. HANDLING AND STORAGE

Safe Handling Precautions:

NEVER SIPHON THIS PRODUCT BY MOUTH. Use appropriate grounding and bonding practices. Static accumulating flammable liquid. Bonding and grounding may be insufficient to eliminate the hazard from static electricity. Do not expose to heat, open flames, strong oxidizers or other sources of ignition. Vapors may travel along the ground or be moved by ventilation. Flashback may occur along vapor trails. No smoking. Use only non-sparking tools. Avoid contact with skin, eyes and clothing. Avoid breathing fumes, gas, or vapors. Use only with adequate ventilation. Avoid repeated and prolonged skin contact. Use personal protection measures as recommended in Section 8. Exercise good personal hygiene including removal of soiled clothing and prompt washing with soap and water. Do not cut, drill, grind or weld on empty containers since explosive residues may remain. Refer to applicable EPA, OSHA, NFPA and consistent state and local requirements.

Hydrocarbons are basically non-conductors of electricity and can become electrostatically charged during mixing, filtering, pumping at high flow rates or loading and transfer operations. If this charge reaches a sufficiently high level, sparks can form that may ignite the vapors of flammable liquids. Sudden release of hot organic chemical vapors or mists from process equipment operating under elevated temperature and pressure, or sudden ingress of air into vacuum equipment may result in ignition of vapors or mists without the presence of obvious ignition sources. Nozzle spouts must be kept in contact with the containers or tank during the entire filling operation.

Portable containers should never be filled while in or on a motor vehicle or marine craft. Containers should be placed on the ground. Static electric discharge can ignite fuel vapors when filling non-grounded containers or vehicles on trailers. The nozzle spout must be kept in contact with the container before and during the entire filling operation. Use only approved containers.

A buildup of static electricity can occur upon re-entry into a vehicle during fueling especially in cold or dry climate conditions. The charge is generated by the action of dissimilar fabrics (i.e., clothing and upholstery) rubbing across each other as a person enters/exits the vehicle. A flash fire can result from this discharge if sufficient flammable vapors are present. Therefore, do not get back in your vehicle while refueling.

Cellular phones and other electronic devices may have the potential to emit electrical charges (sparks). Sparks in potentially explosive atmospheres (including fueling areas such as gas stations) could cause an explosion if sufficient flammable vapors are present. Therefore, turn off cellular phones and other electronic devices when working in potentially explosive atmospheres or keep devices inside your vehicle during refueling.

High-pressure injection of any material through the skin is a serious medical emergency even though the small entrance wound at the injection site may not initially appear serious. These injection injuries can occur from high-pressure equipment such as paint spray or grease or guns, fuel injectors, or pinhole leaks in hoses or hydraulic lines and should all be considered serious. High pressure injection injuries may be SERIOUS SURGICAL EMERGENCIES (See First Aid Section 4).

Storage Conditions:

Store in properly closed containers that are appropriately labeled and in a cool, well-ventilated area. Do not store near an open flame, heat or other sources of ignition.

Incompatible Materials

Strong oxidizing agents.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Name	ACGIH TLV	OSHA PELS:	OSHA - Vacated PELs	NIOSH IDLH
Gasoline 86290-81-5	300 ppm TWA 500 ppm STEL	-	300 ppm TWA 900 mg/m^3 TWA 500 ppm STEL 1500 mg/m^3 STEL	-

Heptane (mixed isomers) 142-82-5	400 ppm TWA 500 ppm STEL	TWA: 500 ppm TWA: 2000 mg/m^3	400 ppm TWA 1600 mg/m^3 TWA 500 ppm STEL 2000 mg/m^3 STEL	750 ppm
Pentane (mixed isomers) 78-78-4	1000 ppm TWA	-	-	-
Butane (mixed isomers) 106-97-8	1000 ppm STEL	-	800 ppm TWA 1900 mg/m^3 TWA	-
Hexane Isomers (other than n-Hexane) 107-83-5	500 ppm TWA 1000 ppm STEL	-	500 ppm TWA 1800 mg/m^3 TWA 1000 ppm STEL 3600 mg/m^3 STEL	-
Toluene 108-88-3	20 ppm TWA	TWA: 200 ppm Ceiling: 300 ppm	100 ppm TWA 375 mg/m^3 TWA 150 ppm STEL 560 mg/m^3 STEL	500 ppm
Xylene (mixed isomers) 1330-20-7	100 ppm TWA 150 ppm STEL	TWA: 100 ppm TWA: 435 mg/m^3	100 ppm TWA 435 mg/m^3 TWA 150 ppm STEL 655 mg/m^3 STEL	900 ppm
n-Hexane 110-54-3	50 ppm TWA Skin - potential significant contribution to overall exposure by the cutaneous route	TWA: 500 ppm TWA: 1800 mg/m^3	50 ppm TWA 180 mg/m^3 TWA	1100 ppm
Cumene 98-82-8	50 ppm TWA	TWA: 50 ppm TWA: 245 mg/m^3 Skin	50 ppm TWA 245 mg/m^3 TWA Limit applies to skin	900 ppm
1,2,4 Trimethylbenzene 95-63-6	25 ppm TWA	-	25 ppm TWA 125 mg/m^3 TWA	-
Ethylbenzene 100-41-4	20 ppm TWA	TWA: 100 ppm TWA: 435 mg/m^3	100 ppm TWA 435 mg/m^3 TWA 125 ppm STEL 545 mg/m^3 STEL	800 ppm
Benzene 71-43-2	0.5 ppm TWA 2.5 ppm STEL Skin - potential significant contribution to overall exposure by the cutaneous route	TWA: 10 ppm (applies to industry segments exempt from the benzene standard) TWA: 1 ppm STEL: 5 ppm (see 29 CFR 1910.1028)	25 ppm Ceiling 1 ppm TWA 5 ppm STEL	500 ppm
Cyclohexane 110-82-7	100 ppm TWA	TWA: 300 ppm TWA: 1050 mg/m^3	300 ppm TWA 1050 mg/m^3 TWA	1300 ppm
Octane 111-65-9	300 ppm TWA	TWA: 500 ppm TWA: 2350 mg/m^3	300 ppm TWA 1450 mg/m^3 TWA 375 ppm STEL 1800 mg/m^3 STEL	1000 ppm
1,2,3-trimethylbenzene 526-73-8	25 ppm TWA	-	25 ppm TWA 125 mg/m^3 TWA	-
Naphthalene 91-20-3	10 ppm TWA Skin - potential significant contribution to overall exposure by the cutaneous route	TWA: 10 ppm TWA: 50 mg/m^3	10 ppm TWA 50 mg/m^3 TWA 15 ppm STEL 75 mg/m^3 STEL	250 ppm

Notes: The manufacturer has voluntarily elected to provide exposure limits contained in OSHA's 1989 air contaminants standard in its SDSs, even though certain of those exposure limits were vacated in 1992.

Engineering measures: Local or general exhaust required in an enclosed area or when there is inadequate ventilation. Use mechanical ventilation equipment that is explosion-proof.

Personal protective equipment

Eye protection:	Use goggles or face-shield if the potential for splashing exists.
Skin and body protection:	Use nitrile rubber, Viton® or PVA gloves for repeated or prolonged skin exposure. Glove suitability is based on workplace conditions and usage. Contact the glove manufacturer for specific advice on glove selection and breakthrough times.
Respiratory protection:	Use a NIOSH approved organic vapor chemical cartridge or supplied air respirators when there is the potential for airborne exposures to exceed permissible exposure limits or if excessive vapors are generated. Observe respirator assigned protection factors (APFs) criteria cited in federal OSHA 29 CFR 1910.134. Self-contained breathing apparatus should be used for fire fighting.
Hygiene measures:	Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State	Liquid
Appearance	Clear yellow liquid
Color	Yellow
Odor	Hydrocarbon
Odor Threshold	No data available.

Property	**Values (Method)**
Melting Point / Freezing Point	No data available.
Initial Boiling Point / Boiling Range	24-210 °C / 75-410 °F (ASTM D86)
Flash Point	-43 °C / -45 °F
Evaporation Rate	No data available.
Flammability (solid, gas)	Not applicable.
Flammability Limit in Air (%):	
Upper Flammability Limit:	7.6
Lower Flammability Limit:	1.4
Explosion limits:	No data available.
Vapor Pressure	5.5-15 psi (ASTM D4814)
Vapor Density	3-4
Specific Gravity / Relative Density	0.70-0.76
Water Solubility	No data available.
Solubility in other solvents	No data available.
Partition Coefficient	2.13-4.5
Decomposition temperature	No data available.
pH:	Not applicable
Autoignition Temperature	280 °C / 536 °F
Kinematic Viscosity	No data available.
Dynamic Viscosity	No data available.
Explosive Properties	No data available.
VOC Content (%)	100%
Density	No data available.
Bulk Density	Not applicable.

10. STABILITY AND REACTIVITY

Reactivity	The product is non-reactive under normal conditions.
Chemical stability	The material is stable at 70°F, 760 mmHg pressure.
Possibility of hazardous reactions	None under normal processing.
Hazardous polymerization	Will not occur.

Conditions to avoid Excessive heat, sources of ignition, open flame.

Incompatible Materials Strong oxidizing agents.

Hazardous decomposition products None known under normal conditions of use.

11. TOXICOLOGICAL INFORMATION

Potential short-term adverse effects from overexposures

Inhalation May cause irritation of respiratory tract. May cause drowsiness or dizziness. Breathing high concentrations of this material in a confined space or by intentional abuse can cause irregular heartbeats which can cause death.

Eye contact Exposure to vapor or contact with liquid may cause mild eye irritation, including tearing, stinging, and redness.

Skin contact Causes skin irritation. Effects may become more serious with repeated or prolonged contact. May be absorbed through the skin in harmful amounts.

Ingestion May be fatal if swallowed or vomited and enters airways. May cause irritation of the mouth, throat and gastrointestinal tract.

Acute toxicological data

Name	Oral LD50	Dermal LD50	Inhalation LC50
Gasoline 86290-81-5	14000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 5.2 mg/L (Rat) 4 h
Heptane (mixed isomers) 142-82-5	-	3000 mg/kg (Rabbit)	103 g/m^3 (Rat) 4 h
Pentane (mixed isomers) 78-78-4	-	-	450 mg/L (Mouse) 2 h
Butane (mixed isomers) 106-97-8	-	-	658 mg/L (Rat) 4 h
Hexane Isomers (other than n-Hexane) 107-83-5	> 5000 mg/kg (Rat)	-	-
Toluene 108-88-3	> 2000 mg/kg (Rat)	8390 mg/kg (Rabbit)	12.5 mg/L (Rat) 4 h
Xylene (mixed isomers) 1330-20-7	> 2000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 5.04 mg/L (Rat) 4 h
n-Hexane 110-54-3	15000 mg/kg (Rat)	3000 mg/kg (Rabbit)	48000 ppm (Rat) 4 h
Cumene 98-82-8	> 2000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 20 mg/L (Rat) 6 h
1,2,4 Trimethylbenzene 95-63-6	3280 mg/kg (Rat)	> 3160 mg/kg (Rabbit)	18,000 mg/m^3 (Rat) 4 h
Ethylbenzene 100-41-4	> 2000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	17.2 mg/L (Rat) 4 h
Benzene 71-43-2	> 2000 mg/kg (Rat)	> 5000 mg/kg (Rabbit)	> 20 mg/l (Rat) 4 h
Cyclohexane 110-82-7	> 5000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	13.9 mg/L (Rat) 4 h
Octane 111-65-9	-	-	118 g/m^3 (Rat) 4 h
1,2,3-trimethylbenzene 526-73-8	-	-	-
Naphthalene 91-20-3	490 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 340 mg/m^3 (Rat) 1 h

Delayed and immediate effects as well as chronic effects from short and long-term exposure

NAPHTHAS: In a large epidemiological study on over 15,000 employees at several petroleum refineries and amongst residents located near these refineries, no increased risk of kidney cancer was observed in association with gasoline exposures (a similar material). In a similar study, no increased risk of kidney cancer was observed among petroleum refinery workers, but there was a slight trend in the incidence of kidney cancers among service station employees, especially after a 30-year latency period. Altered mental state, drowsiness, peripheral motor neuropathy, irreversible brain damage (so-called Petrol Sniffer's Encephalopathy), delirium, seizures, and sudden death have been reported from repeated overexposure to some hydrocarbon solvents, naphthas, and gasoline.

ISOPARAFFINS: Studies in laboratory animals have shown that long-term exposure to similar materials (isoparaffins) can cause kidney damage and kidney cancer in male laboratory rats. However, in-depth research indicates that these findings are unique to the male rat, and that these effects are not relevant to humans.

C9 AROMATIC HYDROCARBONS: A developmental inhalation study was conducted in laboratory mice. Increased implantation losses, reduced fetal weights, delayed ossification and an increased incidence of cleft palate were observed at the highest exposure level (1,500 ppm). This exposure level was extremely toxic to pregnant female mice (44% mortality). Reduced fetal body weights were also observed at 500 ppm. A multi-generation reproduction inhalation study was conducted in laboratory rats. Reductions in pup weights, pup weight gain, litter size, and pup survival were observed at 1,500 ppm, an exposure level at which significant maternal toxicity was observed. Reduced pup weight gain was also observed at 500 ppm.

PENTANES: Studies of pentane isomers in laboratory animals indicate exposure to extremely high levels (roughly 10 vol.%) may induce cardiac arrhythmias (irregular heartbeats) which may be serious or fatal.

BUTANES: Studies in laboratory animals indicate exposure to extremely high levels of butanes (1-10 or higher vol.% in air) may cause cardiac arrhythmias (irregular heartbeats) which may be serious or fatal.

TOLUENE: Case studies of persons abusing toluene suggest isolated incidences of adverse effects on the fetus including birth defects. Abuse of toluene at high concentrations (e.g., glue sniffing and solvent abuse) has been associated with adverse effects on the liver, kidney and nervous system, and can cause CNS depression, cardiac arrhythmias, and death. Studies of workers indicate longterm exposure may be related to impaired color vision and hearing. Some studies of workers suggest longterm exposure may be related to neurobehavioral and cognitive changes. Some of these effects have been observed in laboratory animals following repeated exposure to high levels of toluene. Several studies of workers suggest longterm exposure may be related to small increases in spontaneous abortions and changes in some gonadotropic hormones. However, the weight of evidence does not indicate toluene is a reproductive hazard to humans. Studies in laboratory animals indicate some changes in reproductive organs following high levels of exposure, but no significant effects on mating performance or reproduction were observed. Case studies of persons abusing toluene suggest isolated incidences of adverse effects on the fetus including birth defects. Findings in laboratory animals have been largely negative. Positive findings include small increases in minor skeletal and visceral malformations and developmental delays following very high levels of maternal exposure. Studies of workers indicate long-term exposure may be related to effects on the liver, kidney and blood, but these appear to be limited to changes in serum enzymes and decreased leukocyte counts. Adverse effects on the liver, kidney, thymus and nervous system were observed in animal studies following very high levels of exposure. The relevance of these findings to humans is not clear at this time.

XYLENES, ALL ISOMERS: Overexposure to xylene may cause upper respiratory tract irritation, headache, cyanosis, blood serum changes, nervous system damage and narcosis. Effects may be increased by the use of alcoholic beverages. Evidence of liver and kidney impairment were reported in workers recovering from a gross overexposure. Effects from Prolonged or Repeated Exposure: Impaired neurological function was reported

in workers exposed to solvents including xylene. Studies in laboratory animals have shown evidence of impaired hearing following high levels of exposure. Studies in laboratory animals suggest some changes in reproductive organs following high levels of exposure but no significant effects on reproduction were observed. Studies in laboratory animals indicate skeletal and visceral malformations, developmental delays, and increased fetal resorptions following extremely high levels of maternal exposure with evidence of maternal toxicity. The relevance of these observations to humans is not clear at this time. Adverse effects on the liver, kidney, bone marrow (changes in blood cell parameters) were observed in laboratory animals following high levels of exposure. The relevance of these observations to humans is not clear at this time.

1,2,4-TRIMETHYLBENZENE: The following information pertains to a mixture of C9 aromatic hydrocarbons, over 40% of which was composed of 1,2,4-trimethylbenzene. A developmental inhalation study was conducted in laboratory mice. Increased implantation losses, reduced fetal weights, delayed ossification and an increased incidence of cleft palate were observed at the highest exposure level (1,500 ppm). This exposure level was extremely toxic to pregnant female mice (44% mortality). Reduced fetal body weights were also observed at 500 ppm. A multi-generation reproduction inhalation study was conducted in laboratory rats. Reductions in pup weights, pup weight gain, litter size, and pup survival were observed at 1,500 ppm, an exposure level at which significant maternal toxicity was observed. Reduced pup weight gain was also observed at 500 ppm. Embryotoxicity has been reported in studies of laboratory animals. Adverse effects included increased implantation losses, reduced fetal weights, delayed ossification and an increased incidence of cleft palate.<n><n>

N-HEXANE: Long-term or repeated exposure to n-hexane can cause peripheral nerve damage. Initial symptoms are numbness of the fingers and toes. Also, motor weakness can occur in the digits, but may also involve muscles of the arms, thighs and forearms. The onset of these symptoms may be delayed for several months to a year after the beginning of exposure. Testicular atrophy and partial to full loss of the germ cell line were observed in sub-chronic high-dose inhalation studies of laboratory rodents. These effects appeared irreversible. Rodent reproduction studies have shown evidence of reduced fetal weight but no frank malformations.

CUMENE: Overexposure to cumene may cause upper respiratory tract irritation and CNS depression. Studies in laboratory animals indicate evidence of respiratory tract hyperplasia, and adverse effects on the liver, kidney and adrenal glands following high level exposure. The relevance of these findings to humans is not clear at this time. Findings from lifetime laboratory rodent inhalation studies were as follows: In F344/N rats: an increased incidence of renal carcinomas and adenomas, respiratory epithelial adenomas, and interstitial cell adenomas of the testes. In B6C3F1 mice: an increased incidence of carcinomas and adenomas of the bronchi and lung, liver neoplasms, hemangiosarcomas of the spleen, and adenomas of the thyroid.

