PHASE III REMEDIAL INVESTIGATION WORK PLAN

DUTCHESS COUNTY FIRE TRAINING CENTER
392 CREEK ROAD
HYDE PARK, DUTCHESS COUNTY, NEW YORK 12601

NYSDEC SITE NO. 314128

Prepared for:

NEW YORK STATE | Department of Environmental Conservation

Division of Environmental Remediation

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Acronyms and Abbreviations

AFFF	Aqueous Film Forming Foam
ASP	Analytical Services Protocol
bgs	below ground surface
CAMP	Community Air Monitoring Plan
DCER	Dutchess County Emergency Response
DCFTC	Dutchess County Fire Training Center
DCDPW	Dutchess County Department of Public Works
DER	NYSDEC Division of Environmental Remediation
DER-10	NYSDEC DER-10, Technical Guidance for Site Investigation and Remediation
DUSRs	Data Usability Summary Reports
DMM	Division of Materials Management
DOT	Department of Transportation
DPT	Direct Push Technology
EDDs	Electronic Data Deliverables
FAP	Field Activities Plan
FWIA	Fish and Wildlife Impact Analysis
gpm	gallons per minute
HASP	Health and Safety Plan
MS/MSD	Matrix Spike/Matrix Spike Duplicate
ng/L	nanograms per liter
NTP	Notice to Proceed
NTU	nephelometric turbidity units
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSOMH	New York State Office of Mental Health
PFAS	Per- and Polyfluoroalkyl Substances
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctanesulfonic Acid
PID	Photoionization Detector
PPE	Personal Protective Equipment
PLS	Professional Land Surveyor
PVC	Polyvinyl Chloride
QAPP	Quality Assurance Project Plan
RI	Remedial Investigation
SC	Site Characterization
SOW	Scope of Work

Acronyms and Abbreviations (cont.)

SSHASP	Site-specific HASP
SSCAMP	Site-specific CAMP
TRC	TRC Engineers, Inc.
USCS	Unified Soil Classification System
USGS	United States Geological Survey
USEPA	United States Environmental Protection Agency
WA	Work Assignment
Work Plan	Phase III Remedial Investigation Work Plan

1.0 Introduction

TRC Engineers, Inc. (TRC) has prepared this Phase III Remedial Investigation (RI) Work Plan (Work Plan) to describe the investigation activities to be performed at the Dutchess County Fire Training Center (DCFTC) located at 392 Creek Road, Hyde Park, Dutchess County, New York (the Site). The Site is designated by the New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation (DER) as Site No. 314128 under its Inactive Hazardous Waste Disposal Site Remedial Program (New York State Superfund Program). TRC will complete the proposed Phase III RI activities in accordance with the July 12, 2021 Work Assignment (WA) Approval letter for Standby Engineering Services Contract No. D009812 for a RI/Feasibility Study (FS), the December 17, 2021 and March 26, 2024 NYSDEC-approved Scopes of Work (SOWs), and NYSDEC DER-10, Technical Guidance for Site Investigation and Remediation (DER-10).

The Site encompasses the active training area of the Dutchess County Emergency Response (DCER) property. The Phase III RI objective is to investigate multiple media (ground surface coverings, vegetation, surface soil, subsurface soil, and bedrock groundwater) to expand upon prior investigations by further defining the nature and extent of contamination caused by the historical use of aqueous film forming foam (AFFF) during training operations. AFFF is known to contain per- and polyfluoroalkyl substances (PFAS), specifically perfluorooctanesulfonic acid (PFOS).

2.0 Site Description and History

2.1 Site Location and Setting

The DCFTC site is in the Town of Hyde Park, approximately three miles north of the City of Poughkeepsie. The Site is bordered to the north by East Dorsey Lane and residential properties; to the east by the Fall Kill stream and residential properties; to the south by the offices of DCER, undeveloped land, and the Fall Kill stream; and to the west by Creek Road and public recreational sporting fields. The Hudson River is approximately two miles west of the Site. A United States Geological Survey (USGS) 7.5-minute topographic map showing the Site location and surrounding land features is provided on **Figure 1**.

The DCFTC property is one irregularly shaped land parcel identified on Dutchess County tax maps as parcel number 133200-6163-02-876717-0000 (9.7 acres). Per the online Dutchess County Real Property Tax Service Agency ParcelAccess, land use for the parcel is classified as police/fire (land use code number 662). The parcel immediately east of the DCFTC, which encompasses both the Fall Kill and southern unnamed water body, is identified as parcel number 133200-6163-04-900472-0000 (100 acres), with land use classified as a County park (land use code number 962). Both parcels are owned by Dutchess County.

The Site is accessed from Creek Road via a parking lot and secured chain link fence gates. The DCFTC is identified as the active training grounds and is the focus of these RI activities.

2.2 Site Geology and Hydrogeology

As reported in TRC's June 8, 2020 *Site Characterization Report*, surficial geology in the vicinity of the Site is characterized as outwash sand and gravel consisting of coarse to fine gravel with sand. Soils encountered at the Site during the advancement of soil borings during the Site Characterization (SC) consisted primarily of silt, with varying amounts of clay and gravel. The April 20, 2023 *Phase I Remedial Investigation Field Activities Summary Report* documented the presence of gravelly sand with small to medium cobbles to depths of approximately 2.5 feet below ground surface (bgs), and the August 11, 2023 *Phase II Remedial Investigation Field Activities Summary Report* characterized soils as primarily silt, clay, sand, gravel, and/or varying amounts of mixtures of the four.

Bedrock has been encountered beneath the Site during these previous investigations at depths ranging from 3 to 22 feet bgs, with bedrock shallowest in the northwestern and northeastern corners of the Site, and deepest in the southeastern portion of the Site. The June 2020 *Site Characterization Report* indicates that bedrock underlying the general area is mapped as the

Austin Glen Formation of Upper-Middle Ordovician Age, consisting of graywacke and shale, and noted that shale bedrock outcrops are present in the area.