ETHYLBENZENE: Findings from a 2-year inhalation study in rodents conducted by NTP were as follows: Effects were observed only at the highest exposure level (750 ppm). At this level the incidence of renal tumors was elevated in male rats (tubular carcinomas) and female rats (tubular adenomas). The incidence of tumors was also elevated in male mice (alveolar and bronchiolar carcinomas) and female mice (hepatocellular carcinomas). IARC has classified ethyl benzene as "possibly carcinogenic to humans" (Group 2B). Studies in laboratory animals indicate some evidence of post-implantation deaths following high levels of maternal exposure. The relevance of these findings to humans is not clear at this time. Studies in laboratory animals indicate limited evidence of renal malformations, resorptions, and developmental delays following high levels of maternal exposure with evidence of maternal toxicity. The relevance of these findings to humans is not clear at this time. Studies in laboratory animals have demonstrated evidence of ototoxicity (hearing loss) following exposure levels as low as 300 ppm for 5 days. Studies in laboratory animals indicate some evidence of adverse effects on the liver, kidney, thyroid, and pituitary gland.

BENZENE: Studies of workers exposed to benzene show clear evidence that overexposure can cause cancer and other diseases of the blood forming organs including Acute

Myelogenous Leukemia (AML), and Aplastic Anemia (AA), an often fatal disease. Some studies suggest overexposure to benzene may also be associated with Myelodysplastic Syndrome (MDS). Findings from a case control study of workers exposed to benzene was reported during the 2009 Benzene Symposium in Munich included an increase in Acute Myeloid Leukemias and Non-Hodgkins Lymphoid Neoplasms (NHLN) of the subtype follicular lymphoma (FL) in some occupational categories. Some studies of workers exposed to benzene have shown an association with increased rates of chromosome aberrations in circulating lymphocytes. One study of women workers exposed to benzene suggested a weak association with irregular menstruation. However, other studies of workers exposed to benzene have not demonstrated clear evidence of an effect on fertility or reproductive outcome in humans. Benzene can cross the placenta and affect the developing fetus. Cases of AA have been reported in the offspring of persons severely overexposed to benzene. Studies in laboratory animals indicate that prolonged, repeated exposure to high levels of benzene vapor can cause bone marrow suppression and cancer in multiple organ systems. Studies in laboratory animals show evidence of adverse effects on male reproductive organs following high levels of exposure but no significant effects on reproduction have been observed. Embryotoxicity has been reported in studies of laboratory animals but effects were limited to reduced fetal weight and minor skeletal variations. Benzene has been classified as a proven human carcinogen by OSHA and a Group 1 (Carcinogenic to Humans) material by IARC. The current proposed IARC classification for benzene is summarized as follows: Sufficient evidence for Acute Myeloid Leukemia; limited evidence for Acute Lymphatic Leukemia, Chronic Lymphatic Leukemia, Non-Hodgkin Lymphoma, and Multiple Myeloma.

NAPHTHALENE: Severe jaundice, neurotoxicity (kernicterus) and fatalities have been reported in young children and infants as a result of hemolytic anemia from overexposure to naphthalene. Persons with glucose 6-phosphate dehydrogenase (G6PD) deficiency are more prone to the hemolytic effects of naphthalene. Adverse effects on the kidney have been reported in persons overexposed to naphthalene but these effects are believed to be a consequence of hemolytic anemia, and not a direct effect. Hemolytic anemia has been observed in laboratory animals exposed to naphthalene. Laboratory rodents exposed to naphthalene vapor for 2 years (lifetime studies) developed non-neoplastic and neoplastic tumors and inflammatory lesions of the nasal and respiratory tract. Cataracts and other adverse effects on the eye have been observed in laboratory animals exposed to high levels of naphthalene. Findings from a large number of bacterial and mammalian cell mutation assays have been negative. A few studies have shown chromosomal effects (elevated levels of Sister Chromatid Exchange or chromosomal aberrations) in vitro. Naphthalene has been classified as Possibly Carcinogenic to Humans (2B) by IARC, based on findings from studies in laboratory animals.

CARBON MONOXIDE: is a chemical asphyxiant with no warning properties (such as odor). At 400-500 ppm for 1 hour headache and dyspnea may occur. If activity is increased, symptoms of overexposure may include nausea, irritability, increased respiration, tinnitus, sweating, chest pain, confusion, impaired judgement, dizziness, weakness, drowsiness, ataxia, irregular heart beat, cyanosis and pallor. Levels in excess of 1000 ppm can result in collapse, loss of conciousness, respiratory failure and death. Extremely high concentrations (12,800 ppm) can cause immediate unconsciousness and death in 1-3 minutes. Repeated anoxia can lead to central nervous system damage and peripheral neuropathy, with loss of sensation in the fingers, amnesia, and mental deterioration and possible congestive heart failure. Damage may also occur to the fetus, lung, liver, kidney, spleen, cardiovascular system and other organs.

WHOLLY-VAPORIZED UNLEADED GASOLINE: Lifetime exposure to wholly vaporized unleaded gasoline produced an increased incidence of liver tumors in female mice exposed to the highest exposure concentration (2056 ppm) and α-2 urinary globulin-mediated kidney tumors in male rats. No exposure-related tumors were observed in male mice or female rats. The male-specific rat kidney tumors are not considered relevant to human health. Mice receiving lifetime repeated skin application of various petroleum naphthas exhibited an irritation-dependent increased incidence of skin tumors. Additional studies suggest that these tumors occur through a mechanism that may not be relevant to human health. Epidemiological data from over 18,000 petroleum marketing and distribution workers

showed no increased risk of leukemia, multiple myeloma, or kidney cancer resulting from gasoline exposure. Unleaded gasoline has been identified as possibly carcinogenic to humans (2B) by the International Agency for Research on Cancer (IARC).

COMBUSTION ENGINE EXHAUST: Chronic inhalation studies of gasoline engine exhaust in mice, rats and hamsters did not produce any carcinogenic effects. Condensates/extracts of gasoline engine exhaust produced an increase in tumors compared to controls when testing by skin painting, subcutaneous injection, intratracheal instillation or implantation into the lungs. Gasoline exhaust has been classified as possibly carcinogenic to humans (2B) by the International Agency for Research on Cancer (IARC).

Adverse effects related to the physical, chemical and toxicological characteristics

Signs and Symptoms Irritating to the skin and mucous membranes. Symptoms may include redness, itching, and inflammation. May cause nausea, vomiting, diarrhea, and signs of nervous system depression: headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue. Aspiration hazard. May cause coughing, chest pains, shortness of breath, pulmonary edema and/or chemical pneumonitis. Repeated or prolonged skin contact may cause drying, reddening, itching and cracking.

Sensitization Not expected to be a skin or respiratory sensitizer.

Mutagenic effects May cause genetic defects.

Carcinogenicity May cause cancer.

Cancer designations are listed in the table below

Name	ACGIH (Class)	IARC (Class)	NTP	OSHA
Gasoline 86290-81-5	Confirmed animal carcinogen (A3)	Possible human carcinogen (2B)	Not Listed	Not Listed
Heptane (mixed isomers) 142-82-5	Not Listed	Not Listed	Not Listed	Not Listed
Pentane (mixed isomers) 78-78-4	Not Listed	Not Listed	Not Listed	Not Listed
Butane (mixed isomers) 106-97-8	Not Listed	Not Listed	Not Listed	Not Listed
Hexane Isomers (other than n-Hexane) 107-83-5	Not Listed	Not Listed	Not Listed	Not Listed
Toluene 108-88-3	Not Classifiable (A4)	Not Classifiable (3)	Not Listed	Not Listed
Xylene (mixed isomers) 1330-20-7	Not classifiable (A4)	Not classifiable (3)	Not Listed	Not Listed
n-Hexane 110-54-3	Not Listed	Not Listed	Not Listed	Not Listed
Cumene 98-82-8	Not listed	Possible human carcinogen (2B)	Reasonably anticipated to be a human carcinogen	Not listed
1,2,4 Trimethylbenzene 95-63-6	Not Listed	Not Listed	Not Listed	Not Listed
Ethylbenzene 100-41-4	Confirmed animal carcinogen (A3)	Possible human carcinogen (2B)	Not Listed	Not Listed
Benzene 71-43-2	Confirmed human carcinogen (A1)	Carcinogenic to humans (1)	Known to be human carcinogen	Known carcinogen
Cyclohexane 110-82-7	Not Listed	Not Listed	Not Listed	Not Listed
Octane 111-65-9	Not Listed	Not Listed	Not Listed	Not Listed
1,2,3-trimethylbenzene 526-73-8	Not Listed	Not Listed	Not Listed	Not Listed
Naphthalene 91-20-3	Confirmed animal carcinogen (A3)	Possible human carcinogen (2B)	Reasonably anticipated to be a human carcinogen	Not Listed

Reproductive toxicity Suspected of damaging fertility or the unborn child.

Specific Target Organ Toxicity (STOT) - single exposure	Respiratory system. Central nervous system.
Specific Target Organ Toxicity (STOT) - repeated exposure	Not classified.
Aspiration hazard	May be fatal if swallowed or vomited and enters airways.

12. ECOLOGICAL INFORMATION

Ecotoxicity This product should be considered toxic to aquatic organisms, with the potential to cause long lasting adverse effects in the aquatic environment.

Name	Algae/aquatic plants	Fish	Toxicity to Microorganisms	Crustacea
Gasoline 86290-81-5	72-hr EC50 = 56 mg/l Algae	96-hr LC50 = 11 mg/l Rainbow trout (static)	-	48-hr LC50 = 7.6 mg/l Daphnia magna
Heptane (mixed isomers) 142-82-5	-	96-hr LC50 = 375 mg/L Tilapia	-	-
Pentane (mixed isomers) 78-78-4	-	96-hr LC50 = 3.1 mg/L Rainbow trout	-	48-hr EC50 = >1 - <10 mg/L Daphnia magna
Butane (mixed isomers) 106-97-8	-	-	-	-
Hexane Isomers (other than n-Hexane) 107-83-5	-	-	-	-
Toluene 108-88-3	72-hr EC50 = 12.5 mg/l Algae	96-hr LC50 <= 10 mg/l Rainbow trout	-	48-hr EC50 = 5.46-9.83 mg/l Daphnia magna 48-hr EC50 = 11.5 mg/l Daphnia magna (Static)
Xylene (mixed isomers) 1330-20-7	72-hr EC50 = 11 mg/l Algae	96-hr LC50 = 8 mg/l Rainbow trout	-	48-hr LC50 = 3.82 mg/l Daphnia magna
n-Hexane 110-54-3	-	96-hr LC50 = 2.5 mg/l Fathead minnow	-	-
Cumene 98-82-8	72-hr EC50 = 2.6 mg/l Algae	96-hr LC50 = 6.04-6.61 mg/l Fathead minnow (Flow-through) 96-hr LC50 = 2.7 mg/l Rainbow trout (semi-static)	-	48-hr EC50 = 7.9-14.1 mg/l Daphnia magna (static)
1,2,4 Trimethylbenzene 95-63-6	-	96-hr LC50 = 7.19-8.28 mg/l Fathead minnow (flow-through)	-	48-hr EC50 = 6.14 mg/L Daphnia magna
Ethylbenzene 100-41-4	72-hr EC50 = 1.7-7.6 mg/l Algae	96-hr LC50 = 4 mg/L Rainbow trout	-	48-hr EC50 = 1-4 mg/L Daphnia magna
Benzene 71-43-2	72-hr EC50 = 29 mg/l Algae	96-hr LC50 = 5.3 mg/l Rainbow trout (flow-through)	-	48-hr EC50 = 8.76-15.6 mg/l Daphnia magna (Static)
Cyclohexane 110-82-7	72-hr EC50 = 500 mg/l Algae	96-hr LC50 = 3.96-5.18 mg/l Fathead minnow	-	48-hr EC50 = 1.7-3.5 mg/L Bay shrimp
Octane 111-65-9	-	-	-	48-hr LC50 = 0.38 mg/l Daphnia magna
1,2,3-trimethylbenzene 526-73-8	-	96-hr LC50 = 7.72 mg/l Fathead Minnow (flow-through)	-	-
Naphthalene 91-20-3	-	96-hr LC50 = 0.91-2.82 mg/l Rainbow trout (static) 96-hr LC50 = 1.99 mg/l Fathead minnow (static)	-	48-hr LC50 = 1.6 mg/l Daphnia magna

Persistence and degradability Expected to be inherently biodegradable. The presence of ethanol in this product may impede the biodegradation of benzene, toluene, ethylbenzene and xylene in groundwater, resulting in elongated plumes of these constituents.

Bioaccumulation Has the potential to bioaccumulate.

Mobility in soil May partition into air, soil and water.

Other adverse effects No information available.

13. DISPOSAL CONSIDERATIONS

Description of Waste Residues
This material may be a flammable liquid waste.

Safe Handling of Wastes
Handle in accordance with applicable local, state, and federal regulations. Use personal protection measures as required. Use appropriate grounding and bonding practices. Use only non-sparking tools. Do not expose to heat, open flames, strong oxidizers or other sources of ignition. No smoking.

Disposal of Wastes / Methods of Disposal
The user is responsible for determining if any discarded material is a hazardous waste (40 CFR 262.11). Dispose of in accordance with federal, state and local regulations.

Methods of Contaminated Packaging Disposal
Empty containers should be completely drained and then discarded or recycled, if possible. Do not cut, drill, grind or weld on empty containers since explosive residues may be present. Dispose of in accordance with federal, state and local regulations.

14. TRANSPORT INFORMATION

DOT (49 CFR 172.101):

UN Proper Shipping Name:	Gasoline
UN/Identification No:	UN 1203
Transport Hazard Class(es):	3
Packing Group:	II

TDG (Canada):

UN Proper Shipping Name:	Gasoline
UN/Identification No:	UN 1203
Transport Hazard Class(es):	3
Packing Group:	II

15. REGULATORY INFORMATION

US Federal Regulatory Information:

US TSCA Chemical Inventory Section 8(b): This product and/or its components are listed on the TSCA Chemical Inventory.

EPA Superfund Amendment & Reauthorization Act (SARA):

SARA Section 302: This product does not contain any component(s) included on EPA's Extremely Hazardous Substance (EHS) List.

Name	CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs
Gasoline	NA
Heptane (mixed isomers)	NA
Pentane (mixed isomers)	NA
Butane (mixed isomers)	NA
Hexane Isomers (other than n-Hexane)	NA
Toluene	NA
Xylene (mixed isomers)	NA

n-Hexane	NA
Cumene	NA
1,2,4 Trimethylbenzene	NA
Ethylbenzene	NA
Benzene	NA
Cyclohexane	NA
Octane	NA
1,2,3-trimethylbenzene	NA
Naphthalene	NA

SARA Section 304: This product may contain component(s) identified either as an EHS or a CERCLA Hazardous substance which in case of a spill or release may be subject to SARA reporting requirements:

Name	Hazardous Substances RQs
Gasoline	NA
Heptane (mixed isomers)	NA
Pentane (mixed isomers)	NA
Butane (mixed isomers)	NA
Hexane Isomers (other than n-Hexane)	NA
Toluene	1000 lb final RQ 454 kg final RQ
Xylene (mixed isomers)	100 lb final RQ 45.4 kg final RQ
n-Hexane	5000 lb final RQ 2270 kg final RQ
Cumene	5000 lb final RQ 2270 kg final RQ
1,2,4 Trimethylbenzene	NA
Ethylbenzene	1000 lb final RQ 454 kg final RQ
Benzene	10 lb final RQ 4.54 kg final RQ
Cyclohexane	1000 lb final RQ 454 kg final RQ
Octane	NA
1,2,3-trimethylbenzene	NA
Naphthalene	100 lb final RQ 45.4 kg final RQ

SARA: The following EPA hazard categories apply to this product:

Acute Health Hazard
Chronic Health Hazard
Fire Hazard

SARA Section 313: This product may contain component(s), which if in exceedance of the de minimus threshold, may be subject to the reporting requirements of SARA Title III Section 313 Toxic Release Reporting (Form R).

Name	CERCLA/SARA 313 Emission reporting:
Gasoline	None
Heptane (mixed isomers)	None
Pentane (mixed isomers)	None
Butane (mixed isomers)	None
Hexane Isomers (other than n-Hexane)	None
Toluene	1.0 % de minimis concentration
Xylene (mixed isomers)	1.0 % de minimis concentration
n-Hexane	1.0 % de minimis concentration
Cumene	1.0 % de minimis concentration

1,2,4 Trimethylbenzene	1.0 % de minimis concentration
Ethylbenzene	0.1 % de minimis concentration
Benzene	0.1 % de minimis concentration
Cyclohexane	1.0 % de minimis concentration
Octane	None
1,2,3-trimethylbenzene	None
Naphthalene	0.1 % de minimis concentration

State and Community Right-To-Know Regulations:
The following component(s) of this material are identified on the regulatory lists below:

Gasoline

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 0957
Pennsylvania Right-To-Know:	Present
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Not Listed
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Carcinogen; Flammable - third degree
New Jersey - Environmental Hazardous Substances List:	SN 0957 TPQ: 10000 lb (Under N.J.A.C. 7:1G, environmental hazardous substances in mixtures such as gasoline or new and used petroleum oil may be reported under these categories)
Illinois - Toxic Air Contaminants:	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed

Heptane (mixed isomers)

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 1339
Pennsylvania Right-To-Know:	Present
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic; Flammable
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Flammable - third degree
New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants:	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed

Pentane (mixed isomers)

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 1064
Pennsylvania Right-To-Know:	Present
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Not Listed
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed

California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Flammable - fourth degree
New Jersey - Environmental Hazardous Substances List:	SN 1064 TPQ: 500 lb
Illinois - Toxic Air Contaminants:	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed

Butane (mixed isomers)

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 0273
Pennsylvania Right-To-Know:	Present
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic; Flammable
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Flammable - fourth degree
New Jersey - Environmental Hazardous Substances List:	SN 0273 TPQ: 500 lb
Illinois - Toxic Air Contaminants:	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed

Hexane Isomers (other than n-Hexane)

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 1285
Pennsylvania Right-To-Know:	Present
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Not Listed
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Flammable - third degree
New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants:	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed

Toluene

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Developmental toxicity, initial date 1/1/91 Female reproductive toxicity, initial date 8/7/09
New Jersey Right-To-Know:	SN 1866
Pennsylvania Right-To-Know:	Environmental hazard
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic (skin); Flammable (skin)
Michigan Critical Materials Register List:	100 lb Annual usage threshold
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed

New Jersey - Special Hazardous Substances:	Flammable - third degree; Teratogen
New Jersey - Environmental Hazardous Substances List:	SN 1866 TPQ: 500 lb
Illinois - Toxic Air Contaminants:	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	1000 lb RQ (air); 1 lb RQ (land/water)

Xylene (mixed isomers)