The water-bearing unit of interest mapped as underlying the Site is an unconfined sand and gravel aquifer with a saturated zone less than 10 feet thick, or thicker but with less permeable silty sand and gravel. Well yields in these areas range from 10 to 100 gallons per minute (gpm). Yields in areas adjacent to streams may exceed 100 gpm through pumping induced infiltration. Overburden groundwater flow direction has been documented generally to the east-southeast during previous investigations at the Site, toward the Fall Kill.

2.3 Topography and Site Drainage

The Site is relatively flat. The eastern part of the Site slopes gradually downward toward the Fall Kill. Near the central eastern perimeter of the developed portion of Site, pavement is damaged, subsided, and sloped, and an apparent channel has formed directing stormwater runoff from the paved areas toward the Fall Kill. Further east of this channel, within the central wooded area between the DCFTC and Fall Kill, there is additional evidence of surface water runoff from the facility in the form of a gulley, likely caused by soil erosion/scouring over time. Additionally, further south, the asphalt area surrounding the Site maintenance building is connected to an open grated catch basin which drains via a storm sewer to an outfall east of the perimeter fencing to the Fall Kill.

There is an earthen-bottom water impoundment (approximately 50 feet long by 7 feet wide), formerly utilized as a standing water source for fire training exercises, located near the eastern perimeter of the Site. Two culverts are associated with the water impoundment (one inlet and one outlet), with both connecting to the Fall Kill. Water elevation within the impoundment is sourced and influenced by shallow groundwater and the Fall Kill. During past discussions with the Dutchess County Fire Commissioner, TRC understands that the impoundment is no longer utilized for training exercises.

In August 2022, as part of Phase I RI activities, TRC completed minor alterations to the on-Site water impoundment culverts. During previous Site visits, the culverts were determined to be constructed of 24-inch inner diameter corrugated steel piping with flared ends. In order to slow impacted surface water flowing from the on-Site water impoundment to the Fall Kill, TRC installed one 24-inch mechanical plug on the Fall Kill side of the outlet culvert pipe. After further inspection of the inlet culvert (both Fall Kill and impoundment sides) and outlet culvert (impoundment side), the corrugated steel piping was found to be rusted/pitted and expanded beyond a 24-inch diameter, likely due to weathering. As a result, the three additional openings could not be sealed with mechanical plugs.

2.4 Site Features and Use

The Site is an active emergency response and fire training center, operated by the County of Dutchess. Approximately half of the eastern edge of the property is wooded and borders the Fall Kill, a NYSDEC Class C stream. The DCFTC is largely paved, with vegetated areas on the northern, western, and southeastern perimeters, in addition to two small vegetated rectangular shaped areas in the northeastern portion of the Site which are utilized for Jaws of Life training exercises. Across the DCFTC, pavement is largely cracked, uneven, pitted, or wholly subsided resulting in stormwater and training exercise waters infiltrating into underlying soils.

DCFTC-specific structures include several classrooms, multi-story fire training buildings, propane fueled fire training structures, and confined space training areas. The Site perimeter is secured by chain link fencing with the main access gate located on the western side. There are fire hydrants, supplied with water sourced from the New York State Office of Mental Health (NYSOMH) Hudson River Psychiatric facility located south of the Site on Ross Circle, throughout the Site. Located west and adjacent to the DCER office/call center building, in the southern part of the Site, is a groundwater supply well. As with the water impoundment, TRC understands that the supply well is no longer utilized.

A map showing the DCFTC and above referenced features can be found on **Figure 2**.

2.5 Site History / Past Use

According to historical aerial imagery accessed via the online Dutchess County ParcelAccess, DCFTC structures, as they appear today, were constructed sometime between 1970 and 1980. From 1936 (the earliest available aerial image) to 1970, the northern property appears have been agricultural. The southern DCER building can be seen in all available historical aerial imagery. Historical fire training exercises at the DCFTC may have used open burn methods as well as fire-fighting agents such as AFFF, known to contain PFAS.

2.6 Previous Investigations and Sampling

According to a December 27, 2018 letter from the NYSDEC to the DCER, PFAS compounds were detected in a nearby groundwater supply well and were considered potentially attributable to current or historical DCFTC operations. In response, on April 4, 2019, the Dutchess County Department of Public Works (DCDPW) commissioned the sampling of the on-Site supply well and upstream/downstream Fall Kill surface water for PFAS and 1,4-dioxane. Analytical results from the three sample locations indicated the presence of PFAS at each location, and the total concentrations ranged from 3.54 nanograms per liter (ng/L) (on-Site DCER groundwater supply well) to 11.777 ng/L (upstream Fall Kill surface water sample). 1,4-dioxane was not detected in

any sample collected for analysis. The full results of this sampling effort can be found in the *April 12, 2019 Emerging Contaminants Sampling Report*, authored by C.T. Male Associates of Poughkeepsie, New York.

From November 2019 to January 2020, TRC completed SC activities at the Site to investigate multiple media for evidence of potential PFAS contamination caused by historical use of AFFF. The NYSDEC-approved SC SOW activities included surface water and sediment sampling, surface and subsurface soil sampling, monitoring well installations, groundwater sampling, surveying, and investigation derived waste (IDW) disposal. As a result of the SC activities, elevated concentrations of PFAS were detected in surface water and sediment of the on-Site water impoundment, on-Site subsurface soil, and on-Site groundwater. The full results of these activities are documented in TRC's June 8, 2020 *Site Characterization Report*.

From October 2021 to July 2022, TRC completed Phase I RI activities to further assess the nature and extent of PFAS in surface water and sediment within the Fall Kill and downgradient surface water body, as well as on-site shallow soil (below pavement), surface soil, surface water, and storm water runoff. TRC also completed Step 1 of the Fish and Wildlife Impact Analysis (FWIA) and a land survey of Site physical features and sample locations. The results of the Phase I RI activities indicated that PFAS were detected in all Fall Kill surface water and sediment samples collected from locations adjacent to the Site to south of the dam, approximately one mile downgradient. Elevated PFAS concentrations detected in Site shallow and surface soils, ponding surface water, and storm water run-off. The full results of these activities can be found in the April 20, 2023 *Phase I Remedial Investigation Field Activities Summary Report*.