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 2014
Pennsylvania Right-To-Know:	Environmental hazard
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic (skin); Flammable (skin)
Michigan Critical Materials Register List:	100 lb Annual usage threshold all isomers
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Flammable - third degree
New Jersey - Environmental Hazardous Substances List:	SN 2014 TPQ: 500 lb
Illinois - Toxic Air Contaminants:	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	1000 lb RQ (air); 1 lb RQ (land/water)

n-Hexane

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 1340
Pennsylvania Right-To-Know:	Present
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic; Flammable
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Flammable - third degree
New Jersey - Environmental Hazardous Substances List:	SN 1340 TPQ: 500 lb
Illinois - Toxic Air Contaminants:	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	1 lb RQ (air); 1 lb RQ (land/water)

Cumene

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Carcinogen, initial date 4/6/10
New Jersey Right-To-Know:	SN 0542
Pennsylvania Right-To-Know:	Environmental hazard
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic (skin); Flammable (skin)
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Flammable - third degree
New Jersey - Environmental Hazardous Substances List:	SN 0542 TPQ: 500 lb
Illinois - Toxic Air Contaminants:	Present

New York - Reporting of Releases Part 597 - List of Hazardous Substances:	5000 lb RQ (air); 1 lb RQ (land/water)
1,2,4 Trimethylbenzene	
Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 1929
Pennsylvania Right-To-Know:	Present
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Not Listed
New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants:	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed
Ethylbenzene	
Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Carcinogen, initial date 6/11/04
New Jersey Right-To-Know:	SN 0851
Pennsylvania Right-To-Know:	Environmental hazard
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic; Flammable
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Carcinogen; flammable - Third degree
New Jersey - Environmental Hazardous Substances List:	SN 0851 TPQ: 500 lb
Illinois - Toxic Air Contaminants:	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	1000 lb RQ (air); 1 lb RQ (land/water)
Benzene	
Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Carcinogen, initial date 2/27/87 Developmental toxicity, initial date 12/26/97 Male reproductive toxicity, initial date 12/26/97
New Jersey Right-To-Know:	SN 0197
Pennsylvania Right-To-Know:	Environmental hazard; Special hazardous substance
Massachusetts Right-To Know:	Carcinogen; Extraordinarily hazardous
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic (skin); Flammable (skin); Carcinogen (skin)
Michigan Critical Materials Register List:	100 lb Annual usage threshold
Massachusetts Extraordinarily Hazardous Substances:	Carcinogen; Extraordinarily hazardous
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Present
New Jersey - Special Hazardous Substances:	Carcinogen; Flammable - third degree; Mutagen
New Jersey - Environmental Hazardous Substances List:	SN 0197 TPQ: 500 lb
Illinois - Toxic Air Contaminants:	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	10 lb RQ (air); 1 lb RQ (land/water)

Cyclohexane

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 0565
Pennsylvania Right-To-Know:	Environmental hazard
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic; Flammable
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Flammable - third degree
New Jersey - Environmental Hazardous Substances List:	SN 0565 TPQ: 500 lb
Illinois - Toxic Air Contaminants:	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	1000 lb RQ (air); 1 lb RQ (land/water)

Octane

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 1434
Pennsylvania Right-To-Know:	Present
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic; Flammable
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Flammable - third degree
New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants:	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed

1,2,3-trimethylbenzene

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 1929
Pennsylvania Right-To-Know:	Present
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Not Listed
New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants:	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed

Naphthalene

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Carcinogen, initial date 4/19/02
New Jersey Right-To-Know:	SN 1322 SN 3758

Pennsylvania Right-To-Know:	Environmental hazard Present (particulate)
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic; Flammable
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Carcinogen
New Jersey - Environmental Hazardous Substances List:	SN 1322 TPQ: 500 lb (Reportable at the de minimis quantity of >0.1%)
Illinois - Toxic Air Contaminants:	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	100 lb RQ (air); 1 lb RQ (land/water)

Canada DSL/NDSL Inventory: This product and/or its components are listed either on the Domestic Substances List (DSL) or are exempt.

Canadian Regulatory Information: This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the (M)SDS contains all the information required by the Controlled Products Regulations.

Name	Canada - WHMIS: Classifications of Substances:	Canada - WHMIS: Ingredient Disclosure:
Gasoline	B2,D2A,D2B	0.1%
Heptane (mixed isomers)	B2,D2B	1%
Pentane (mixed isomers)	B2	1%
Butane (mixed isomers)	A,B1	1%
Hexane Isomers (other than n-Hexane)	B2	1%
Toluene	B2,D2A,D2B	0.1%
Xylene (mixed isomers)	B2,D2A,D2B	m-, o-isomers 1.0%; p-isomer 0.1%
n-Hexane	B2,D2A,D2B	1%
Cumene	B2,D2A	0.1%
1,2,4 Trimethylbenzene	B3,D2B	1%
Ethylbenzene	B2,D2A,D2B	0.1%
Benzene	B2,D2A,D2B	0.1%
Cyclohexane	B2,D2B	1%
Octane	B2,D2B	1%
1,2,3-trimethylbenzene	B3	1%
Naphthalene	B4,D2A	0.1%

Note: Not applicable.

16. OTHER INFORMATION

Prepared By Toxicology and Product Safety

Revision Date: 06/01/2016

Revision Note:

Revised Sections

The following sections (§) have been updated:
1. IDENTIFICATION
2. HAZARD IDENTIFICATION
3. COMPOSITION/INFORMATION ON INGREDIENTS
4. FIRST AID MEASURES
6. ACCIDENTAL RELEASE MEASURES
7. HANDLING AND STORAGE
8. EXPOSURE CONTROLS/PERSONAL PROTECTION
9. PHYSICAL AND CHEMICAL PROPERTIES
11. TOXICOLOGICAL INFORMATION
12. ECOLOGICAL INFORMATION
15. REGULATORY INFORMATION

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is intended as guidance for safe handling, use, processing, storage, transportation, accidental release, clean-up and disposal and is not considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

SAFETY DATA SHEET

Version 3.17
Revision Date 06/02/2016
Print Date 05/18/2017

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name : Sodium hydroxide

Product Number : S8045
Brand : Sigma-Aldrich
Index-No. : 011-002-00-6

CAS-No. : 1310-73-2

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63103
USA

Telephone : +1 800-325-5832
Fax : +1 800-325-5052

1.4 Emergency telephone number

Emergency Phone # : +1-703-527-3887 (CHEMTREC)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Corrosive to metals (Category 1), H290
Skin corrosion (Category 1A), H314
Serious eye damage (Category 1), H318
Acute aquatic toxicity (Category 3), H402

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram

Signal word Danger

Hazard statement(s)
H290 May be corrosive to metals.
H314 Causes severe skin burns and eye damage.
H402 Harmful to aquatic life.

Precautionary statement(s)
P234 Keep only in original container.
P260 Do not breathe dust or mist.
P264 Wash skin thoroughly after handling.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face

	protection.
P301 + P330 + P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340 + P310	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.
P305 + P351 + P338 + P310	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.
P363	Wash contaminated clothing before reuse.
P390	Absorb spillage to prevent material damage.
P405	Store locked up.
P406	Store in corrosive resistant stainless steel container with a resistant inner liner.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Synonyms : Caustic soda

Formula : NaOH
Molecular weight : 40.00 g/mol
CAS-No. : 1310-73-2
EC-No. : 215-185-5
Index-No. : 011-002-00-6
Registration number : 01-2119457892-27-XXXX

Hazardous components

Component	Classification	Concentration
Sodium hydroxide		
	Met. Corr. 1; Skin Corr. 1A; Eye Dam. 1; Aquatic Acute 3; H290, H314, H318, H402	<= 100 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.Continue rinsing eyes during transport to hospital.

If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed

No data available

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
No data available

5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
No data available

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Wear respiratory protection. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.
For personal protection see section 8.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections
For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid formation of dust and aerosols.Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs.
Provide appropriate exhaust ventilation at places where dust is formed.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Keep container tightly closed in a dry and well-ventilated place.
Storage class (TRGS 510): Non-combustible, corrosive hazardous materials

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
Sodium hydroxide	1310-73-2	TWA	2.000000 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		C	2.000000 mg/m3	USA. ACGIH Threshold Limit Values (TLV)
	Remarks	Upper Respiratory Tract irritation Eye irritation Skin irritation		

		C	2 mg/m3	USA. ACGIH Threshold Limit Values (TLV)
		Upper Respiratory Tract irritation Eye irritation Skin irritation		
		C	2.000000 mg/m3	USA. NIOSH Recommended Exposure Limits
		C	2 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)

Derived No Effect Level (DNEL)

Application Area	Exposure routes	Health effect	Value
Workers	Inhalation	Long-term local effects	1 mg/m3
Consumers	Inhalation	Long-term local effects	1 mg/m3

8.2 Exposure controls

Appropriate engineering controls
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment

Eye/face protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection
Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: pellets Colour: white
b)	Odour	odourless
c)	Odour Threshold	No data available
d)	pH	14 at 50 g/l at 20 °C (68 °F)
e)	Melting point/freezing point	Melting point/range: 318 °C (604 °F)
f)	Initial boiling point and boiling range	1,390 °C (2,534 °F)
g)	Flash point	Not applicable
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	No data available
k)	Vapour pressure	< 24.00 hPa (< 18.00 mmHg) at 20 °C (68 °F) 4.00 hPa (3.00 mmHg) at 37 °C (99 °F)
l)	Vapour density	1.38 - (Air = 1.0)
m)	Relative density	2.1300 g/cm3
n)	Water solubility	ca.1,260 g/l at 20 °C (68 °F)
o)	Partition coefficient: n-octanol/water	No data available
p)	Auto-ignition temperature	No data available
q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	No data available

9.2 Other safety information

Bulk density	ca.1,150 kg/m3
Relative vapour density	1.38 - (Air = 1.0)

10. STABILITY AND REACTIVITY

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
No data available

10.5 Incompatible materials
Strong oxidizing agents, Strong acids, Organic materials

10.6 Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Sodium oxides
Other decomposition products - No data available
In the event of fire: see section 5

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
No data available

Inhalation: No data available

Dermal: No data available

No data available

Skin corrosion/irritation
Skin - Rabbit
Result: Causes severe burns. - 24 h

Serious eye damage/eye irritation
Eyes - Rabbit
Result: Corrosive - 24 h

Respiratory or skin sensitisation
Will not occur

Germ cell mutagenicity
No data available

Carcinogenicity

IARC:	No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
NTP:	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA:	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity
No data available

No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

Additional Information
RTECS: WB4900000

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to fish	LC50 - Gambusia affinis (Mosquito fish) - 125 mg/l - 96 h
	LC50 - Oncorhynchus mykiss (rainbow trout) - 45.4 mg/l - 96 h
Toxicity to daphnia and other aquatic	Immobilization EC50 - Daphnia (water flea) - 40.38 mg/l - 48 h

invertebrates

12.2 Persistence and degradability
The methods for determining the biological degradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Harmful to aquatic life.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product
Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
UN number: 1823 Class: 8 Packing group: II
Proper shipping name: Sodium hydroxide, solid
Reportable Quantity (RQ): 1000 lbs

Poison Inhalation Hazard: No

IMDG
UN number: 1823 Class: 8 Packing group: II EMS-No: F-A, S-B
Proper shipping name: SODIUM HYDROXIDE, SOLID

IATA
UN number: 1823 Class: 8 Packing group: II
Proper shipping name: Sodium hydroxide, solid

15. REGULATORY INFORMATION

SARA 302 Components
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
No SARA Hazards

Massachusetts Right To Know Components

	CAS-No.	Revision Date
Sodium hydroxide	1310-73-2	2007-03-01

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
Sodium hydroxide	1310-73-2	2007-03-01

New Jersey Right To Know Components

	CAS-No.	Revision Date
Sodium hydroxide	1310-73-2	2007-03-01

California Prop. 65 Components
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3.

Aquatic Acute	Acute aquatic toxicity
Eye Dam.	Serious eye damage
H290	May be corrosive to metals.
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.
H402	Harmful to aquatic life.
Met. Corr.	Corrosive to metals

HMIS Rating

Health hazard:	3
Chronic Health Hazard:	
Flammability:	0
Physical Hazard	0

NFPA Rating

Health hazard:	2
Fire Hazard:	0
Reactivity Hazard:	0

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

Preparation Information
Sigma-Aldrich Corporation
Product Safety – Americas Region
1-800-521-8956

Version: 3.17 Revision Date: 06/02/2016 Print Date: 05/18/2017

Appendix C

Field Forms

THIS FORM MUST BE ENTIRELY COMPLETED PRIOR TO BEGINNING ANY INTRUSIVE WORK

Project Name: Kent Superfund Site Start Date:

Project #: 30091602 End Date:

Utility markings valid for 15 days. Initiate clearance renewal 5 days prior to expiration for ongoing work

PRE-FIELD WORK REQUIREMENTS

DigSafe 811 notified 48-72 hrs. in advance of work? [ ] DigSafe Ticket #:

Ticket Expiration Date: State Utility Laws: www.commongroundalliance.com/map

Ticket(s) Attached(Y/N)? [ ] List utility owners notified via DigSafe 811 & response status:

List addt'l. utilities requiring notification not included in DigSafe811 Notice:

Review task details w/ private utility location subcontractor. ID work areas, clearance equipment needed, depth of clearance needed, types of features, utilities, anticipated/known/unknown. Verify DigSafe 811 markings to confirm public utility clearance.

Private Utility Locator Name, if used: AUS onsite meeting (Y/N)? [ ]

FIELD WORK REQUIREMENTS

This portion of the checklist must be completed on site. AUS staff must have a minimum of one year of field experience in identifying utilities to complete the checklist. Field staff will review the completed checklist with PM or designee prior to beginning intrusive work.

Heavy equipment/mechanized intrusive work w/in the Arcadis Tolerance Zone (utility or structure present within 30-in. of point of work) REQUIRES pre-approval by Corporate H&S prior to working at all such locations. STOP WORK if the Arcadis Tolerance Zone work has not been approved.

List work type & locations for utility location and clearance as applicable to this checklist:

3 Reliable Lines of Evidence are REQUIRED for EACH INTRUSIVE LOCATION prior to starting any subsurface intrusive work. Check corresponding boxes below to document utility clearance efforts.

[ ] OneCall/DigSafe 811 Public Utility Locate (required by State law for subsurface work)

811 is only reliable as a Line of Evidence when working in/adjacent to a public ROW or easement.

Marking type: [ ] Paint [ ] Pin Flags/Stakes [ ] Other: [ ] None

[ ] Client provided maps/drawings (Y/N)? [ ] Maps/drawings not provided (Y/N)?

[ ] Client Clearance (Y/N)? Name(s)/Affiliation(s):

[ ] Interviews (Y/N)? Name(s)/Affiliation(s):

[ ] Specific subsurface feature types and depths provided by person interviewed (Y/N)?

Details provided:

[ ] Site Inspected (Y/N)? (document on Pg. 2.) Photo Document Marked Utilities & Structures

[ ] Public records/Client Dwgs/As-Builts (Y/N)? Type:

List private locator tools used: [ ] Radio Freq. Detection [ ] Electromagnetic [ ] GPR

[ ] Metal Detector [ ] Acoustic Pipe Locator [ ] Downhole sonde Other:

[ ] Soft Dig Methods used (Y/N)? [ ] Hand auger [ ] Probing [ ] Hand tools (shovel/rake)

[ ] Air knife [ ] Hydro Knife [ ] Potholing/Vacuum extraction

[ ] Other soft dig tools used (Y/N)? If Yes, list here:

ALL BOXES BELOW MUST BE COMPLETED BEFORE PROCEEDING

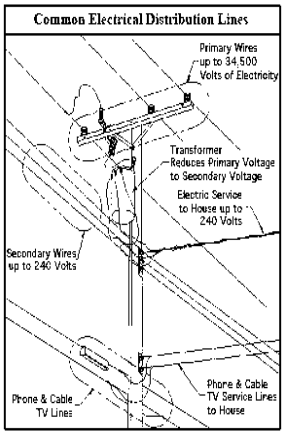
Site inspection also requires investigating vicinity outside of the work area for structures and utilities. Noting "YES" requires addt'l. investigation. Utilities must be field marked prior to intrusive work.

Is the utility present (Y/N)?		Utility Color Code
	Utilities entering/exiting structures?	**No Color**
	Intrusive work area marked out?	**White**
	Structural features above or below?	**White**
	Public natural gas line or meter?	**Yellow**
	Private natural gas laterals/feeders?	**Yellow**
	Public electrical service?	**Red**
	Conduit from meter or on wall?	**Red**
	Conduit from poles into ground?	**Red**
	Poles/devices w/ no visible lines?	**Red**
	Overhead electrical lines?	**Red**
	Solar arrays or wind turbines?	**Red**
	Public water line(s)?	**Blue**
	Private water line(s) or lateral(s)?	**Blue**
	Water meter onsite?	**Blue**
	Fire hydrants/post indicator valves?	**Blue**
	Irrigation system control box/valve?	**Blue**
	Sprinkler heads, drip lines, vaults?	**Blue**
	Water dispensers, fill stations?	**Blue**
	Telecomm. overhead or buried?	
	Telecomm. ground box or relays?	
	Telecomm./security CCTV devices?	
	Public sanitary sewer pipes?	**Green**
	Combined sanitary/storm pipes?	**Green**
	Private sanitary laterals/clean outs?	**Green**
	Restrooms, kitchens, wash bays?	**Green**

Is the utility present (Y/N)?		Utility Color Code
	Evidence of stormwater network?	**Green**
	Curb drains/catch basins/manholes?	**Green**
	Stormwater culverts, outfalls?	**Green**
	ABOVEGROUND Features Present?	
	Transportation tunnels/structures/markers present?	
	Overhead electrical lines?	**Red**
	< 50 kV w/in 10 ft of work area?	**Red**
	>50-200 kV w/in 15 ft of work area?	**Red**
	>200-350 kV w/in 20 ft of work area?	**Red**
	>350-500 kV w/in 25 ft of work area?	**Red**
	>500-750 kV w/in 35 ft of work area?	**Red**
	>750-1000 kV w/in 45 ft of work area?	**Red**
	Aboveground fire suppression?	**Blue**
	Aboveground communications?	
	Aboveground chases/racks/trays?	
	Private/Remediation system lines?	**Various**
	Unclassed utilities/anomalies?	
	Warning signs/stakes/markers present?	
	Heavy Equipment: Mark travel route for overhead, next to route, and/or under route (e.g. crush risk) utilities.	
	Signs of other utilities/ground disturbance	
	Signs of asphalt or concrete disturbance/repair?	
	Any ground subsidence or change in vegetation?	
	Unknown manholes or valve covers in work area?	