TRC completed Phase II RI activities between November 2022 and March 2023 to further assess the horizontal and vertical extent of PFAS contamination in both subsurface soil and overburden groundwater at the Site. Based on the results of the Phase II RI activities, the highest concentrations of PFAS (PFOS in particular) in soil were detected in samples collected in the northeastern portion of the Site, in the Jaws of Life training area. The highest concentrations of PFAS (PFOS in particular) in groundwater were detected in samples collected in the northeastern portion of the Site, south and east (downgradient) of the Jaws of Life training area. The full results of these activities can be found in the August 11, 2023 *Phase II Remedial Investigation Field Activities Summary Report*.

3.0 General Information

3.1 Project Organization

TRC will implement the Phase III RI with oversight from the NYSDEC using qualified TRC personnel and several NYSDEC-approved subcontractors. Contact information for designated representatives is provided below:

Contact information for Dutchess County

Dana Smith, Commissioner of Emergency Response
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NYSDEC-approved Phase III RI TRC subcontractors:

- Greenstar Environmental Services, LLC – Utility Locating Services
- Parratt Wolff, Inc. – Direct Push Technology Drilling Services
- AARCO Environmental Services Corp. – Hollow Stem Auger/Air Rotary Drilling, Packer Testing, and IDW Disposal Services
- Hager Richter Geoscience, Inc. – Borehole Geophysics Services
- Susan M. Anacker, PLS, PLLC – Land Surveying Services
- Eurofins TestAmerica – Laboratory Analytical Services
- Environmental Data Services, Inc. – Laboratory Data Validation

3.2 Notifications and Permits

3.2.1 NYSDEC

TRC will provide NYSDEC 15 business days advanced notice prior to the start of work pertaining to this Work Plan.

3.2.2 Property Owner(s)

NYSDEC will provide advance notice to property owner(s) consistent with the agreements, orders, etc. in place between the property owner(s) and the NYSDEC prior to the start of work pertaining to this work plan.

3.2.3 Town of Hyde Park

Based on a review of Town of Hyde Park requirements and discussions with the NYSDEC, no Town notices or permits are required for implementation of this Work Plan.

3.2.4 Dutchess County

Based on a review of Dutchess County requirements and discussions with the NYSDEC, no County notices or permits are required for implementation of this Work Plan.

3.2.5 New York State

The NYSDEC will provide all necessary inter-agency notices that are required and/or appropriate prior to the start of work pertaining to this Work Plan.

3.2.6 Federal

Based on a review of Federal requirements, no Federal notices or permits are required for implementation of this Work Plan.

3.3 Governing Documents

3.3.1 General

As noted previously in **Section 1.0**, the Phase III RI activities discussed in this Work Plan will be conducted in accordance with the July 12, 2021 Work Assignment (WA) Approval letter for Standby Engineering Services Contract No. D009812 for a RI/Feasibility Study (FS), the December 17, 2021 and March 26, 2024 NYSDEC-approved Scopes of Work (SOWs), and NYSDEC DER-10, Technical Guidance for Site Investigation and Remediation (DER-10).

Investigation activities, including sample collection and laboratory analysis, will be completed in accordance with the Health and Safety Plan (HASP), Field Activities Plan (FAP), and Quality Assurance Project Plan (QAPP) approved for use on Standby Engineering Contract No. D009812, including any site-specific modifications as discussed below.

3.3.2 Site-Specific Health and Safety Plan

A Site-specific HASP (SSHASP) has been prepared for the activities to be performed under this Work Plan based on the generic HASP and Site-specific HASP template for Standby Engineering Services Contract No. D009812. The SSHASP is provided in **Appendix A**.

3.3.3 Community Air Monitoring Plan

A Community Air Monitoring Plan (CAMP) will be implemented (as appropriate) during ground intrusive activities in accordance with the NYSDOH generic CAMP and HASPs. The CAMP will include real-time monitoring for VOCs and particulates (i.e., dust) at one upwind and one downwind perimeter location during intrusive activities only. The CAMP will be implemented by the TRC scientist/engineer overseeing investigation activities. CAMP summaries will be provided to the NYSDOH and NYSDEC on a weekly basis, at a minimum, and any exceedances of action levels and corrective measures will be reported to the Departments immediately (within 24 hours).

A Site-Specific Community Air Monitoring Plan (SSCAMP) has been prepared for the intrusive activities to be performed under this Work Plan. The SSCAMP is provided in **Appendix B**.

3.3.4 Quality Assurance Project Plan, EQuIS EDDs, and Data Usability Summary Reports

A summary of the proposed sampling and analysis plan for this Work Plan is presented in **Table 1.**

Quality control samples consisting of one field duplicate and one matrix spike/matrix spike duplicate (MS/MSD) sample will be collected in accordance with TRC's Generic QAPP (i.e., at a frequency of one MS/MSD sample per 20 matrix samples). Equipment blanks will be collected in accordance with TRC's Generic QAPP utilizing water provided and certified by the subcontract laboratory as to not contain PFAS. Where applicable and appropriate, the laboratories will provide NYSDEC Analytical Services Protocol (ASP) Category B data deliverable packages, and Data Usability Summary Reports (DUSRs) will be prepared by TRC or a TRC subcontractor. Electronic Data Deliverables (EDDs) in EQuIS format will be submitted to NYSDEC and the results will be presented in the Phase III RI Report.

4.0 Phase III Remedial Investigation Activities

Based on the recommendations of the August 11, 2023 *Phase II Remedial Investigation Field Activities Summary Report* and as discussed with the NYSDEC Project Manager, additional remedial investigation activities are required to fill in Phase I and II RI data gaps, determine the presence or absence of PFAS in the underlying shallow bedrock, and assess associated risk.

The Phase III RI activities will include:

- Private utility clearance of proposed soil borings and monitoring well locations;
- Completion of 40 soil borings within vadose zone soils;
- Ground surface covering and vegetation sampling;
- Installation of three overburden monitoring wells;
- Installation of five shallow bedrock monitoring wells including downhole geophysics and packer testing;
- Groundwater sampling of eight newly installed monitoring wells;
- Overburden/bedrock aquifer hydraulic study including slug testing and long-term groundwater/surface water (Fall Kill) elevation data logging;
- Land survey;
- IDW management;
- Tree survey;
- Blanding's turtle habitat survey; and
- Phase III RI Field Activities Summary Report.

4.1 Utility Locating Survey

Prior to intrusive activities, a private utility locating survey will be conducted, in addition to the public utility mark outs, in the proposed soil boring and monitoring well locations shown on **Figures 3** and **4**, respectively. Subsurface utilities/structures/anomalies will be identified on the ground surface with spray paint and/or pin flags. A utility survey report, including a map showing the locations and types of subsurface features identified, will be prepared and included in the Phase III RI Field Activities Summary Report.

TRC will discuss any required soil boring repositioning, due to identified subsurface utilities/structures/anomalies, with the NYSDEC Project Manager prior to installation. It is anticipated that minor offsets (10 feet or less) will not require prior notification/approval.

4.2 Supplemental Vadose Zone PFAS Impact Delineation Sampling

To further delineate vadose zone PFAS impacts found during the Phase I and II RI, this subtask includes advancing up to 40 additional soil borings. The proposed soil boring locations are shown as green icons on **Figure 3**. The field activities associated with this subtask are described below:

- Prior to advancement of each soil boring, pavement or vegetation will be removed to allow the hand collection of up to 2 surface soil samples at depths of 0 to 0.5 feet and 0.5 to 1.5 feet bgs. Surface soil sample analytical results will be compared to the Phase I RI surface soil and below pavement shallow soil sampling results and incorporated into isoconcentration mapping previously provided in the April 20, 2023 *Phase I Remedial Investigation Field Activity Summary Report*.
- Soil borings will then be advanced via direct push technology (DPT) from 1.5 to 10 feet bgs, groundwater, or refusal, whichever is encountered first. Soil cores will be collected continuously to each boring termination depth using polyvinyl chloride (PVC) dual tube liners. Up to 2 subsurface soil samples collected from each boring will be submitted for analysis: the sample collected from 1.5 to 5 feet bgs and the 2-foot interval collected directly above the apparent water table. No saturated soil samples will be collected. Subsurface soil sample analytical results will be compared to the Phase II RI soil sampling results and incorporated into isoconcentration mapping previously provided in the August 11, 2023 *Phase II Remedial Investigation Field Activity Summary Report*.
- In areas/locations not accessible with a DPT drill rig, hand auguring to the proposed terminal depth or refusal, whichever is encountered first, will be completed.
- Soil samples collected under this subtask will be submitted to a TRC Standby laboratory for the analysis of PFAS (21 compound list) by United States Environmental Protection Agency (USEPA) Method 537 Modified.
- Boreholes will be tremie grouted to a depth of 0.5 feet bgs and restored at the surface to match the surrounding surface (i.e., asphalt, concrete, gravel, etc.).
- Location information for each soil boring will be collected via a global positioning system (GPS) device.
- IDW will be containerized in 55-gallon steel drums and transported off-Site under a separate subtask described below.

4.3 Ground Surface Covering and Vegetation Sampling

TRC will collect samples of ground surface coverings and vegetation in areas determined to be PFAS impacted during the Phase I and II RI. Sample locations will be determined during field activities and are not shown on the attached figures.

The primary purpose of the sampling is to determine the presence/absence of PFAS impacts present in these materials. The secondary purpose of the sampling will be to evaluate alternatives for disposal and/or recycling (asphalt and concrete) or re-use as cover (woody vegetation, chipped and spread over excavated surfaces) under a future Interim Remedial Measure (IRM) and/or Remedial Action. Ground surface cover and vegetation samples will be submitted to TRC's Standby laboratory for analysis of PFAS (21 compound list) by USEPA Method 537 Modified. Additionally, as part of this subtask, TRC will install a semi-permanent stream gage consisting of a perforated PVC stilling well and staff gage. The semi-permanent stream gage will be located adjacent to the inlet culvert connecting the Fall Kill to the on-Site water impoundment or other accessible location and anchored/secured as appropriate. The stream gage will be utilized for hydraulic monitoring described below.

Collection and analysis of the following materials are included in this subtask:

- Asphalt pavement – Up to five samples in "hot spot" areas identified during the Phase I and II RI. TRC will attempt to hand pulverize asphalt samples to the extent feasible. Further sample grain size reduction may be performed by the laboratory to meet analysis requirements.
- Concrete – Up to three samples in "hot spot" areas identified during the Phase I and II RI. TRC will attempt to hand pulverize concrete samples to the extent feasible. Further sample grain size reduction may be performed by the laboratory to meet analysis requirements.
- Woody Vegetation – Up to seven samples, throughout the eastern wooded area and biased to different species of trees larger than six-inches in diameter. TRC will utilize a tree-borer for the collection of woody vegetation samples.

4.4 Overburden Monitoring Well Installation

To determine the presence/absence of PFAS contamination in the overburden aquifer in identified data gap areas, up to one on-Site and two off-Site overburden monitoring wells, co-located with select bedrock monitoring wells, will be installed near the western and eastern Site perimeters. The three overburden monitoring well locations are shown as pink icons on **Figure 4**. As part of this subtask, the following will be completed:

- It is anticipated that vegetation clearing will be required to create vehicular access to proposed monitoring wells located east of the Fall Kill. Vegetation clearing will be completed as needed.
- No soil sampling will be performed during drilling. Boreholes of adjacent bedrock monitoring wells will be sampled via DPT as described in the following subtask.