Tips for Thorough Utility Location (HSS Section 5.6):

1. Don't forget to look up for utilities
2. Be on-site with Private Utility Locators.
3. Ask Private Locators to "confirm" other's markings.
4. Also clear alternate/backup locations
5. Mark all known utilities.
6. No hammering, no pickaxes, no digging bars, no shortcutting.
7. No excessive turning or downward force of hand tools, especially hand augers.
8. Utilities may run in or directly under asphalt/concrete
9. Heavy equipment may damage shallow utilities. Especially during clearing and grubbing.
10. Use spotter for heavy equipment near aboveground utilities?



☐ Utilities & Structures Checklist reviewed by the PM or Designee (Y/N)? *If no, STOP WORK call PM*

PM or Designee Name: _____

Name and Signature of person completing the checklist: _____

Date of checklist review / update: _____

ALL SUSPECT UTILITY STRIKES REQUIRE CORPORATE H&S NOTIFICATION WITHIN 24 hrs. OF KNOWLEDGE OF STRIKE WITH A CONFIRMED RESPONSE FROM CORPORATE H&S.

AUS Personal Protective Equipment List by Business Line

This matrix outlines **basic** PPE requirements for each Business Line. **Specific client, task, or regulatory requirements may dictate the type of PPE beyond what is listed in this matrix.** Additionally, task specific PPE requirements may also be included in the HASP or JSA. Hazard/task specific PPE or emergency supply recommendations are outlined by hazard/task in the Field H&S Handbook. PPE and equipment should be charged to the project. For any supplies that the PM determines cannot be billed, the equipment should be charged to the employee's overhead charge number. PPE associated with specialized training such as NFPA 70E Arc Flash is not included in this matrix. Refer to the specific training program for a description of the necessary PPE for tasks involving such requirements.

Hard Hat	R	R	R	R
Reflective Traffic Vest (Minimum Class 2)	R	R	R	R
Safety Glasses - Clear and Tinted	R	R	R	R
ANSI Compliant Safety - Toe Boots	R	R	R	R
Hearing Protection - Ear plugs (Need for ear muffs TBD)	R	R	R	R
Leather gloves and glove clip	R	R	R	R
Small first aid kit	R	R	R	O
16 oz. bottle of Eye Wash	R	R	R	O
Tick Remover (fine tip tweezers) (See THA for high risk locations)	O	O	O	O
PPE duffel bag with logo, or equivalent	O	O	O	O
Half Face or Full-Face Respirator [3] (See THA)	O [3]	O [3]	O [3]	O [3]
Insect Repellent (See THA.) (Recommended 20-30% DEET)	O	O	O	O
Sunscreen	O	O	O	O
Hand sanitizer	O	O	O	O
Cut Resistant or Chemical Resistant Gloves [4]	O	O	O	O
Poison Ivy pre-exposure wipes or post exposure cleanser (i.e., Tecnu or Zanfel) (see THA for high risk locations)	O	O	O	O
Other specialized protective equipment (See THA for Work Tasks)	O	O	O	O
Outdoor wilderness survival kit [5]	O	O	O	O

Notes:

R - Required

O - Optional. Based on HASP Task Hazard Analysis (THA) or geographic location of work.

THA - Task Hazard Analysis.
Review the HASP Task Hazard Analysis (THA) in making this determination. Certain specific factors can influence the determination for requiring this PPE for the site or task. For example, certain geographic regions may have a higher incidence of the hazard or associated risk, the proximity of the site relative to emergency services may require such, previous observations of the hazard at the site, or where unknown hazard conditions apply. Modifications to the minimum required PPE are required to be communicated via the HASP and/or JSA.

1. The Business Line Director, Operations Manager, Project Manager, or Employee Supervisor is responsible for making the decision to provide Arcadis branded shirts to employees. Billing of such shirts is related to the authority level of the decision maker.

2. For project sites with an office/trailer, first aid/emergency response supplies can be kept in a central location, and may not be required to be carried by each Arcadis employee.

3. Staff must comply with the Arcadis Respiratory Protection H&S Standard before a respirator can be worn. The H&S Standard is available on the H&S Team webpage via the H&S Standards Library link.

<u>Arcadis Standards</u>

4. Determination for use of cut resistant, chemical resistant gloves or other specialized hand protection are to be based on THA in the project HASP.

5. Outdoor survival kits are generally required when working in remote wilderness locations. See the HASP THA and the Field H&S Handbook for requirements and supply list.

Task Improvement Process

Observed Company:
Observation Type:
TIP Form: H&S Field Multi-Task (General)
Task Observed:
Observee Name:
Observer Name:
Observation Date:
Project Number: 30091602
Project Name: Kent Superfund Site
Supervisor:
Equipment On Site:
Pertinent Information:

Task	Correct	Questionable	Comments
General			
PPE worn according to HASP/JLA specifications and inspected before use?			
STOP work authority used where appropriate?			
Body Use/Positioning			
Proper lifting/pushing/pulling techniques used (no awkward positions/posture; no twisting or excessive reaching; no straining; no excessive weight; load under control/stable; etc.)?			
Body parts away from pinch points (clear or protected from being caught between objects/equipment or from contacting sharp objects/edges, etc.)?			
Body parts not in the Line of Fire (protected from being struck by traffic, equipment, falling/flying objects, etc.)?			
Work Procedures/Environment			
Correct type and number of barricades/warning devices/cones?			

Communication with others when necessary (hand signals, flags, etc.)?			
Right tools and equipment selected for the job and inspected before use?			
Tools and equipment used properly?			
Housekeeping performed (work areas and pathways clear of hazards, uneven surfaces addressed, etc.)?			
Slip/trip/fall hazards addressed (path selected and cleared, eyes on path, speed footing, etc.)?			
Proper energy control (electrical systems grounded, lock out/tag out performed, isolated, cords/fixtures in good condition, GFCI inspected and utilized when appropriate and used properly, etc.)?			
Protected from overhead/underground utilities (proper clearance, properly marked, spotters as necessary, etc.)?			
Safe work on/near water (appropriate flotation device, appropriate boat for body of water and operation of boat, etc.)?			
Chemical/Radiation protection (decontamination zones set up properly, air monitoring, completed, and logged, etc.)?			
Fall from elevated height prevention (maintains 3-points of contact, appropriate ladder, mounting/dismounting vehicle/equipment, fall arrest system, etc.)?			
Any additional safety issues identified:			

Discussion following the TIP led by: _____

Date of follow-up discussion: _____

Positive Comments:

Discussion Summary Completed:

- ☐ Supervisor Led
- ☐ Peer to Peer
- ☐ Arcadis Employee to Subcontractor

Summary of Questionable Items

Item #	Action Item	Responsible Person	Due Date	Comp. Date
1				
2				
3				

Reviews to be performed after entry of this TIP into 4-Sight.

Quality Reviews to be performed after entry of this TIP into 4-Sight.

Use the 4-Sight generated copy of this TIP to perform field V&V activities.

Air Monitoring Documentation Form

ARCADIS Design & Consultancy for natural and built assets

PID Model: ____________________ Monitor Frequency: ____________________

LEL/O_2 Model: ____________________

CIT Model: ____________________

Dust Mon. Model: ____________________

Air Monitoring Results

Date	Time	PID (units)	O_2 (%)	LEL (% LEL)	CIT (ppm)	Dusts (mg/m^3)	Location

CIT = Colorimetric Indicator Tube
LEL = Lower Explosive Limit
mg/m3 = Milligram per cubic meter
O2 = Oxygen
ppm = Part per million
% = Percent
PID = Photoionization Detector

Air Monitoring Calibration Log

Zero Gas Source:	____________	Instrument Type:	____________	PAGE ____ of ____
Lot Number/Expiration Date:	____________	Serial Number:	____________	
Calibration Gas Source:	____________	Instrument Type:	____________	
Lot Number/Expiration Date:	____________	Serial Number:	____________	
Concentration:	____________		____________	

Instrument Number	Date	Time	Zero Cal. OK (Y/N)	Calibration Gas Reading	Comments	Calibration w/in 2% (Y/N)?	Alarms Set (Yes/No)?	User Initials

Arcadis Weekly Vehicle Inspection Form

Vehicle # / License Plate # | **Lease Plan # / Last 6 of Vin #**

	Inspection Date												
	Odometer reading												
	Driver / Inspector Name												
	Check the appropriate box and enter repair date for identified repairs:	OK	Needs Repair	Repair Date	OK	Needs Repair	Repair Date	OK	Needs Repair	Repair Date	OK	Needs Repair	Repair Date
Interior	Horn operational												
	Door Locks operational												
	Seat Belts in good repair												
	Seats and Seating Controls												
	Steering Wheel - No Excessive Play												
	Interior Lights and Light Controls												
	Instrument Panel/Gauges												
	Wiper Controls operational												
	Heat/Defrost/Air Conditioning working												
	Rear View Mirror present												
	Backup Camera/Sensors working												
	Jack and Lug Wrench present												
Exterior[1]	Lights and Signals operational												
	ires properly inflated/good tread depth												
	Spare Tire properly inflated												
	Doors operational												
	Windows Not Cracked/Damaged												
	Side View Mirrors												
	Body Panels and Bumpers												
Engine & Brakes	Engine Start & Running Smoothly												
	Fluid Levels, No Noticeable Leaks												
	Belts tight, no cracks												
	Brakes operational, no squeaking												
Emergency Equipment[2]	First Aid Kit, inspected weekly												
	Fire Extinguisher properly secured												
	Fire Extinguisher inspected weekly												
	range/Yellow emergency warning light												
	Roadside Assistance Information												
	Recommend spotter cones available												
Cargo	Cargo Secure and Properly Distributed												
	Securing Devices in Good Condition												
Registration	License Plate /Tags												
	Registration and Insurance												
	City/State Inspection Decal												
	Lease Plan information/Fuel Card												

[1] **Note all damages to the vehicle on the back of this page**

[2] **Emergency Equipment required per Motor Vehicle Standard ARC HSGE024**

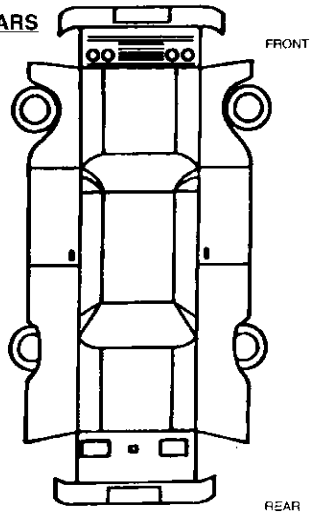
Note All Vehicle Damage Below

All Vehicle Damage must be reported to Sue Berndt (Corporate Legal), Andrew McDonald (Corporate H&S), and Roger Elliot (Corporate Fleet Manger)

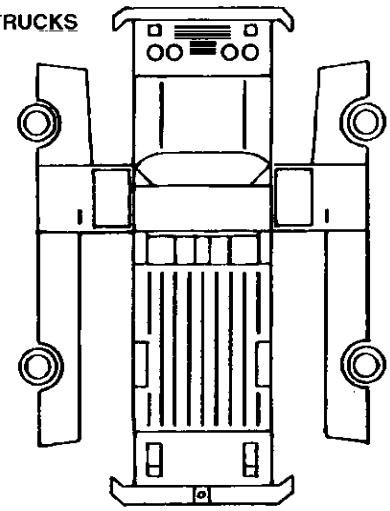
CODES:

B-BENT
BR-BROKEN
BU-BULGE
C-CHAFED
CH-CHIPPED
CPM-COVERED WITH PROTECTIVE MATERIAL-UNABLE TO DETERMINE DEFECTS IF ANY
CSA-CHAFED AND SCRATCHED ALL OVER
CR-CRACKED
D-DENTED
DMC-DUST AND MUD COVERED UNABLE TO DETERMINE OTHER DEFECTS IF ANY
G-GOUGED OR CUT
GC-GLASS CRACKED
HS-HAIRLINE SCRATCH
M-MISSING
P-PUNCTURED
R-RUSTY
S-SCRATCHED
SC-SCRAPED
SM-SMASHED
ST-STAINED AND/OR SOILED
T-TORN

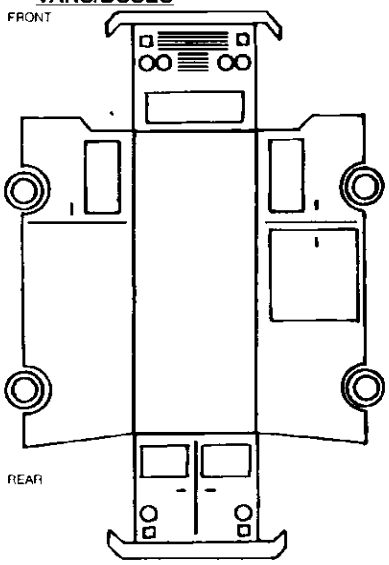
CARS



TRUCKS



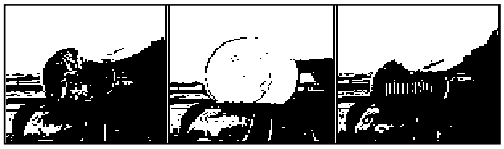
VANS/BUSES



-INDICATE ON DIAGRAM-
-GIVE DIMENSIONS-
-CIRCLE WHERE APPLICABLE-

Notes:

Tread guide: If a tread gauge is not available coins may be used to determine remaining tread. 2/32” is the minimum by law in most states (top of Lincoln’s head on penny), 4/32” is minimum recommended for wet surfaces (top of Washington’s head on quarter), 6/32” is minimum recommended for snowy surfaces (top of Lincoln Memorial on penny).Vehicle tires should be replaced if the tread depth is less than 6/32”.



2/32” remaining 4/32” remaining 6/32” remaining

Reference JSA 10907 For Weekly Vehicle Inspection

Control Number: TSM- 30091602

TSM + project number plus date as follows: xxxxxxxx.xxxx.xxxxx - dd/mm/year

TAILGATE HEALTH & SAFETY MEETING FORM

Project Name:			**Project Location:**
Date:	**Time:**	**Conducted by:**	**Signature/Title:**

Issues or concerns from previous day's activities:

Task anticipated to be performed today:

☐ Additional permits/checklists attached

USE TRACK! Evaluate the hazards (h) for the tasks being performed today and rank as Low (L), Medium (M) or High (H). Use relevant JSAs, FHSHB, permit or other work standard to communicate controls (c) to be used to eliminate or mitigate identified hazards.

☐ Gravity (i.e., ladder, trips) (L M H) h: c:	☐ Motion (i.e., traffic, machinery) (L M H) h: c:	☐ Mechanical (i.e., augers, motors) (L M H) h: c:
☐ Electrical (i.e., utilities) (L M H) h: c:	☐ Pressure (i.e., gas cyl., wells) (L M H) h: c:	☐ Environment (i.e., heat, cold) (L M H) h: c:
☐ Chemical (i.e., fuel, acid, paint) (L M H) h: c:	☐ Biological (i.e., ticks, poison ivy) (L M H) h: c:	☐ Radiation (i.e., alpha, sun, laser) (L M H) h: c:
☐ Sound (i.e., machinery) (L M H) h: c:	☐ Personal (i.e. alone, night) (L M H) h: c:	☐ Driving (i.e. car, ATV, boat) (L M H) h: c:

☐ Refer to the attached Hazard Analysis Sheet(s) or JSA

Comments:

Signature and Certification: I have read and understand the project specific HASP for this project.

SSE Employee*	Printed Name/Signature/Company	Sign In Time	Sign Out Time

***Short Service Employee (SSE) working for Arcadis <1 year.**

I will STOP the job any time anyone is concerned or uncertain about health & safety or if anyone identifies a hazard or additional mitigation not recorded in the site, project, job or task hazard assessment.

I will be alert to any changes in personnel, conditions at the work site or hazards not covered by the original hazard assessments.

If it is necessary to **STOP THE JOB,** I will perform **TRACK**; and then amend the hazard assessments or the HASP as needed.

I will not assist a subcontractor or other party with their work unless it is absolutely necessary and then only after I have done TRACK and I have thoroughly controlled the hazard.

All site staff should arrive fit for work. If not, they should report to the supervisor any restrictions or concerns.

In the event of an injury, employees will call **WorkCare at 1.888.449-7787** and then notify the field supervisor.

Utility strike, motor vehicle accident or 3rd party property damage - field supervisor will immediately notify the Project or Task Manager

Signatures

I have read, understand and agree to abide by the requirements presented in this health and safety plan. I understand that I have the absolute right to stop work if I recognize an unsafe condition affecting my work until corrected.

Printed Name	Signature	Date

Add additional sheets if necessary

You have an absolute right to STOP WORK if unsafe conditions exist!

Appendix D

Shipping Determination

SHIPPING/TRANSPORTATION DETERMINATION FORM Revision 13c

Regulated Material Shipping Determination for Non-Bulk and Bulk Consignments

Date:	6/4/2021
Project Name:	Kent Superfund Site
Project Number:	30091602
Supplemental Information:	Analytical data (attached)

1) Description of the Material to be Transported or Shipped

1a	Select a description category ===>	Samples
1b	*Soil/sludge/sediment with high concentrations of metals*	
1c	Arsenic	

X This material is mixed with water, soil or other inert material

X This material will be shipped on wet or blue ice

Consignment contains dry ice

Consignment contains containers with acid/base preservatives prepared by an analytical laboratory. Leave this box unchecked

AIR shipping is required

2) Classification and Identification

2a This material is: Hazardous Material

Complete sections 2b and 2c below

Complete for Hazardous Materials ONLY:

2b UN/NA/ID# : UN1558 2c PG: II Primary Hazard Class: 6.1

Subsidiary Hazard Class: NA NA

PSN: Arsenic, Mixture

See Section 7a

2d This material is a: No additional criteria applies to this material

3) Packaging, Exceptions and Shipping Information

3a Packaging Type: Combination Package - Non-Bulk

3b Inner Container Category: Glass receptacles

3c Number and Quantity:

	Number	Container type		**Net Qty. Each Container**		
Largest Container Type =>	20	8 oz	Glass	0.355	kg	<= Select units here
Container type #2	0	None	Glass		None	
Container type #3	0	None	None		None	
Container type #4	0	None	None		None	
Container type #5	0	None	None		None	
Container type #6	0	None	None		None	

TIP: Do not place units in the white column. Place the largest container in bottle set in row #1.