- The upper 3 feet of soil at each well location will be removed by hand and a length of PVC pipe will be installed to prevent potential soil fall-in during drilling activities.
- Following installation of the upper temporary PVC casing, the monitoring wells will be installed via 4.25-inch inner diameter (ID) hollow stem augers (HSAs). HSAs will be advanced to the apparent groundwater depth (estimated between 5 to 10 feet bgs) or refusal, whichever is encountered first.
- Overburden monitoring wells will be constructed using 2-inch diameter PVC riser and 10 feet of 0.01-slot PVC screen. At each location, the well screen will be set approximately 7 feet below and 3 feet above the apparent groundwater table (as conditions allow). If shallow groundwater is encountered, the screen length may be adjusted as needed.
- The annulus between the well and borehole wall will be backfilled with No. 1 sand to 1 foot above the well screen. Following the filter sand, a minimum 0.5-foot-thick hydrated bentonite seal will be installed. The remaining annulus will be filled with a cement/bentonite grout to approximately 1 foot bgs, as conditions allow.
- Where installed in asphalt pavement or landscaped areas, monitoring wells will be completed with flush mount manholes within a concrete pad. Where completed in vegetated areas (i.e., not landscaped or regularly maintained), monitoring wells will be completed above ground surface within an approximately 3-foot-high steel standpipe, also set in a concrete pad.
- Following installation, the monitoring wells will be developed via pump and surge techniques. Development will be considered complete when either turbidity is below 50 nephelometric turbidity units (NTUs), the well purges dry, or 10 well volumes have been removed, whichever occurs first.
- IDW generated during well installation and development activities will be containerized in 55-gallon drums.

4.5 Bedrock Monitoring Well Installation

4.5.1 Open Hole Bedrock Well Installation

To determine the presence/absence of PFAS contamination in shallow bedrock, TRC will install up to five bedrock monitoring wells around the perimeter of the Site. The secondary purpose for the five perimeter bedrock monitoring wells is to serve as sentinel points between the Site and off-Site sensitive receptors. The scope is based on advancing each location to a terminal depth of 50 feet below the encountered bedrock surface (estimated to range from approximately 5 to 25 feet bgs, based on Phase II RI findings) and that competent bedrock is present. The proposed bedrock well locations are shown in orange on the attached **Figure 4**. As part of this subtask, the following will be completed:

- Utilizing the DPT rig as described in the Supplemental Vadose Zone PFAS Impact Delineation subtask above, soil samples will be collected prior to mobilization of the driller for bedrock well construction. Soil samples will be screened using a PID, inspected for indications of contamination (e.g., staining, odors, etc.), and characterized using Unified Soil Classification System (USCS) and/or modified Burmister methods. Geologic descriptions of the soil and field screening results will be recorded.
- Prior to advancement of each soil boring, pavement or vegetation will be removed to allow the hand collection of up to 2 surface soil samples at depths of 0 to 0.5 feet and 0.5 to 1.5 feet bgs.
- A soil boring for each of the five bedrock monitoring well locations will then be advanced via DPT from 1.5 feet bgs to refusal, the assumed bedrock depth. Soil cores will be collected continuously to each boring termination depth using PVC dual tube liners. Soil samples will be screened using a PID, inspected for indications of contamination (e.g., staining, odors, etc.), and characterized using USCS and/or modified Burmister methods. Geologic descriptions of the soil and field screening results will be recorded.
- At each location, four soil samples will be submitted for analysis of PFAS by USEPA Draft Method 1633. The depth intervals to be selected for analysis will be: 0 to 0.5 feet bgs, 0.5 to 1.5 feet bgs, the depth interval directly above the apparent soil-groundwater interface, and the depth interval directly above the overburden-bedrock interface. Boreholes will be tremie grouted to a depth of 0.5 feet bgs and restored at the surface to match the surrounding surface (i.e., asphalt, concrete, gravel, etc.).
- Prior to advancing HSAs, the upper 3 feet of soil at each well location (offset several feet from the corresponding grouted soil boring) will be removed by hand and a length of PVC pipe will be installed to prevent potential soil fall-in during drilling activities.
- The boreholes for the monitoring wells will be advanced through the PVC pipe to bedrock using 8.25-inch ID HSAs.
- A 7.75-inch diameter pilot hole will be advanced through the HSAs using air rotary methods to approximately 5 feet into competent bedrock. A 6-inch diameter steel casing will then be installed and grouted into place prior to further advancement to limit potential for contaminant migration.
- Following a minimum 24-hour curing period, a 5.75-inch diameter borehole will be further advanced below the casing using air-rotary drilling methods to the selected completion depth for each bedrock well.
- Limited well development (i.e., sufficient to remove foreign material introduced by drilling and drill cuttings) will be completed on the new boreholes.
- Where completed in paved or landscaped areas, bedrock wells will be finished with flush bolt-down manholes with concrete pads. Where completed in heavily vegetated areas, bedrock wells will be finished with locking steel protective standpipes, also set in concrete pads.

- IDW generated during well installation and development activities will be containerized in 55-gallon drums.

4.5.2 Bedrock Borehole Geophysics

Following installation of the five open hole bedrock wells, a downhole geophysical survey will be completed for the purpose of identifying fracture zones. The methods used to perform the geophysical survey at each location will include caliper, fluid temperature and conductivity, optical and acoustic televiewer, natural gamma, and/or heat-pulse flow meter under ambient and stress/pumping conditions.

The geophysical surveyor will supply a preliminary log for each well showing the results and fracture zones recommended for packer testing. Preliminary geophysical logs and packer test zone recommendations will be submitted to the NYSDEC via email for concurrence. Final geophysical logs and a summary report will be provided in the Phase III RI Field Activities Summary Report.

4.5.3 Packer Testing

The findings of the borehole geophysical survey will be used to select up to three packer test zones at each open hole bedrock well location. Packer testing will consist of the following:

- A straddle packer assembly, pump and tubing, and instrumentation will be used to monitor changes in head and indicators of yield and packer tightness during pumping. After successfully inflating and setting the packers at each test interval, the subcontractor will initiate pumping of each test interval at a flow rate specified by TRC to permit monitoring water quality using a water quality meter and a flow cell. A flow rate will be determined to estimate fracture yield.
- At each packer interval, field sampling parameters (pH, temperature, salinity, conductivity, oxidation-reduction potential, dissolved oxygen and turbidity) will be recorded at frequent intervals during pumping.
- At each interval after field sampling parameters and flow have stabilized, a groundwater sample will be collected for laboratory analysis of PFAS by USEPA Draft Method 1633.
- IDW purge water generated during packer testing activities will be containerized in 55-gallon drums.

4.5.4 Bedrock Monitoring Well Completion

After review of the packer test analytical results and in consultation with the NYSDEC, TRC will select proposed well screen intervals for each bedrock monitoring well.

Under a separate mobilization, TRC's subcontracted driller will install monitoring wells to the agreed upon specifications. It is anticipated that each monitoring well will consist of 10 feet of 2-inch diameter Schedule 40 PVC 0.01-slot well screen and 65 feet of riser. The open hole between the bottom of the well screen and bottom of the borehole will be filled with a cement/bentonite grout via a tremie pipe. The annulus between the well and borehole wall will be backfilled with a No. 0 filter sand to 2 feet above the screen followed by a minimum 2-foot-thick hydrated bentonite seal. The remaining annulus will be filled with a cement/bentonite grout to approximately 1-foot bgs, as conditions allow. Following installation, each monitoring well will be developed utilizing pump and surging techniques, as appropriate.

If review of the geophysical and packer test results indicates a need for multi-level monitoring well systems, TRC will review available technologies and seek concurrence from the NYSDEC as appropriate.

4.6 Groundwater Sampling

A minimum of two weeks following development of the fully installed bedrock monitoring wells, TRC will collect a round of surface elevation measurements from all Site monitoring wells (shown on **Figure 4**) for the purpose of contouring groundwater surface elevations and estimating flow direction. The eight newly installed monitoring wells (three overburden and five bedrock) will be sampled for PFAS by USEPA Draft Method 1633.

4.7 Overburden/Bedrock Aquifer Hydraulic Study

Following the groundwater sampling activities described above, up to two rising/falling head slug tests will be performed on each newly installed bedrock monitoring well and up to 6 overburden monitoring wells to estimate hydraulic conductivity.

Following slug testing, six pressure transducers (located in two bedrock wells, three overburden wells, and one in the Fall Kill stream gauge) will be deployed for data collection over an approximate one-month time period. Collected water level data will be used to evaluate the Fall Kill's influence on local overburden and bedrock groundwater flow.

4.8 Land Survey

The Professional Land Surveyor (PLS) selected to perform activities under the Phase I and II Ris will revisit the Site to survey locations and elevations (ground surface, top of protective casing elevation and top of PVC well casing) of the new monitoring wells.

The survey drawing will be updated and signed/sealed by the PLS and included in the Phase III RI Field Activities Summary Report. The survey data will be used to generate groundwater and inferred bedrock surface elevation contour figures for the project investigation area.

4.9 Investigation Derived Waste Disposal

Wash and rinse water from equipment decontamination, development water, purge water, and soil, rock, asphalt and concrete cuttings will be containerized in Department of Transportation (DOT)-approved 55-gallon drums or bulk containers (solids – rolloff container and liquids – frac tank), if determined to be cost effective and feasible for extended on-Site storage, for off-site disposal.

Used Personal Protective Equipment (PPE) and disposable sampling equipment will be bagged as regular refuse and disposed as solid waste, unless grossly contaminated.

Containerized materials will be clearly marked to indicate the contents of the containers, the date of collection, and the source of the material. Materials containerized for off-site disposal will be staged at a predetermined location approved by the NYSDEC and Site property owner(s).

4.10 Tree Survey

TRC will conduct a survey of trees within the wooded area adjacent to the facility and west of the Fall Kill. The species and size (in diameter at breast height) will be recorded using a measuring taps approximately 4.5 feet up from the tree trunk. In addition, each surveyedtree will be GPS located. A narrative summary, tabular listing, and figure of identified trees will be provided in the Phase III RI Field Activities Summary Report.

4.11 Blanding's Turtle Habitat Survey

TRC will conduct a Blanding's Turtle Habitat Assessment in accordance with guidelines outlined in the *Blanding's Turtle Habitats in Southern Dutchess County* to determine the presence of suitable aquatic/wetland habitats, upland habitats, and migration corridors within the project boundaries. A separate TRC Blanding's Turtle Habitat Assessment Plan, outlining activities to be completed, can be found in **Appendix C**.

4.12 Phase III Remedial Investigation Field Activities Summary Report

The Phase III RI Field Activities Summary Report will present the results of the remedial investigation and will be prepared in accordance with the applicable provisions of NYSDEC DER-10. The report will include text, tables, and figures. The figures will show the aerial and vertical extent of contaminants identified. The report will additionally present the results of the natural resources survey activities performed by TRC.

5.0 Schedule

Presented below is an estimated project schedule for implementation of each of the tasks described above. The schedule will be updated periodically and summarized in the regular monthly project progress reports during project implementation.

Task Description	Estimated Completion Date
Tree Survey	June 2024
Blanding's Turtle Habitat Survey	
Utility Locating Survey	July - September 2024
Supplemental Vadose Zone PFAS Impact Delineation Sampling	
Ground Surface Covering and Vegetation Sampling	
Overburden and Bedrock Monitoring Well Installation	
Groundwater Sampling	October - November 2024
Overburden/Bedrock Aquifer Hydraulic Study	
Land Survey	
Investigation Derived Waste Disposal	
Phase III RI Field Activities Summary Report	February 2025

TABLE

Table 1
New York State Department of Environmental Conservation
Dutchess County Fire Training Center – Site No. 314128
WA No. D009812-22.1
Proposed Sampling and Analysis Plan