3d Intermediate Packaging: Plastic bag/liner

3e Outer Packaging: SAMPLE COOLER (Non-specification box- plastic)

3f Other: None Type: None

AIR shipping is required

Your suggested shipping configuration (**excluding MOT**): DOT Road Fully Regulated

This material will be shipped (mode of transport and type of shipment):

3g Road using a DOT exception

If using an exception/exemption, list the exception/exemption below

3h DOT Limited Quantity

Carrier/Transporter information:

3i Arcadis or Lab Courier Transport

3j Auth. Air Limits for EQ, LQ and Fully Reg. Shipments and Selected Ground LQ and SQE:

Inner Container Limit (NA- Not Applicable; F- Forbidden; mg, g, or kg for solids; ml or L for liquids):

Glass	100/0.5	ml/kg	Plastic Bag	NA	NA	Outer Package Limit	
Metal	100/0.5	ml/kg	Paper Bag	NA	NA	66 lbsG	NA
Plastic	100/0.5	ml/kg	Fibre	NA	NA		
	Limit QC is disabled for this shipment		Total net volume/mass:			7.1	L/Kg

Arcadis Shipping Guide US-001 attached
Specific package closure instructions are attached
Arcadis Shipping Guide or HSSP is available for this shipment: NA

4) Marks, Labels and/or Placards Required

Orientation arrows, if shown, may be red or black in color.

Place all marks and labels checked in this section on same side of package (excludes orientation arrows, if shown).

5) Documentation

No special documentation required
Requires a Shipper's Declaration (air) prepared using : None
Requires HazMat ground shipping papers prepared using: None
Requires a Bill of Lading or Manifest (>MOT, Freight,Trucking Co., Waste Hauler, etc.)
Requires Special Permit DOT-Special Permit #:
Other:

6) Emergency Response

Use ChemTel 24/7 Emergency Phone and Contract Number
or approved equivalent (authorized client or vendor) for this shipment:
1-800-255-3924 (ChemTel #MIS0007883) Register this shipment with ChemTel:
Have carrier tracking number available. http://Arcadis.chemtel.net/
Ensure current edition of Emergency Response Guidebook in vehicle (this applies to Arcadis Transport requiring a shipping paper)

7) Special Instructions (Specify any "See Section 7" details in 7a)

Gross package weight must not exceed 66 pounds.

7a

8) References and Rationale for the Determination (add additional sheets, if required).

DOT §172.101 DOT §173.153	NA
DOT Special Provisions:	IB8, IP2, IP4, T3, TP33

8a Assuming a 8-ounce sample jar, the highest concentration of arsenic accepted under the Excepted Quantity Inner Container Limit (which is 0.001 kg arsenic per container) is 2,800 ppm (assuming a soil density of 1.5 g/cm^3). Based on the attached surface soil sample map, arsenic concentractions in the ROW along the road are typically between 6 ppm and 159 ppm. Although, there are arsenic concentrations in surface soil in the general area at concentrations greater than 2,800 ppm, these locations are in heavily vegetated and wooded areas set much further back from the road. Soil in the ROW is not expected to have the same composition or geology as those locations in heavily vegetated areas because it would be include road subbase material and run-off from traffic.

769	Rationale must be at least 200 characters (including spaces)
X	See attached for rationale (IF CHECKED, DETERMINATION IS VOID IF RATIONALE NOT ATTACHED)

9) Signatures

Determination performed by: Dan Zuck

Phone (XXX-XXX-XXXX): 315-671-9152

Determination QA/QC performed by:

May be signed by any currently trained HazMat #1 employee.

Arcadis of New York, Inc.
One Lincoln Center, 110 West Fayette Street, Suite 300
Syracuse
New York 13202
Phone: 315 446 9120
Fax: 315 449 0017
www.arcadis.com

Appendix B

NYSDOH Generic Community Air Monitoring Plan

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 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.

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^{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.

Appendix C

Laboratory Analytical Reports for Pre-Characterization Soil Samples

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Arcadis

Kent Superfund Site, Kent, NY

SGS Job Number: JD26317

Sampling Date: 06/08/21

Report to:

Arcadis U.S.
1 Lincoln Center,110 West Fayette Street Suite 300
Syracuse, NY 13202
Lawrence.healy@Arcadis.com

ATTN: Lawrence Healy

Total number of pages in report: 64

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Caitlin Brice, M.S.
General Manager

Client Service contact: Kelly Ramos 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

Table of Contents

SGS North America Inc.

Sample Summary

Arcadis

Job No: JD26317

Kent Superfund Site, Kent, NY

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
JD26317-1	06/08/21	09:22	EG	06/10/21	SO	Soil	2314
JD26317-2	06/08/21	09:28	EG	06/10/21	SO	Soil	2314-A
JD26317-3	06/08/21	09:40	EG	06/10/21	SO	Soil	2315
JD26317-4	06/08/21	09:45	EG	06/10/21	SO	Soil	2315-A
JD26317-5	06/08/21	09:57	EG	06/10/21	SO	Soil	23155
JD26317-6	06/08/21	10:05	EG	06/10/21	SO	Soil	23155-A
JD26317-7	06/08/21	10:12	EG	06/10/21	SO	Soil	2316
JD26317-8	06/08/21	10:15	EG	06/10/21	SO	Soil	2316-A
JD26317-9	06/08/21	10:25	EG	06/10/21	SO	Soil	2316-1
JD26317-10	06/08/21	10:28	EG	06/10/21	SO	Soil	2316-1-A
JD26317-11	06/08/21	11:05	EG	06/10/21	SO	Soil	2317
JD26317-12	06/08/21	11:10	EG	06/10/21	SO	Soil	2317-A
JD26317-13	06/08/21	10:55	EG	06/10/21	SO	Soil	2317-1

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

Sample Summary
(continued)

Arcadis

Job No: JD26317

Kent Superfund Site, Kent, NY

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
JD26317-14	06/08/21	10:58	EG	06/10/21	SO	Soil	2317-1-A
JD26317-15	06/08/21	11:25	EG	06/10/21	SO	Soil	2318
JD26317-16	06/08/21	11:28	EG	06/10/21	SO	Soil	2318-A
JD26317-17	06/08/21	11:40	EG	06/10/21	SO	Soil	2319
JD26317-18	06/08/21	11:45	EG	06/10/21	SO	Soil	2319-A
JD26317-19	06/08/21	11:55	EG	06/10/21	SO	Soil	2320
JD26317-20	06/08/21	12:05	EG	06/10/21	SO	Soil	2321
JD26317-21	06/08/21	12:10	EG	06/10/21	SO	Soil	2321-A
JD26317-22	06/08/21	12:15	EG	06/10/21	SO	Soil	2322
JD26317-23	06/08/21	12:20	EG	06/10/21	SO	Soil	2322-1
JD26317-24	06/08/21	12:25	EG	06/10/21	SO	Soil	2322-1-A
JD26317-25	06/08/21	12:45	EG	06/10/21	SO	Soil	2323
JD26317-26	06/08/21	12:50	EG	06/10/21	SO	Soil	2324

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

Sample Summary
(continued)

Arcadis

Job No: JD26317

Kent Superfund Site, Kent, NY

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
JD26317-27	06/08/21	12:58	EG	06/10/21	SO	Soil	2324-A
JD26317-28	06/08/21	13:00	EG	06/10/21	SO	Soil	2325

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

Summary of Hits

Job Number: JD26317
Account: Arcadis
Project: Kent Superfund Site, Kent, NY
Collected: 06/08/21

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JD26317-1	**2314**					
No hits reported in this sample.						
JD26317-2	**2314-A**					
No hits reported in this sample.						
JD26317-3	**2315**					
No hits reported in this sample.						
JD26317-4	**2315-A**					
Arsenic		0.56	0.50		mg/l	SW846 6010D
JD26317-5	**23155**					
No hits reported in this sample.						
JD26317-6	**23155-A**					
No hits reported in this sample.						
JD26317-7	**2316**					
No hits reported in this sample.						
JD26317-8	**2316-A**					
No hits reported in this sample.						
JD26317-9	**2316-1**					
No hits reported in this sample.						
JD26317-10	**2316-1-A**					
No hits reported in this sample.						
JD26317-11	**2317**					
No hits reported in this sample.						

Summary of Hits

Job Number: JD26317
Account: Arcadis
Project: Kent Superfund Site, Kent, NY
Collected: 06/08/21

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JD26317-12	**2317-A**					
No hits reported in this sample.						
JD26317-13	**2317-1**					
No hits reported in this sample.						
JD26317-14	**2317-1-A**					
No hits reported in this sample.						
JD26317-15	**2318**					
No hits reported in this sample.						
JD26317-16	**2318-A**					
No hits reported in this sample.						
JD26317-17	**2319**					
No hits reported in this sample.						
JD26317-18	**2319-A**					
No hits reported in this sample.						
JD26317-19	**2320**					
No hits reported in this sample.						
JD26317-20	**2321**					
No hits reported in this sample.						
JD26317-21	**2321-A**					
No hits reported in this sample.						
JD26317-22	**2322**					
No hits reported in this sample.						

Summary of Hits

Job Number: JD26317
Account: Arcadis
Project: Kent Superfund Site, Kent, NY
Collected: 06/08/21

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JD26317-23	**2322-1**					
No hits reported in this sample.						
JD26317-24	**2322-1-A**					
No hits reported in this sample.						
JD26317-25	**2323**					
No hits reported in this sample.						
JD26317-26	**2324**					
No hits reported in this sample.						
JD26317-27	**2324-A**					
No hits reported in this sample.						
JD26317-28	**2325**					
No hits reported in this sample.						

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	2314		
Lab Sample ID:	JD26317-1	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	n/a
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	< 0.50	D004	5.0	0.50	mg/l	5	06/11/21	06/11/21	ND	SW846 6010D [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA50676
(2) Prep QC Batch: MP26937

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 7/1/11)

Report of Analysis

Client Sample ID:	2314-A		
Lab Sample ID:	JD26317-2	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	n/a
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	< 0.50	D004	5.0	0.50	mg/l	5	06/11/21	06/11/21	ND	SW846 6010D [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA50676
(2) Prep QC Batch: MP26937

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 7/1/11)

Report of Analysis

Client Sample ID:	2315		
Lab Sample ID:	JD26317-3	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	n/a
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	< 0.50	D004	5.0	0.50	mg/l	5	06/11/21	06/11/21	ND	SW846 6010D [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA50676
(2) Prep QC Batch: MP26937

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 7/1/11)

Report of Analysis

Client Sample ID:	2315-A		
Lab Sample ID:	JD26317-4	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	n/a
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	0.56	D004	5.0	0.50	mg/l	5	06/11/21	06/11/21	ND	SW846 6010D [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA50676
(2) Prep QC Batch: MP26937

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 7/1/11)

Report of Analysis

Client Sample ID:	23155		
Lab Sample ID:	JD26317-5	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	n/a
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	< 0.50	D004	5.0	0.50	mg/l	5	06/11/21	06/11/21	ND	SW846 6010D [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA50676
(2) Prep QC Batch: MP26937

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 7/1/11)

Report of Analysis

Client Sample ID:	23155-A		
Lab Sample ID:	JD26317-6	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	n/a
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	< 0.50	D004	5.0	0.50	mg/l	5	06/11/21	06/11/21	ND	SW846 6010D [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA50676
(2) Prep QC Batch: MP26937

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 7/1/11)

Report of Analysis

Client Sample ID:	2316		
Lab Sample ID:	JD26317-7	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	n/a
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	< 0.50	D004	5.0	0.50	mg/l	5	06/11/21	06/11/21	ND	SW846 6010D [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA50676
(2) Prep QC Batch: MP26937

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 7/1/11)

Report of Analysis

Client Sample ID:	2316-A		
Lab Sample ID:	JD26317-8	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	n/a
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	< 0.50	D004	5.0	0.50	mg/l	5	06/11/21	06/11/21	ND	SW846 6010D [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA50676
(2) Prep QC Batch: MP26937

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 7/1/11)

Report of Analysis

Client Sample ID:	2316-1		
Lab Sample ID:	JD26317-9	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	n/a
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	< 0.50	D004	5.0	0.50	mg/l	5	06/11/21	06/11/21	ND	SW846 6010D [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA50676
(2) Prep QC Batch: MP26937

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 7/1/11)

Report of Analysis

Client Sample ID:	2316-1-A		
Lab Sample ID:	JD26317-10	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	n/a
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	< 0.50	D004	5.0	0.50	mg/l	5	06/11/21	06/11/21	ND	SW846 6010D [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA50676
(2) Prep QC Batch: MP26937

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 7/1/11)

Report of Analysis

Client Sample ID:	2317		
Lab Sample ID:	JD26317-11	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	n/a
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	< 0.50	D004	5.0	0.50	mg/l	5	06/11/21	06/11/21	ND	SW846 6010D [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA50676
(2) Prep QC Batch: MP26937

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 7/1/11)

Report of Analysis

Client Sample ID:	2317-A		
Lab Sample ID:	JD26317-12	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	n/a
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	< 0.50	D004	5.0	0.50	mg/l	5	06/11/21	06/11/21	ND	SW846 6010D [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA50676
(2) Prep QC Batch: MP26937

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 7/1/11)

Report of Analysis

Client Sample ID:	2317-1		
Lab Sample ID:	JD26317-13	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	n/a
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	< 0.50	D004	5.0	0.50	mg/l	5	06/11/21	06/11/21	ND	SW846 6010D [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA50676
(2) Prep QC Batch: MP26937

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 7/1/11)

Report of Analysis

Client Sample ID:	2317-1-A		
Lab Sample ID:	JD26317-14	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	n/a
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	< 0.50	D004	5.0	0.50	mg/l	5	06/11/21	06/11/21	ND	SW846 6010D [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA50676
(2) Prep QC Batch: MP26937

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 7/1/11)

Report of Analysis

Client Sample ID:	2318		
Lab Sample ID:	JD26317-15	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	n/a
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	< 0.50	D004	5.0	0.50	mg/l	5	06/11/21	06/11/21	ND	SW846 6010D [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA50676
(2) Prep QC Batch: MP26941

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 7/1/11)

Report of Analysis

Client Sample ID:	2318-A		
Lab Sample ID:	JD26317-16	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	n/a
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	< 0.50	D004	5.0	0.50	mg/l	5	06/11/21	06/11/21	ND	SW846 6010D [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA50676
(2) Prep QC Batch: MP26941

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 7/1/11)

Report of Analysis

Client Sample ID:	2319		
Lab Sample ID:	JD26317-17	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	n/a
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	< 0.50	D004	5.0	0.50	mg/l	5	06/11/21	06/11/21	ND	SW846 6010D [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA50676
(2) Prep QC Batch: MP26941

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 7/1/11)

Report of Analysis

Client Sample ID:	2319-A		
Lab Sample ID:	JD26317-18	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	n/a
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	< 0.50	D004	5.0	0.50	mg/l	5	06/11/21	06/11/21	ND	SW846 6010D [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA50676
(2) Prep QC Batch: MP26941

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 7/1/11)

Report of Analysis

Client Sample ID:	2320		
Lab Sample ID:	JD26317-19	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	n/a
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	< 0.50	D004	5.0	0.50	mg/l	5	06/11/21	06/11/21	ND	SW846 6010D [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA50676
(2) Prep QC Batch: MP26941

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 7/1/11)

Report of Analysis

Client Sample ID:	2321		
Lab Sample ID:	JD26317-20	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	n/a
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	< 0.50	D004	5.0	0.50	mg/l	5	06/11/21	06/11/21	ND	SW846 6010D [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA50676
(2) Prep QC Batch: MP26941

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 7/1/11)

Report of Analysis

Client Sample ID:	2321-A		
Lab Sample ID:	JD26317-21	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	n/a
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	< 0.50	D004	5.0	0.50	mg/l	5	06/11/21	06/11/21	ND	SW846 6010D [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA50676
(2) Prep QC Batch: MP26941

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 7/1/11)

Report of Analysis

Client Sample ID:	2322		
Lab Sample ID:	JD26317-22	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	n/a
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	< 0.50	D004	5.0	0.50	mg/l	5	06/11/21	06/11/21	ND	SW846 6010D [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA50676
(2) Prep QC Batch: MP26941

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 7/1/11)

Report of Analysis

Client Sample ID:	2322-1		
Lab Sample ID:	JD26317-23	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	n/a
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	< 0.50	D004	5.0	0.50	mg/l	5	06/11/21	06/11/21	ND	SW846 6010D [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA50676
(2) Prep QC Batch: MP26941

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 7/1/11)

Report of Analysis

Client Sample ID:	2322-1-A		
Lab Sample ID:	JD26317-24	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	n/a
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	< 0.50	D004	5.0	0.50	mg/l	5	06/11/21	06/11/21	ND	SW846 6010D [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA50676
(2) Prep QC Batch: MP26941

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 7/1/11)

Report of Analysis

Client Sample ID:	2323		
Lab Sample ID:	JD26317-25	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	n/a
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	< 0.50	D004	5.0	0.50	mg/l	5	06/11/21	06/11/21	ND	SW846 6010D [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA50676
(2) Prep QC Batch: MP26941

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 7/1/11)

Report of Analysis

Client Sample ID:	2324		
Lab Sample ID:	JD26317-26	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	n/a
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	< 0.50	D004	5.0	0.50	mg/l	5	06/11/21	06/11/21	ND	SW846 6010D [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA50676
(2) Prep QC Batch: MP26941

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 7/1/11)

Report of Analysis

Client Sample ID:	2324-A		
Lab Sample ID:	JD26317-27	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	n/a
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	< 0.50	D004	5.0	0.50	mg/l	5	06/11/21	06/11/21	ND	SW846 6010D [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA50676
(2) Prep QC Batch: MP26941

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 7/1/11)

Report of Analysis

Client Sample ID:	2325		
Lab Sample ID:	JD26317-28	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	n/a
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	< 0.50	D004	5.0	0.50	mg/l	5	06/11/21	06/11/21	ND	SW846 6010D [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA50676
(2) Prep QC Batch: MP26941

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 7/1/11)

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

SGS

So

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

EHSA-QAC-0023-02-FORM-Standard COC

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FED-EX Tracking # 7739 5532 6872
Bottle Order Control # KR-06221-223
SGS Quote #
SGS Job # JD26317

Client / Reporting Information	Project Information	
Company Name: Arcadis	Project Name: Kent Super Fund Site	
Street Address: 110 W. Fayette St	Street: Gipsy Trail Rd	Billing Information (If different from Report to)
City: Syracuse State: NY Zip: 13202	City: Kent State: NY	Company Name
Project Contact: Carey Healy E-mail: Lawrence.Hailey@arcadis.com	Project #:	Street Address
Phone #: 315-335-9493	Client Purchase Order #	City State Zip
Sampler(s) Name(s): Evan Green Phone #: 603-305-2692	Project Manager: Kelly Ramos	Attention:

Requested Analysis: TCLP, EAS

Matrix Codes: DW - Drinking Water, GW - Ground Water, WW - Water, SW - Surface Water, SO - Soil, SL - Sludge, SED - Sediment, OI - Oil, LIQ - Other Liquid, AIR - Air, SOL - Other Solid, WP - Wipe, FB - Field Blank, EB - Equipment Blank, RB - Rinse Blank, TB - Trip Blank

	SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) Comp (C)	Matrix	# of bottles	HCl	NaOH	HNO_3	H_2SO_4	NONE	DI Water	MEOH	ENCORE	TCLP, EAS	LAB USE ONLY
1	1	2314		6/8/21	0922	EG	G	SO	1					X				X	D40
2	1	2314-A		6/8/21	0928	EG	G	SO	1					X				X	
3	1	2315		6/8/21	0940	EG	G	SO	1					X				X	
4	1	2315-A		6/8/21	0945	EG	G	SO	1					X				X	
5	1	2315S		6/8/21	0957	EG	G	SO	1					X				X	
6	1	2315S-A		6/8/21	1005	EG	G	SO	1					X				X	
7	1	2316		6/8/21	1012	EG	G	SO	1					X				X	
8	1	2316-A		6/8/21	1015	EG	G	SO	1					X				X	
9	1	2316-1		6/8/21	1025	EG	G	SO	1					X				X	
10	1	2316-1-A		6/8/21	1028	EG	G	SO	1					X				X	
11	1	2317		6/8/21	1105	EG	G	SO	1					X				X	
12	1	2317-A		6/8/21	1110	EG	G	SO	1					X				X	

Turn Around Time (Business Days)

- ☐ 10 Business Days
- ☐ 5 Business Days
- ☒ 3 Business Days*
- ☐ 2 Business Days*
- ☐ 1 Business Day*
- ☐ Other

Approved By (SGS PM): / Date:

All data available via Lablink

* Approval needed for 1-3 Business Day TAT

Deliverable

- ☐ Commercial "A" (Level 1)
- ☒ Commercial "B" (Level 2)
- ☐ NJ Reduced (Level 3)
- ☐ Full Tier I (Level 4)
- ☐ Commercial "C"
- ☐ NJ DKQP
- ☐ NYASP Category A
- ☐ NYASP Category B
- ☐ MA MCP Criteria
- ☐ CT RCP Criteria
- ☐ State Forms
- ☐ EDD Format
- ☐ DOD-QSM5

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

INITIAL ASSESSMENT 3AJK

LABEL VERIFICATION

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by:	Date / Time:	Received By:	Relinquished By:	Date / Time:	Received By:
1 [signature]	6/8/21 1155	1 N Krause 6/9/21 1155	2 N. Krause 6/9/21 1155		2 [signature] 6/9/21 15:00
3 [signature] 6-9-21	1600	3 Fed Ex	4 Fed Ex	6/10/21 1023	4 [signature]
5		5	Custody Seal #	☐ Intact ☐ Not intact	Preserved where applicable ☐ Absent; On Ice ☒; Cooler Temp. °C 3.6°C; Therm. ID: IR-4

JD26317: Chain of Custody
Page 1 of 5

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

SGS

EHSA-QAC-0023-02-FORM-Standard COC

FED-EX Tracking #: | Bottle Order Control #:
SGS Quote #: | SGS Job #: JD26317

Client / Reporting Information

Company Name: ArcaVis
Street Address: 110 W Fayette St
City / State / Zip: Syracuse NY 13202
Project Contact / E-mail: Carey Healy Lawrence.Healy@Arcadis.com
Phone #: 315-335-9493
Sampler(s) Name(s) / Phone #: Evan Gan 603-305-2697

Project Information

Project Name: Kent Superfund Site
Street: Gipsy Trail Rd.
City / State: Kent NY
Project #:
Client Purchase Order #:
Project Manager:

Billing information (if different from Report to)

Company Name:
Street Address:
City / State / Zip:
Attention:

Requested Analysis

TCLP, EAS

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB - Field Blank
EB-Equipment Blank
RB - Rinse Blank
TB - Trip Blank

	SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) Comp (C)	Matrix	# of bottles	Preserved Bottles: HCl	NaOH	HNO_3	H_2SO_4	NONE	DI Water	MEOH	ENCORE	LAB USE ONLY
1	1	2317		6/8/21	1105	EG	G	SO	1					X				
2	1	2317-A		6/8/21	1110	EG	G	SO	1					X				
13	1	2317-1		6/8/21	1055	EG	G	SO	1					X				
14	1	2317-1-A		6/8/21	1058	EG	G	SO	1					X				
15	1	2318		6/8/21	1125	EG	G	SO	1					X				
16	1	2318-A		6/8/21	1128	EG	G	SO	1					X				
17	1	2319		6/8/21	1140	EG	G	SO	1					X				
18	1	2319-A		6/8/21	1145	EG	G	SO	1					X				
19	1	2320		6/8/21	1155	EG	G	SO	1					X				
20	1	2321		6/8/21	1205	EG	G	SO	1					X				
21	1	2321-A		6/8/21	1210	EG	G	SO	1					X				
22	1	2322		6/8/21	1215	EG	G	SO	1					X				

Turn Around Time (Business Days)

Approved By (SGS PM): / Date:

- [ ] 10 Business Days
- [ ] 5 Business Days
- [x] 3 Business Days*
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other

All data available via Lablink

* Approval needed for 1-3 Business Day TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [x] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [ ] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] MA MCP Criteria
- [ ] CT RCP Criteria
- [ ] State Forms
- [ ] EDD Format
- [ ] DOD-QSM5

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by:	Date / Time:	Received By:	Relinquished By:	Date / Time:	Received By:
1		6/8/21 1155	1 M. Krauss 6/9/21 1155	2 M. Krauss	6/9/21 1155	2 6/9/21 1500
3	6/9/21	/600	3 Fed Ex	4 Fed Ex	6/10/21 1023	4
5			5	Custody Seal #	Intact / Not intact	Preserved where applicable / Absent

On Ice | Cooler Temp. °C | Therm. ID:

CHAIN OF CUSTODY

Page 3 of 3

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

EHSA-QAC-0023-02-FORM-Standard COC

FED-EX Tracking #: | Bottle Order Control #:
SGS Quote #: | SGS Job #: JD26317

Client / Reporting Information

Company Name: Arcadis
Street Address: 110 W Fayette St
City: Syracuse State: NY Zip: 13202
Project Contact: Cary Hesly E-mail: Laurence.Hesly@arcadis.com
Phone #: 315-395-9493
Sampler(s) Name(s): EGan Phone #: 603-305-2692

Project Information

Project Name: Kent Superfund Site
Street: Gipsy Trail Rd
City: Kent State: NY
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)
Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis

TCLP, ETS

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB - Field Blank
EB-Equipment Blank
RB - Rinse Blank
TB - Trip Blank

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) Comp (C)	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO_3	H_2SO_4	NONE	DI Water	MEOH	ENCORE	LAB USE ONLY
23	2322-1		6/8/21	1220		G	SO						X				
24	2322-1-A		6/8/21	1225		G	SO						X				
25	2323		6/8/21	1245		G	SO						X				
26	2324		6/8/21	1250		G	SO						X				
27	2324-A		6/8/21	1258		G	SO						X				
28	2325		6/8/21	1300		G	SO						X				

Turn Around Time (Business Days)

Approved By (SGS PM): / Date:

- [ ] 10 Business Days
- [ ] 5 Business Days
- [x] 3 Business Days*
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other

All data available via Lablink

* Approval needed for 1-3 Business Day TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [x] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [ ] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] MA MCP Criteria_____
- [ ] CT RCP Criteria_____
- [ ] State Forms
- [ ] EDD Format _____
- [ ] DOD-QSM5

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by:	Date / Time:	Received By:	Date / Time:
1		6/8/21 1155	1 M Krause	6/9/21 1155
2	M Krause	6/9/21 1155	2	6/9/21 1500
3		6/9/21 1600	3 Fed Ex	6/10/21 1023
4	Fed Ex	6/10/21 1023	4	
5			5	

Custody Seal # | Intact | Not Intact | Preserved where applicable | Absent | Therm. ID: | On Ice | Cooler Temp. °C

SGS Sample Receipt Summary

Job Number: JD26317 **Client:** ARCADIS U.S. **Project:** KENT SUPERFUND SITE, KENT, NY

Date / Time Received: 6/10/2021 10:23:00 AM **Delivery Method:** Fed Ex **Airbill #'s:** 7739 5532 6872

Cooler Temps (Raw Measured) °C: Cooler 1: (3.6);

Cooler Temps (Corrected) °C: Cooler 1: (2.9);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:	IR Gun		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	1		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☐	☑
2. Trip Blank listed on COC:	☐		☐	☑
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☐		☐	☑

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Test Strip Lot #s: pH 1-12: 212820 pH 12+: 203117A Other: (Specify) _____ _____

Comments 1) Samples 2317 and 2317-A listed twice on COC. Once on page 1 and again on page 2.

SM089-02 Rev. Date 12/1/16

Responded to by: Kelly Ramos Response Date: 6/10/2021

Samples 2317 and 2317-A was listed twice accidently. Only 28 samples were collected per Evan

JD26317: Chain of Custody
Page 5 of 5

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JD26317
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP26937
Matrix Type: LEACHATE

Methods: SW846 6010D
Units: mg/l

Prep Date: 06/11/21

Metal	RL	IDL	MDL	MB raw	final
Aluminum	1.0	.08	.23		
Antimony	0.50	.013	.024		
Arsenic	0.50	.01	.014	-0.0021	<0.50
Barium	1.0	.002	.067		
Beryllium	0.010	.0005	.0025		
Bismuth	0.10	.018	.02		
Boron	0.50	.0095	.31		
Cadmium	0.020	.002	.005		
Calcium	25	.028	.5		
Chromium	0.050	.0025	.01		
Cobalt	0.25	.0025	.013		
Copper	0.050	.005	.03		
Iron	0.50	.056	.16		
Lead	0.50	.006	.009		
Lithium	0.25	.012	.037		
Magnesium	25	.32	.7		
Manganese	0.075	.001	.007		
Molybdenum	0.10	.002	.018		
Nickel	0.050	.0015	.0085		
Phosphorus	0.25	.021	.089		
Potassium	50	.28	1		
Selenium	0.50	.018	.025		
Silicon	1.0	.008	.51		
Silver	0.050	.0055	.0095		
Strontium	0.050	.0005	.005		
Sulfur	0.25	.022	.23		
Thallium	0.50	.013	.009		
Tin	0.050	.005	.019		
Titanium	0.050	.002	.013		
Tungsten	0.25	.014	.2		
Vanadium	0.25	.003	.009		
Zinc	0.10	.0005	.035		
Zirconium	0.050	.002	.021		

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JD26317
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP26937
Matrix Type: LEACHATE

Methods: SW846 6010D
Units: mg/l

Prep Date: 06/11/21

Metal	RL	IDL	MDL	MB raw	final

Associated samples MP26937: JD26317-1, JD26317-2, JD26317-3, JD26317-4, JD26317-5, JD26317-6, JD26317-7, JD26317-8, JD26317-9, JD26317-10, JD26317-11, JD26317-12, JD26317-13, JD26317-14

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JD26317
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP26937
Matrix Type: LEACHATE

Methods: SW846 6010D
Units: mg/l

Prep Date: 06/11/21

Metal	JD26317-1 Original	MS	Spikelot MPSPK2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	0.022	1.9	2.0	93.9	75-125
Barium					
Beryllium					
Bismuth					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Strontium					
Sulfur					
Thallium					
Tin					
Titanium					
Tungsten					
Vanadium					
Zinc					
Zirconium					

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JD26317
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP26937
Matrix Type: LEACHATE

Methods: SW846 6010D
Units: mg/l

Prep Date: 06/11/21

Metal	JD26317-1 Original MS	Spikelot MPSPK2	% Rec	QC Limits

Associated samples MP26937: JD26317-1, JD26317-2, JD26317-3, JD26317-4, JD26317-5, JD26317-6, JD26317-7, JD26317-8, JD26317-9, JD26317-10, JD26317-11, JD26317-12, JD26317-13, JD26317-14

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JD26317
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP26937
Matrix Type: LEACHATE

Methods: SW846 6010D
Units: mg/l

Prep Date: 06/11/21

Metal	JD26317-1 Original	MSD	Spikelot MPSPK2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	0.022	1.8	2.0	88.9	5.4	20
Barium						
Beryllium						
Bismuth						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Strontium						
Sulfur						
Thallium						
Tin						
Titanium						
Tungsten						
Vanadium						
Zinc						
Zirconium						

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JD26317
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP26937
Matrix Type: LEACHATE

Methods: SW846 6010D
Units: mg/l

Prep Date: 06/11/21

Metal	JD26317-1 Original MSD	Spikelot MPSPK2	% Rec	MSD RPD	QC Limit

Associated samples MP26937: JD26317-1, JD26317-2, JD26317-3, JD26317-4, JD26317-5, JD26317-6, JD26317-7, JD26317-8, JD26317-9, JD26317-10, JD26317-11, JD26317-12, JD26317-13, JD26317-14

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JD26317
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP26937
Matrix Type: LEACHATE

Methods: SW846 6010D
Units: mg/l

Prep Date: 06/11/21

Metal	BSP Result	Spikelot MPSPK2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	1.8	2.0	90.0	80-120
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Strontium				
Sulfur				
Thallium				
Tin				
Titanium				
Tungsten				
Vanadium				
Zinc				
Zirconium				

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JD26317
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP26937
Matrix Type: LEACHATE

Methods: SW846 6010D
Units: mg/l

Prep Date: 06/11/21

Metal	BSP Result	Spikelot MPSPK2	% Rec	QC Limits

Associated samples MP26937: JD26317-1, JD26317-2, JD26317-3, JD26317-4, JD26317-5, JD26317-6, JD26317-7, JD26317-8, JD26317-9, JD26317-10, JD26317-11, JD26317-12, JD26317-13, JD26317-14

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: JD26317
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP26937
Matrix Type: LEACHATE

Methods: SW846 6010D
Units: ug/l

Prep Date: 06/11/21

Metal	JD26317-1 Original	SDL 5:25	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	21.6	0.00	100.0(a)	0-10
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Strontium				
Sulfur				
Thallium				
Tin				
Titanium				
Tungsten				
Vanadium				
Zinc				

SERIAL DILUTION RESULTS SUMMARY

Login Number: JD26317
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP26937
Matrix Type: LEACHATE

Methods: SW846 6010D
Units: ug/l

Prep Date: 06/11/21

Metal	JD26317-1 Original SDL 5:25 %DIF	QC Limits
Zirconium		

Associated samples MP26937: JD26317-1, JD26317-2, JD26317-3, JD26317-4, JD26317-5, JD26317-6, JD26317-7, JD26317-8, JD26317-9, JD26317-10, JD26317-11, JD26317-12, JD26317-13, JD26317-14

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JD26317
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP26941
Matrix Type: LEACHATE

Methods: SW846 6010D
Units: mg/l

Prep Date: 06/11/21

Metal	RL	IDL	MDL	MB raw	final
Aluminum	1.0	.08	.23		
Antimony	0.50	.013	.024		
Arsenic	0.50	.01	.014	-0.0036	<0.50
Barium	1.0	.002	.067		
Beryllium	0.010	.0005	.0025		
Bismuth	0.10	.018	.02		
Boron	0.50	.0095	.31		
Cadmium	0.020	.002	.005		
Calcium	25	.028	.5		
Chromium	0.050	.0025	.01		
Cobalt	0.25	.0025	.013		
Copper	0.050	.005	.03		
Iron	0.50	.056	.16		
Lead	0.50	.006	.009		
Lithium	0.25	.012	.037		
Magnesium	25	.32	.7		
Manganese	0.075	.001	.007		
Molybdenum	0.10	.002	.018		
Nickel	0.050	.0015	.0085		
Phosphorus	0.25	.021	.089		
Potassium	50	.28	1		
Selenium	0.50	.018	.025		
Silicon	1.0	.008	.51		
Silver	0.050	.0055	.0095		
Strontium	0.050	.0005	.005		
Sulfur	0.25	.022	.23		
Thallium	0.50	.013	.009		
Tin	0.050	.005	.019		
Titanium	0.050	.002	.013		
Tungsten	0.25	.014	.2		
Vanadium	0.25	.003	.009		
Zinc	0.10	.0005	.035		
Zirconium	0.050	.002	.021		

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JD26317
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP26941
Matrix Type: LEACHATE

Methods: SW846 6010D
Units: mg/l

Prep Date: 06/11/21

Metal	RL	IDL	MDL	MB raw	final

Associated samples MP26941: JD26317-15, JD26317-16, JD26317-17, JD26317-18, JD26317-19, JD26317-20, JD26317-21, JD26317-22, JD26317-23, JD26317-24, JD26317-25, JD26317-26, JD26317-27, JD26317-28

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JD26317
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP26941
Matrix Type: LEACHATE

Methods: SW846 6010D
Units: mg/l

Prep Date: 06/11/21

Metal	JD26317-15 Original	MS	Spikelot MPSPK2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	0.0	1.9	2.0	95.0	75-125
Barium					
Beryllium					
Bismuth					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Strontium					
Sulfur					
Thallium					
Tin					
Titanium					
Tungsten					
Vanadium					
Zinc					
Zirconium					

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JD26317
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP26941
Matrix Type: LEACHATE

Methods: SW846 6010D
Units: mg/l

Prep Date: 06/11/21

Metal	JD26317-15 Original MS	Spikelot MPSPK2	% Rec	QC Limits

Associated samples MP26941: JD26317-15, JD26317-16, JD26317-17, JD26317-18, JD26317-19, JD26317-20, JD26317-21, JD26317-22, JD26317-23, JD26317-24, JD26317-25, JD26317-26, JD26317-27, JD26317-28

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JD26317
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP26941
Matrix Type: LEACHATE

Methods: SW846 6010D
Units: mg/l

Prep Date: 06/11/21

Metal	JD26317-15 Original	MSD	Spikelot MPSPK2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	0.0	2.0	2.0	100.0	5.1	20
Barium						
Beryllium						
Bismuth						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Strontium						
Sulfur						
Thallium						
Tin						
Titanium						
Tungsten						
Vanadium						
Zinc						
Zirconium						

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JD26317
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP26941
Matrix Type: LEACHATE

Methods: SW846 6010D
Units: mg/l

Prep Date: 06/11/21

Metal	JD26317-15 Original MSD	Spikelot MPSPK2	% Rec	MSD RPD	QC Limit

Associated samples MP26941: JD26317-15, JD26317-16, JD26317-17, JD26317-18, JD26317-19, JD26317-20, JD26317-21, JD26317-22, JD26317-23, JD26317-24, JD26317-25, JD26317-26, JD26317-27, JD26317-28

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JD26317
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP26941
Matrix Type: LEACHATE

Methods: SW846 6010D
Units: mg/l

Prep Date: 06/11/21

Metal	BSP Result	Spikelot MPSPK2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	1.9	2.0	95.0	80-120
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Strontium				
Sulfur				
Thallium				
Tin				
Titanium				
Tungsten				
Vanadium				
Zinc				
Zirconium				

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JD26317
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP26941
Matrix Type: LEACHATE

Methods: SW846 6010D
Units: mg/l

Prep Date: 06/11/21

Metal	BSP Result	Spikelot MPSPK2	% Rec	QC Limits

Associated samples MP26941: JD26317-15, JD26317-16, JD26317-17, JD26317-18, JD26317-19, JD26317-20, JD26317-21, JD26317-22, JD26317-23, JD26317-24, JD26317-25, JD26317-26, JD26317-27, JD26317-28

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: JD26317
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP26941
Matrix Type: LEACHATE

Methods: SW846 6010D
Units: ug/l

Prep Date: 06/11/21

Metal	JD26317-15 Original	SDL 5:25	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	0.00	0.00	NC	0-10
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Strontium				
Sulfur				
Thallium				
Tin				
Titanium				
Tungsten				
Vanadium				
Zinc				

SERIAL DILUTION RESULTS SUMMARY

Login Number: JD26317
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP26941
Matrix Type: LEACHATE

Methods: SW846 6010D
Units: ug/l

Prep Date: 06/11/21

Metal	JD26317-15 Original SDL 5:25 %DIF	QC Limits
Zirconium		

Associated samples MP26941: JD26317-15, JD26317-16, JD26317-17, JD26317-18, JD26317-19, JD26317-20, JD26317-21, JD26317-22, JD26317-23, JD26317-24, JD26317-25, JD26317-26, JD26317-27, JD26317-28

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Arcadis

Kent Superfund Site, Kent, NY

SGS Job Number: JD26317R

Sampling Date: 06/08/21

Report to:

Arcadis U.S.
1 Lincoln Center,110 West Fayette Street Suite 300
Syracuse, NY 13202
Lawrence.healy@Arcadis.com

ATTN: Lawrence Healy

Total number of pages in report: 62

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Caitlin Brice, M.S.
General Manager

Client Service contact: Kelly Ramos 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

Table of Contents

SGS North America Inc.