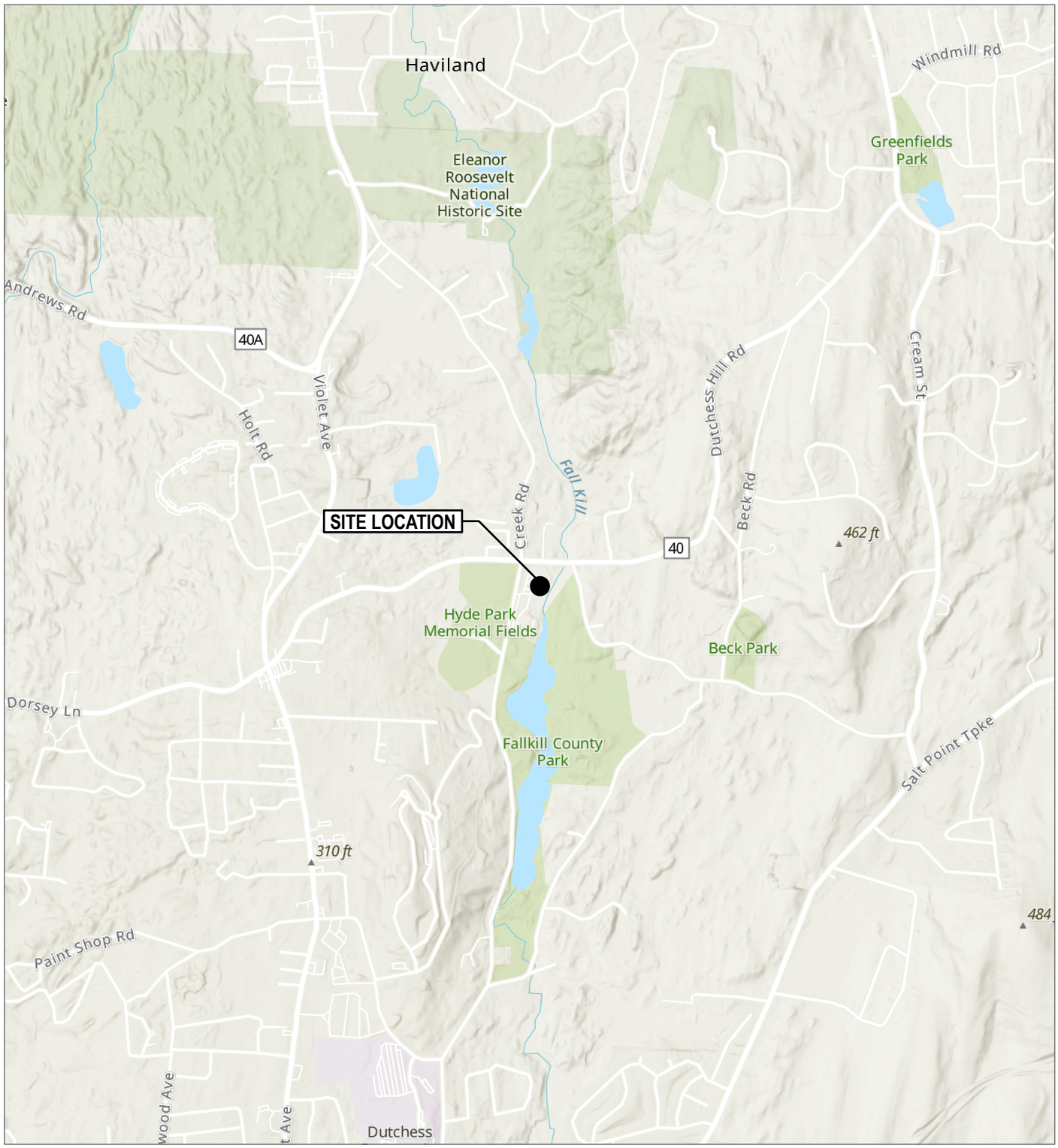
Task	Sample Type	Sample Matrix	Estimated Number of Samples for Analysis	PFAS - 21 Compounds (USEPA Method 537 Modified)	PFAS - 40 Compounds (USEPA Draft Method 1633)	Waste Characterization Parameters[1]
PHASE III RI SAMPLING AND ANALYSES						
Supplemental Vadose Zone PFAS Impact Delineation Sampling	Soil	Soil	160	X		
	Blind Duplicate	Soil	8			
	MS/MSD	Soil	16			
	Equipment Blank	Water	4			
Ground Surface Covering and Vegetation Sampling	Asphalt	Solid	5	X		
	Concrete	Solid	3			
	Vegetation	Solid	7			
	Blind Duplicate	Solid	1			
	MS/MSD	Solid	2			
	Equipment Blank	Water	1			
Bedrock Monitoring Well Installation	Soil	Soil	20		X	
	Blind Duplicate	Soil	1			
	MS/MSD	Soil	2			
	Equipment Blank	Water	2			
Packer Test Sampling	Groundwater	Groundwater	15		X	
	Blind Duplicate	Groundwater	1			
	MS/MSD	Groundwater	2			
	Equipment Blank	Water	2			
Groundwater Sampling	Groundwater	Groundwater	8		X	
	Blind Duplicate	Groundwater	1			
	MS/MSD	Groundwater	2			
	Equipment Blank	Water	1			
Investigation-Derived Waste	IDW	Liquid IDW	Note 2			X
	IDW	Solid IDW	Note 2			

Notes:
1 - Waste characterization parameters will be collected and analyzed based on disposal facility requirements and may include: TCL VOCs, TCL SVOCs, TCL pesticides, TAL metals, PCBs, PFAS, TPH DRO/GRO, ignitability, corrosivity, and reactivity. In addition, solid IDW will be analyzed for the full list of Resource Conservation and Recovery Act (RCRA) toxicity constituents by toxicity characteristic leaching procedure, cyanide, and paint filter.

2 - The number of liquid and solid IDW characterization samples will be determined based on final waste volumes, as well as the requirements of the receiving disposal facility.

IDW : Investigation-Derived Waste
MS/MSD : Matrix Spike/Matrix Spike Duplicate
PCBs : Polychlorinated Biphenyls
PFAS : Per- and polyfluoroalkyl substances
SVOCs : Semivolatile Organic Compounds
TAL : Target Analyte List
TCL : Target Compound List
TICs : Tentatively Identified Compounds
TPH DRO/GRO : Total Petroleum Hydrocarbons Diesel- and Gasoline-Range Organics
USEPA : United States Environmental Protection Agency
VOCs : Volatile Organic Compounds

FIGURES



LEGEND

- SITE LOCATION

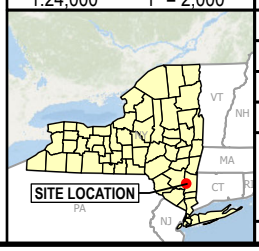
BASE MAP: ESRI TOPOGRAPHIC IMAGERY
DATA SOURCES: TRC