Sample Summary

Arcadis

Job No: JD26317R

Kent Superfund Site, Kent, NY

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
JD26317-1R	06/08/21	09:22	EG	06/10/21	SO	Soil	2314
JD26317-2R	06/08/21	09:28	EG	06/10/21	SO	Soil	2314-A
JD26317-3R	06/08/21	09:40	EG	06/10/21	SO	Soil	2315
JD26317-5R	06/08/21	09:57	EG	06/10/21	SO	Soil	23155
JD26317-6R	06/08/21	10:05	EG	06/10/21	SO	Soil	23155-A
JD26317-7R	06/08/21	10:12	EG	06/10/21	SO	Soil	2316
JD26317-8R	06/08/21	10:15	EG	06/10/21	SO	Soil	2316-A
JD26317-9R	06/08/21	10:25	EG	06/10/21	SO	Soil	2316-1
JD26317-11R	06/08/21	11:05	EG	06/10/21	SO	Soil	2317
JD26317-13R	06/08/21	10:55	EG	06/10/21	SO	Soil	2317-1
JD26317-14R	06/08/21	10:58	EG	06/10/21	SO	Soil	2317-1-A
JD26317-15R	06/08/21	11:25	EG	06/10/21	SO	Soil	2318
JD26317-16R	06/08/21	11:28	EG	06/10/21	SO	Soil	2318-A

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

Sample Summary
(continued)

Arcadis

Job No: JD26317R

Kent Superfund Site, Kent, NY

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
JD26317-17R	06/08/21	11:40	EG	06/10/21	SO	Soil	2319
JD26317-18R	06/08/21	11:45	EG	06/10/21	SO	Soil	2319-A
JD26317-19R	06/08/21	11:55	EG	06/10/21	SO	Soil	2320
JD26317-20R	06/08/21	12:05	EG	06/10/21	SO	Soil	2321
JD26317-21R	06/08/21	12:10	EG	06/10/21	SO	Soil	2321-A
JD26317-22R	06/08/21	12:15	EG	06/10/21	SO	Soil	2322
JD26317-23R	06/08/21	12:20	EG	06/10/21	SO	Soil	2322-1
JD26317-24R	06/08/21	12:25	EG	06/10/21	SO	Soil	2322-1-A
JD26317-25R	06/08/21	12:45	EG	06/10/21	SO	Soil	2323
JD26317-26R	06/08/21	12:50	EG	06/10/21	SO	Soil	2324
JD26317-28R	06/08/21	13:00	EG	06/10/21	SO	Soil	2325

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

Summary of Hits

Job Number: JD26317R
Account: Arcadis
Project: Kent Superfund Site, Kent, NY
Collected: 06/08/21

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JD26317-1R	**2314**					
Arsenic		67.4	2.6		mg/kg	SW846 6010D
JD26317-2R	**2314-A**					
Arsenic		109	2.5		mg/kg	SW846 6010D
JD26317-3R	**2315**					
Arsenic [a]		423	11		mg/kg	SW846 6010D
JD26317-5R	**23155**					
Arsenic [a]		84.6	11		mg/kg	SW846 6010D
JD26317-6R	**23155-A**					
Arsenic		703	2.4		mg/kg	SW846 6010D
JD26317-7R	**2316**					
Arsenic		281	2.4		mg/kg	SW846 6010D
JD26317-8R	**2316-A**					
Arsenic		736	2.3		mg/kg	SW846 6010D
JD26317-9R	**2316-1**					
Arsenic		103	2.6		mg/kg	SW846 6010D
JD26317-11R	**2317**					
Arsenic		467	2.4		mg/kg	SW846 6010D
JD26317-13R	**2317-1**					
Arsenic		13.3	2.3		mg/kg	SW846 6010D
JD26317-14R	**2317-1-A**					
Arsenic		12.2	2.1		mg/kg	SW846 6010D

Summary of Hits

Job Number: JD26317R
Account: Arcadis
Project: Kent Superfund Site, Kent, NY
Collected: 06/08/21

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JD26317-15R	**2318**					
Arsenic [a]		178	12		mg/kg	SW846 6010D
JD26317-16R	**2318-A**					
Arsenic		383	2.7		mg/kg	SW846 6010D
JD26317-17R	**2319**					
Arsenic		25.4	4.8		mg/kg	SW846 6010D
JD26317-18R	**2319-A**					
Arsenic		26.8	4.1		mg/kg	SW846 6010D
JD26317-19R	**2320**					
Arsenic		76.7	2.5		mg/kg	SW846 6010D
JD26317-20R	**2321**					
Arsenic [a]		49.2	5.4		mg/kg	SW846 6010D
JD26317-21R	**2321-A**					
Arsenic [a]		63.0	5.0		mg/kg	SW846 6010D
JD26317-22R	**2322**					
Arsenic [a]		75.5	4.6		mg/kg	SW846 6010D
JD26317-23R	**2322-1**					
Arsenic [a]		91.6	13		mg/kg	SW846 6010D
JD26317-24R	**2322-1-A**					
Arsenic [a]		59.2	4.9		mg/kg	SW846 6010D
JD26317-25R	**2323**					
Arsenic [a]		17.3	5.6		mg/kg	SW846 6010D

Summary of Hits

Job Number: JD26317R
Account: Arcadis
Project: Kent Superfund Site, Kent, NY
Collected: 06/08/21

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JD26317-26R	**2324**					
Arsenic		96.2	2.4		mg/kg	SW846 6010D
JD26317-28R	**2325**					
Arsenic [a]		29.4	5.5		mg/kg	SW846 6010D

(a) Elevated detection limit due to dilution required for high interfering element.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	2314		
Lab Sample ID:	JD26317-1R	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	76.5
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	67.4	2.6	mg/kg	1	06/24/21	06/24/21	ND	SW846 6010D [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA50739
(2) Prep QC Batch: MP27116

RL = Reporting Limit

Report of Analysis

Client Sample ID:	2314-A		
Lab Sample ID:	JD26317-2R	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	75.7
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	109	2.5	mg/kg	1	06/24/21	06/24/21	ND	SW846 6010D [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA50739
(2) Prep QC Batch: MP27116

RL = Reporting Limit

Report of Analysis

Client Sample ID:	2315		
Lab Sample ID:	JD26317-3R	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	84.6
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic [a]	423	11	mg/kg	5	06/24/21	06/25/21	ND	SW846 6010D [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA50748
(2) Prep QC Batch: MP27116

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	23155		
Lab Sample ID:	JD26317-5R	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	90.1
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic [a]	84.6	11	mg/kg	5	06/24/21	06/25/21	ND	SW846 6010D [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA50748
(2) Prep QC Batch: MP27116

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	23155-A		
Lab Sample ID:	JD26317-6R	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	86.9
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	703	2.4	mg/kg	1	06/24/21	06/24/21	ND	SW846 6010D [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA50739
(2) Prep QC Batch: MP27116

RL = Reporting Limit

Report of Analysis

Client Sample ID:	2316		
Lab Sample ID:	JD26317-7R	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	81.7
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	281	2.4	mg/kg	1	06/24/21	06/24/21	ND	SW846 6010D [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA50739
(2) Prep QC Batch: MP27116

RL = Reporting Limit

Report of Analysis

Client Sample ID:	2316-A		
Lab Sample ID:	JD26317-8R	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	88.9
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	736	2.3	mg/kg	1	06/24/21	06/24/21	ND	SW846 6010D [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA50739
(2) Prep QC Batch: MP27116

RL = Reporting Limit

Report of Analysis

Client Sample ID:	2316-1		
Lab Sample ID:	JD26317-9R	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	81.6
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	103	2.6	mg/kg	1	06/24/21	06/24/21	ND	SW846 6010D [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA50739
(2) Prep QC Batch: MP27116

RL = Reporting Limit

Report of Analysis

Client Sample ID:	2317		
Lab Sample ID:	JD26317-11R	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	82.4
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	467	2.4	mg/kg	1	06/24/21	06/24/21	ND	SW846 6010D [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA50739
(2) Prep QC Batch: MP27116

RL = Reporting Limit

Report of Analysis

Client Sample ID:	2317-1		
Lab Sample ID:	JD26317-13R	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	90.0
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	13.3	2.3	mg/kg	1	06/24/21	06/24/21	ND	SW846 6010D [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA50739
(2) Prep QC Batch: MP27116

RL = Reporting Limit

Report of Analysis

Client Sample ID:	2317-1-A		
Lab Sample ID:	JD26317-14R	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	92.1
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	12.2	2.1	mg/kg	1	06/24/21	06/24/21	ND	SW846 6010D [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA50739
(2) Prep QC Batch: MP27116

RL = Reporting Limit

Report of Analysis

Client Sample ID:	2318		
Lab Sample ID:	JD26317-15R	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	80.8
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic [a]	178	12	mg/kg	5	06/24/21	06/25/21	ND	SW846 6010D [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA50748
(2) Prep QC Batch: MP27116

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	2318-A		
Lab Sample ID:	JD26317-16R	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	73.5
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	383	2.7	mg/kg	1	06/24/21	06/24/21	ND	SW846 6010D [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA50739
(2) Prep QC Batch: MP27116

RL = Reporting Limit

Report of Analysis

Client Sample ID:	2319		
Lab Sample ID:	JD26317-17R	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	39.3
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	25.4	4.8	mg/kg	1	06/24/21	06/25/21	ND	SW846 6010D [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA50739
(2) Prep QC Batch: MP27116

RL = Reporting Limit

Report of Analysis

Client Sample ID:	2319-A		
Lab Sample ID:	JD26317-18R	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	47.5
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	26.8	4.1	mg/kg	1	06/24/21	06/25/21	ND	SW846 6010D [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA50739
(2) Prep QC Batch: MP27116

RL = Reporting Limit

Report of Analysis

Client Sample ID:	2320		
Lab Sample ID:	JD26317-19R	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	80.8
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	76.7	2.5	mg/kg	1	06/24/21	06/25/21	ND	SW846 6010D [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA50739
(2) Prep QC Batch: MP27116

RL = Reporting Limit

Report of Analysis

Client Sample ID:	2321		
Lab Sample ID:	JD26317-20R	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	77.3
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic [a]	49.2	5.4	mg/kg	2	06/24/21	06/25/21	ND	SW846 6010D [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA50749
(2) Prep QC Batch: MP27118

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	2321-A		
Lab Sample ID:	JD26317-21R	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	80.7
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic [a]	63.0	5.0	mg/kg	2	06/24/21	06/25/21	ND	SW846 6010D [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA50749
(2) Prep QC Batch: MP27118

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	2322		
Lab Sample ID:	JD26317-22R	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	87.1
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic [a]	75.5	4.6	mg/kg	2	06/24/21	06/25/21	ND	SW846 6010D [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA50749
(2) Prep QC Batch: MP27118

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	2322-1		
Lab Sample ID:	JD26317-23R	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	81.0
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic [a]	91.6	13	mg/kg	5	06/24/21	06/25/21	ND	SW846 6010D [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA50749
(2) Prep QC Batch: MP27118

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	2322-1-A		
Lab Sample ID:	JD26317-24R	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	84.3
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic [a]	59.2	4.9	mg/kg	2	06/24/21	06/25/21	ND	SW846 6010D [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA50749
(2) Prep QC Batch: MP27118

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	2323		
Lab Sample ID:	JD26317-25R	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	72.2
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic [a]	17.3	5.6	mg/kg	2	06/24/21	06/25/21	ND	SW846 6010D [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA50749
(2) Prep QC Batch: MP27118

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	2324		
Lab Sample ID:	JD26317-26R	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	87.4
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	96.2	2.4	mg/kg	1	06/24/21	06/24/21	ND	SW846 6010D [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA50741
(2) Prep QC Batch: MP27118

RL = Reporting Limit

Report of Analysis

Client Sample ID:	2325		
Lab Sample ID:	JD26317-28R	**Date Sampled:**	06/08/21
Matrix:	SO - Soil	**Date Received:**	06/10/21
		Percent Solids:	74.6
Project:	Kent Superfund Site, Kent, NY		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic [a]	29.4	5.5	mg/kg	2	06/24/21	06/25/21	ND	SW846 6010D [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA50749
(2) Prep QC Batch: MP27118

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

SGS

EHSA-QAC-0023-02-FORM-Standard COC

So

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

Page 1 of 3 L

FED-EX Tracking # 7739 5532 6872
Bottle Order Control # KR-06221-223
SGS Quote #
SGS Job # JD26317

Client / Reporting Information	Project Information	
Company Name: Arcadis	Project Name: Kent Super Fund Site	
Street Address: 110 W. Fayette St	Street: Gipsy Trail Rd	Billing Information (If different from Report to)
City / State / Zip: Syracuse NY 13202	City / State: Kent NY	Company Name
Project Contact: Carey Healy E-mail: Lawrence.Haley@arcadis.com	Project #	Street Address
Phone #: 315-335-9493	Client Purchase Order #	City / State / Zip
Sampler(s) Name(s): Evan Green Phone #: 603-305-2692	Project Manager: Kelly Ramos	Attention:

Requested Analysis: TCLP, EAS

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB - Field Blank; EB-Equipment Blank; RB - Rinse Blank; TB - Trip Blank

	SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) Comp (C)	Matrix	# of bottles	HCl	NaOH	HNO_3	H_2SO_4	NONE	DI Water	MEOH	ENCORE	TCLP, EAS	LAB USE ONLY
1	1	2314		6/8/21	0922	EG	G	SO	1					X				X	D40
2	1	2314-A		6/8/21	0928	EG	G	SO	1					X				X	
3	1	2315		6/8/21	0940	EG	G	SO	1					X				X	
4	1	2315-A		6/8/21	0945	EG	G	SO	1					X				X	
5	1	2315S		6/8/21	0957	EG	G	SO	1					X				X	
6	1	2315S-A		6/8/21	1005	EG	G	SO	1					X				X	
7	1	2316		6/8/21	1012	EG	G	SO	1					X				X	
8	1	2316-A		6/8/21	1015	EG	G	SO	1					X				X	
9	1	2316-1		6/8/21	1025	EG	G	SO	1					X				X	
10	1	2316-1-A		6/8/21	1028	EG	G	SO	1					X				X	
11	1	2317		6/8/21	1105	EG	G	SO	1					X				X	
12	1	2317-A		6/8/21	1110	EG	G	SO	1					X				X	

Turn Around Time (Business Days)

- ☐ 10 Business Days
- ☐ 5 Business Days
- ☒ 3 Business Days*
- ☐ 2 Business Days*
- ☐ 1 Business Day*
- ☐ Other

Approved By (SGS PM): / Date:

All data available via Lablink
* Approval needed for 1-3 Business Day TAT

Deliverable

- ☐ Commercial "A" (Level 1)
- ☒ Commercial "B" (Level 2)
- ☐ NJ Reduced (Level 3)
- ☐ Full Tier I (Level 4)
- ☐ Commercial "C"
- ☐ NJ DKQP
- ☐ NYASP Category A
- ☐ NYASP Category B
- ☐ MA MCP Criteria______
- ☐ CT RCP Criteria______
- ☐ State Forms
- ☐ EDD Format ________
- ☐ DOD-QSM5

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

INITIAL ASESSMENT 3AJK
LABEL VERIFICATION______

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by:	Date / Time:	Received By:	Relinquished By:	Date / Time:	Received By:
1 [signature]	6/8/21 1155	1 M. Krause 6/9/21 1155	2 M. Krause 6/9/21 1155		2 [signature] 6/9/21 15:00
3 [signature] 6-9-21	1600	3 Fed Ex	4 Fed Ex	6/10/21 1023	4 [signature]
5		5	Custody Seal #	☐ Intact ☐ Not intact	Preserved where applicable ☐ Absent; On Ice ☒; Cooler Temp. °C 3.6°C; Therm. ID: IR-4

JD26317R: Chain of Custody
Page 1 of 6

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

Page 2 of 3

EHSA-QAC-0023-02-FORM-Standard COC

FED-EX Tracking #: | Bottle Order Control #:
SGS Quote #: | SGS Job #: JD26317

Client / Reporting Information

Company Name: ArcaVis
Street Address: 110 W Fayette St
City / State / Zip: Syracuse NY 13202
Project Contact / E-mail: Carey.Healy.Lawrence.Healy@Arcadis.com
Phone #: 315-335-9493
Sampler(s) Name(s) / Phone #: Evan 603-305-2697

Project Information

Project Name: Kent Superfund Site
Street: Gipsy Trail Rd.
City / State: Kent NY
Project #:
Client Purchase Order #:
Project Manager:

Billing information (if different from Report to)

Company Name:
Street Address:
City / State / Zip:
Attention:

Requested Analysis

TCLP, EAS

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB - Field Blank
EB-Equipment Blank
RB - Rinse Blank
TB - Trip Blank

	SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) Comp (C)	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO_3	H_2SO_4	NONE	DI Water	MEOH	ENCORE	LAB USE ONLY
1	1	2317		6/8/21	1105	EG	G	SO	1					X				
2	1	2317-A		6/8/21	1110	EG	G	SO	1					X				
13	1	2317-1		6/8/21	1055	EG	G	SO	1					X				
14	1	2317-1-A		6/8/21	1058	EG	G	SO	1					X				
15	1	2318		6/8/21	1125	EG	G	SO	1					X				
16	1	2318-A		6/8/21	1128	EG	G	SO	1					X				
17	1	2319		6/8/21	1140	EG	G	SO	1					X				
18	1	2319-A		6/8/21	1145	EG	G	SO	1					X				
19	1	2320		6/8/21	1155	EG	G	SO	1					X				
20	1	2321		6/8/21	1205	EG	G	SO	1					X				
21	1	2321-A		6/8/21	1210	EG	G	SO	1					X				
22	1	2322		6/8/21	1215	EG	G	SO	1					X				

Turn Around Time (Business Days)

Approved By (SGS PM): / Date:

- [ ] 10 Business Days
- [ ] 5 Business Days
- [x] 3 Business Days*
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other

All data available via Lablink

* Approval needed for 1-3 Business Day TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [x] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [ ] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] MA MCP Criteria
- [ ] CT RCP Criteria
- [ ] State Forms
- [ ] EDD Format
- [ ] DOD-QSM5

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by:	Date / Time:	Received By:	Relinquished By:	Date / Time:	Received By:
1		6/8/21 1155	1 M. Krauss 6/9/21 1155	2 M. Krauss	6/9/21 1155	2 6/9/21 1500
3	6/9/21	/600	3 FedEx	4 FedEx	6/10/21 1023	4
5			5	Custody Seal #	Intact / Not intact	Preserved where applicable / Absent

On Ice | Cooler Temp. °C | Therm. ID:

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

EHSA-QAC-0023-02-FORM-Standard COC

FED-EX Tracking #: | Bottle Order Control #:
SGS Quote #: | SGS Job #: JD26317

Client / Reporting Information

Company Name: Arcadis
Street Address: 110 W Fayette St
City: Syracuse State: NY Zip: 13202
Project Contact: Cary Hesly E-mail: Laurence.Hanlon@arcadis.com
Phone #: 315-305-9493
Sampler(s) Name(s): EGan Phone #: 603-305-2692

Project Information

Project Name: Kent Superfund Site
Street: Gipsy Trail Rd
City: Kent State: NY
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis

TCLP, ETS

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB - Field Blank
EB-Equipment Blank
RB - Rinse Blank
TB - Trip Blank

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) Comp (C)	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO_3	H_2SO_4	NONE	DI Water	MEOH	ENCORE	LAB USE ONLY
23	2322-1		6/8/21	1220		G	SO						X				X
24	2322-1-A		6/8/21	1225		G	SO						X				X
25	2323		6/8/21	1245		G	SO						X				X
26	2324		6/8/21	1250		G	SO						X				X
27	2324-A		6/8/21	1258		G	SO						X				X
28	2325		6/8/21	1300		G	SO						X				X

Turn Around Time (Business Days)

Approved By (SGS PM): / Date:

- [ ] 10 Business Days
- [ ] 5 Business Days
- [x] 3 Business Days*
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other

All data available via Lablink

* Approval needed for 1-3 Business Day TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [x] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [ ] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] MA MCP Criteria
- [ ] CT RCP Criteria
- [ ] State Forms
- [ ] EDD Format
- [ ] DOD-QSM5

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by:	Date / Time:	Received By:	Date / Time:
1		6/8/21 1155	1 M Krause	6/9/21 1155
2	M Krause	6/9/21 1155	2	6/9/21 1500
3		6/9/21 1600	3 Fed Ex	6/10/21 1023
4	Fed Ex	6/10/21 1023	4	
5			5	

Custody Seal # | Intact | Not Intact | Preserved where applicable | Absent | Therm. ID: | On Ice | Cooler Temp. °C

SGS Sample Receipt Summary

Job Number: JD26317 **Client:** ARCADIS U.S. **Project:** KENT SUPERFUND SITE, KENT, NY

Date / Time Received: 6/10/2021 10:23:00 AM **Delivery Method:** Fed Ex **Airbill #'s:** 7739 5532 6872

Cooler Temps (Raw Measured) °C: Cooler 1: (3.6);

Cooler Temps (Corrected) °C: Cooler 1: (2.9);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:	IR Gun		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	1		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☐	☑
2. Trip Blank listed on COC:	☐		☐	☑
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☐		☐	☑

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Test Strip Lot #s: pH 1-12: 212820 pH 12+: 203117A Other: (Specify) _____ _____

Comments 1) Samples 2317 and 2317-A listed twice on COC. Once on page 1 and again on page 2.

SM089-02 Rev. Date 12/1/16

Responded to by: Kelly Ramos Response Date: 6/10/2021

Samples 2317 and 2317-A was listed twice accidently. Only 28 samples were collected per Evan

JD26317R: Chain of Custody
Page 5 of 6

Job Change Order: JD26317

Requested Date: 6/21/2021 **Received Date:** 6/10/2021

Account Name: Arcadis **Due Date:** 6/15/2021

Project Description: Kent Superfund Site, Kent, NY **Deliverable:** COMMB

C/O Initiated By: KELLYR **PM:** KR **TAT (Days):** 7

==========

Sample #: JD26317-1, -2, -3, -5 through 9, -11 **Change:** Please relog for AS and SOL104

Dept:

TAT: 7

==========

==========

Sample #: JD26317--13 through -26, -28 **Change:** Please relog for AS and SOL104

Dept:

TAT: 7

==========

Above Changes Per: Carey Healy **Date/Time:** 6/21/2021 1:58:14 PM

To Client: This Change Order is confirmation of the revisions, previously discussed with the Client Service Representative.

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JD26317R
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP27116
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 06/24/21

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	1.7	8.1		
Antimony	2.0	.17	.41		
Arsenic	2.0	.21	.28	0.030	<2.0
Barium	20	.08	1.9		
Beryllium	0.20	.03	.08		
Bismuth	2.0	.23	.52		
Boron	10	.23	1.5		
Cadmium	0.50	.03	.07		
Calcium	500	.66	44		
Chromium	1.0	.03	.37		
Cobalt	5.0	.04	.28		
Copper	2.5	.08	.84		
Iron	50	.53	19		
Lead	2.0	.11	.41		
Lithium	5.0	.48	.92		
Magnesium	500	3.2	14		
Manganese	1.5	.01	.41		
Molybdenum	2.0	.06	.32		
Nickel	4.0	.04	.35		
Phosphorus	20	.12	3.3		
Potassium	1000	7.7	32		
Selenium	2.0	.32	.65		
Silicon	20	.17	11		
Silver	0.50	.1	.17		
Sodium	1000	3.4	78		
Strontium	5.0	.03	.18		
Sulfur	10	.3	9.4		
Thallium	1.0	.18	.58		
Tin	20	.08	3.8		
Titanium	1.0	.05	.34		
Tungsten	5.0	.26	1.8		
Vanadium	5.0	.06	.19		
Zinc	5.0	.01	2.3		

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JD26317R
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP27116
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 06/24/21

Metal	RL	IDL	MDL	MB raw	final
Zirconium	2.0	.03	.23		

Associated samples MP27116: JD26317-1R, JD26317-2R, JD26317-3R, JD26317-5R, JD26317-6R, JD26317-7R, JD26317-8R, JD26317-9R, JD26317-11R, JD26317-13R, JD26317-14R, JD26317-15R, JD26317-16R, JD26317-17R, JD26317-18R, JD26317-19R

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JD26317R
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP27116
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 06/24/21

Metal	JD26317-9R Original	MS	Spikelot MPSPK2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	103	301	243	81.6	75-125
Barium					
Beryllium					
Bismuth					
Boron					
Cadmium					
Calcium	anr				
Chromium					
Cobalt					
Copper					
Lead					
Lithium					
Magnesium	anr				
Manganese					
Molybdenum					
Nickel					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	anr				
Strontium					
Sulfur					
Thallium					
Tin					
Tungsten					
Vanadium					
Zinc					
Zirconium					

Associated samples MP27116: JD26317-1R, JD26317-2R, JD26317-3R, JD26317-5R, JD26317-6R, JD26317-7R, JD26317-8R, JD26317-9R, JD26317-11R, JD26317-13R, JD26317-14R, JD26317-15R, JD26317-16R, JD26317-17R, JD26317-18R, JD26317-19R

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JD26317R
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP27116
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 06/24/21

Metal	JD26317-9R Original MS	Spikelot MPSPK2	% Rec	QC Limits

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JD26317R
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP27116
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 06/24/21

Metal	JD26317-9R Original	MSD	Spikelot MPSPK2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	103	354	240	104.5	16.2	20
Barium						
Beryllium						
Bismuth						
Boron						
Cadmium						
Calcium	anr					
Chromium						
Cobalt						
Copper						
Lead						
Lithium						
Magnesium	anr					
Manganese						
Molybdenum						
Nickel						
Potassium						
Selenium						
Silicon						
Silver						
Sodium	anr					
Strontium						
Sulfur						
Thallium						
Tin						
Tungsten						
Vanadium						
Zinc						
Zirconium						

Associated samples MP27116: JD26317-1R, JD26317-2R, JD26317-3R, JD26317-5R, JD26317-6R, JD26317-7R, JD26317-8R, JD26317-9R, JD26317-11R, JD26317-13R, JD26317-14R, JD26317-15R, JD26317-16R, JD26317-17R, JD26317-18R, JD26317-19R

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JD26317R
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP27116
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 06/24/21

Metal	JD26317-9R Original MSD	Spikelot MPSPK2	% Rec	MSD RPD	QC Limit

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JD26317R
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP27116
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 06/24/21

Metal	BSP Result	Spikelot MPSPK2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	197	200	98.5	80-120
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium	anr			
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	anr			
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	anr			
Strontium				
Sulfur				
Thallium				
Tin				
Titanium				
Tungsten				
Vanadium				
Zinc				

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JD26317R
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP27116
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 06/24/21

Metal	BSP Result	Spikelot MPSPK2	% Rec	QC Limits
Zirconium				

Associated samples MP27116: JD26317-1R, JD26317-2R, JD26317-3R, JD26317-5R, JD26317-6R, JD26317-7R, JD26317-8R, JD26317-9R, JD26317-11R, JD26317-13R, JD26317-14R, JD26317-15R, JD26317-16R, JD26317-17R, JD26317-18R, JD26317-19R

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: JD26317R
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP27116
Matrix Type: SOLID

Methods: SW846 6010D
Units: ug/l

Prep Date: 06/24/21

Metal	JD26317-9R Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	804	813	1.2	0-10
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium	anr			
Chromium				
Cobalt				
Copper				
Lead				
Lithium				
Magnesium	anr			
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	anr			
Strontium				
Sulfur				
Thallium				
Tin				
Tungsten				
Vanadium				
Zinc				
Zirconium				

Associated samples MP27116: JD26317-1R, JD26317-2R, JD26317-3R, JD26317-5R, JD26317-6R, JD26317-7R, JD26317-8R, JD26317-9R, JD26317-11R, JD26317-13R, JD26317-14R, JD26317-15R, JD26317-16R, JD26317-17R,

SERIAL DILUTION RESULTS SUMMARY

Login Number: JD26317R
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP27116
Matrix Type: SOLID

Methods: SW846 6010D
Units: ug/l

Prep Date: 06/24/21

Metal	JD26317-9R Original SDL 1:5	%DIF	QC Limits

JD26317-18R, JD26317-19R

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

POST DIGESTATE SPIKE SUMMARY

Login Number: JD26317R
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP27116
Matrix Type: SOLID

Methods: SW846 6010D
Units: ug/l

Prep Date: 06/24/21

Metal	Sample ml	Final ml	JD26317-9R Raw	Corr.**	PS ug/l	Spike ml	Spike ug/ml	Spike ug/l	% Rec	QC Limits
Aluminum										
Antimony										
Arsenic										
Barium										
Beryllium										
Bismuth										
Boron										
Cadmium										
Calcium										
Chromium										
Cobalt										
Copper										
Iron										
Lead										
Lithium										
Magnesium										
Manganese										
Molybdenum										
Nickel										
Phosphorus										
Potassium										
Selenium										
Silicon										
Silver										
Sodium										
Strontium										
Sulfur										
Thallium										
Tin										
Titanium										
Tungsten										
Vanadium										
Zinc										

POST DIGESTATE SPIKE SUMMARY

Login Number: JD26317R
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP27116
Matrix Type: SOLID

Methods: SW846 6010D
Units: ug/l

Prep Date: 06/24/21

Metal	Sample ml	Final ml	JD26317-9R Raw	Corr.**	PS ug/l	Spike ml	Spike ug/ml	Spike ug/l	% Rec	QC Limits
Zirconium										

Associated samples MP27116: JD26317-1R, JD26317-2R, JD26317-3R, JD26317-5R, JD26317-6R, JD26317-7R, JD26317-8R, JD26317-9R, JD26317-11R, JD26317-13R, JD26317-14R, JD26317-15R, JD26317-16R, JD26317-17R, JD26317-18R, JD26317-19R

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(**) Corr. sample result = Raw * (sample volume / final volume)
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JD26317R
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP27118
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 06/24/21

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	1.6	8.1		
Antimony	2.0	.25	.41		
Arsenic	2.0	.2	.28	0.050	<2.0
Barium	20	.04	1.9		
Beryllium	0.20	.01	.08		
Bismuth	2.0	.36	.52		
Boron	10	.19	1.5		
Cadmium	0.50	.04	.07		
Calcium	500	.56	44		
Chromium	1.0	.05	.37		
Cobalt	5.0	.05	.28		
Copper	2.5	.1	.84		
Iron	50	1.1	19		
Lead	2.0	.12	.41		
Lithium	5.0	.23	.92		
Magnesium	500	6.5	14		
Manganese	1.5	.02	.41		
Molybdenum	2.0	.04	.32		
Nickel	4.0	.03	.35		
Phosphorus	20	.41	3.3		
Potassium	1000	5.5	32		
Selenium	2.0	.35	.65		
Silicon	20	.16	11		
Silver	0.50	.11	.17		
Sodium	1000	1.1	78		
Strontium	5.0	.01	.18		
Sulfur	10	.44	9.4		
Thallium	1.0	.25	.58		
Tin	20	.1	3.8		
Titanium	1.0	.04	.34		
Tungsten	5.0	.28	1.8		
Vanadium	5.0	.06	.19		
Zinc	5.0	.01	2.3		

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JD26317R
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP27118
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 06/24/21

Metal	RL	IDL	MDL	MB raw	final
Zirconium	2.0	.04	.23		

Associated samples MP27118: JD26317-20R, JD26317-21R, JD26317-22R, JD26317-23R, JD26317-24R, JD26317-25R, JD26317-26R, JD26317-28R

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JD26317R
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP27118
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 06/24/21

Metal	JD26317-20R Original	MS	Spikelot MPSPK2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	49.2	291	256	94.4	75-125
Barium					
Beryllium					
Bismuth					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead	anr				
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium					
Strontium					
Sulfur					
Thallium					
Tin					
Titanium					
Tungsten					
Vanadium					
Zinc					

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JD26317R
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP27118
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 06/24/21

Metal	JD26317-20R Original MS	Spikelot MPSPK2	% Rec	QC Limits
Zirconium				

Associated samples MP27118: JD26317-20R, JD26317-21R, JD26317-22R, JD26317-23R, JD26317-24R, JD26317-25R, JD26317-26R, JD26317-28R

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JD26317R
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP27118
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 06/24/21

Metal	JD26317-20R Original	MSD	Spikelot MPSPK2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	49.2	303	256	99.1	4.0	20
Barium						
Beryllium						
Bismuth						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead	anr					
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium						
Strontium						
Sulfur						
Thallium						
Tin						
Titanium						
Tungsten						
Vanadium						
Zinc						

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JD26317R
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP27118
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 06/24/21

Metal	JD26317-20R Original MSD	Spikelot MPSPK2	% Rec	MSD RPD	QC Limit
Zirconium					

Associated samples MP27118: JD26317-20R, JD26317-21R, JD26317-22R, JD26317-23R, JD26317-24R, JD26317-25R, JD26317-26R, JD26317-28R

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JD26317R
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP27118
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 06/24/21

Metal	BSP Result	Spikelot MPSPK2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	192	200	96.0	80-120
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead	anr			
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Strontium				
Sulfur				
Thallium				
Tin				
Titanium				
Tungsten				
Vanadium				
Zinc				

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JD26317R
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP27118
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 06/24/21

Metal	BSP Result	Spikelot MPSPK2	% Rec	QC Limits
Zirconium				

Associated samples MP27118: JD26317-20R, JD26317-21R, JD26317-22R, JD26317-23R, JD26317-24R, JD26317-25R, JD26317-26R, JD26317-28R

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: JD26317R
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP27118
Matrix Type: SOLID

Methods: SW846 6010D
Units: ug/l

Prep Date: 06/24/21

Metal	JD26317-20R Original	SDL 2:10	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	365	372	1.8	0-10
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead	anr			
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Strontium				
Sulfur				
Thallium				
Tin				
Titanium				
Tungsten				
Vanadium				
Zinc				

SERIAL DILUTION RESULTS SUMMARY

Login Number: JD26317R
Account: BBLNYS - Arcadis
Project: Kent Superfund Site, Kent, NY

QC Batch ID: MP27118
Matrix Type: SOLID

Methods: SW846 6010D
Units: ug/l

Prep Date: 06/24/21

Metal	JD26317-20R Original SDL 2:10	%DIF	QC Limits
Zirconium			

Associated samples MP27118: JD26317-20R, JD26317-21R, JD26317-22R, JD26317-23R, JD26317-24R, JD26317-25R, JD26317-26R, JD26317-28R

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

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