N

0 1,000 2,000

FEET

1:24,000 1" = 2,000'



PROJECT:
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DUTCHESS COUNTY FIRE TRAINING CENTER - SITE NO. 314128
392 CREEK ROAD
HYDE PARK, DUTCHESS COUNTY, NEW YORK

TITLE:

SITE LOCATION MAP

DRAWN BY:	L. LILL	PROJ. NO.:	453208.0000.0000
CHECKED BY:	J. KING		
APPROVED BY:	J. MAGDA		FIGURE 1
DATE:	MARCH 2023		

TRC
3 Corporate Drive
Suite 202
Clifton Park, NY 12065
Phone: 518.348.1190

FILE: PHASEI_RI

LEGEND

- TAX PARCEL BOUNDARY
- ONSITE WATER IMPOUNDMENT
- SURFACE WATER FLOW DIRECTION
- CULVERT OR STORM SEWER AND FLOW DIRECTION
- FENCELINE
- MONITORING WELL

NOTES:

1. LOCATIONS AND DIMENSIONS OF PHYSICAL FEATURES AND PROPERTY BOUNDARIES ARE APPROXIMATE.

1:1,200
1" = 100'

BASE MAP: NEARMAP IMAGERY DATED 4/14/2022
DATA SOURCES: TRC
SHEET SIZE: 11X17L

0 50 100 FEET

PROJECT:
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DUTCHESS COUNTY FIRE TRAINING CENTER - SITE NO. 314128
392 CREEK ROAD
HYDE PARK, DUTCHESS COUNTY, NEW YORK

TITLE:

SITE LAYOUT MAP

DRAWN BY:	L. LILL	PROJ. NO.:	453208.0000.0000
CHECKED BY:	J. KING	FIGURE 2	
APPROVED BY:	J. MAGDA		
DATE:	AUGUST 2023		

TRC

3 Corporate Drive
Suite 202
Clifton Park, NY 12065
Phone: 518.348.1190

FILE: PhaseI_RI.aprx

LEGEND

- TAX PARCEL BOUNDARY
- ONSITE WATER IMPOUNDMENT
- COUNTY PROPOSED BUILDING EXPANSION
- SURFACE WATER FLOW DIRECTION
- CULVERT OR STORM SEWER AND FLOW DIRECTION
- FENCELINE
- MECHANICAL PIPE PLUG
- SITE CHARACTERIZATION MONITORING WELL - NOVEMBER 2019
- SITE CHARACTERIZATION SOIL BORING - NOVEMBER 2019
- COUNTY SOIL BORING - SEPTEMBER 2019
- CORRUGATED STEEL PIPE
- SITE CHARACTERIZATION SURFACE WATER/ SEDIMENT SAMPLE - NOVEMBER 2019
- PHASE I RI FALL KILL SURFACE WATER/SEDIMENT SAMPLE - OCTOBER 2021
- PHASE I RI SURFACE SOIL SAMPLE - MAY 2022
- PHASE I RI SHALLOW SURFACE SOIL SAMPLE, BELOW PAVEMENT - MAY 2022
- PHASE I RI PONDED SURFACE WATER SAMPLE - MAY 2022
- PHASE I RI STORMWATER SAMPLE - MAY 2022
- PHASE II RI SOIL BORING AND MONITORING WELL - NOVEMBER 2022
- PHASE II RI SOIL BORING - NOVEMBER 2022
- PROPOSED IRM SOIL BORING LOCATION

NOTES:

1. LOCATIONS AND DIMENSIONS OF PHYSICAL FEATURES AND PROPERTY BOUNDARIES ARE APPROXIMATE.

BASE MAP: NEAR MAP IMAGERY DATED 4/14/2022
DATA SOURCES: TRC
SHEET SIZE: 11X17L

N

1:600
1" = 50'
0 25 50 FEET

PROJECT:
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DUTCHESS COUNTY FIRE TRAINING CENTER - SITE NO. 314128
392 CREEK ROAD
HYDE PARK, DUTCHESS COUNTY, NEW YORK

TITLE:
PHASE III RI
PROPOSED SOIL BORING LOCATIONS

DRAWN BY:	L. LILL	PROJ. NO.:	453208.0000.0000
CHECKED BY:	J. KING	FIGURE 3	
APPROVED BY:	J. MAGDA		
DATE:	JANUARY 2024		

TRC

3 Corporate Drive
Suite 202
Clifton Park, NY 12065
Phone: 518.348.1190

FILE: IRM.aprx

Coordinate System: NAD 1983 StatePlane New York East FIPS 3101 Feet; Map Rotation: 0
-- Saved By: LLILL on 1/9/2024, 09:18:41 AM; File Path: T:\1-PROJECTS\NYSDEC\453208_DutchessCountyFireTraining\2-APRX\IRM\IRM.aprx; Layout Name: Figure 1- Proposed IRM Soil Boring Locations

LEGEND

- TAX PARCEL BOUNDARY
- ONSITE WATER IMPOUNDMENT
- COUNTY PROPOSED BUILDING EXPANSION
- CULVERT OR STORM SEWER AND FLOW DIRECTION
- SURFACE WATER FLOW DIRECTION
- FENCELINE
- MECHANICAL PIPE PLUG
- MONITORING WELL
- CORRUGATED STEEL PIPE
- PROPOSED OVERBURDEN MONITORING WELL
- PROPOSED BEDROCK MONITORING WELL

NOTES:

1. LOCATIONS AND DIMENSIONS OF PHYSICAL FEATURES AND PROPERTY BOUNDARIES ARE APPROXIMATE.

BASE MAP: NEARMAP IMAGERY DATED 4/14/2022
DATA SOURCES: TRC
SHEET SIZE: 11X17L

1:1,080
1" = 90'
0 45 90 FEET

PROJECT:
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DUTCHESS COUNTY FIRE TRAINING CENTER - SITE NO. 314128
392 CREEK ROAD
HYDE PARK, DUTCHESS COUNTY, NEW YORK

TITLE:
PHASE III RI
PROPOSED MONITORING WELL LOCATION MAP

DRAWN BY:	L. LILL	PROJ. NO.:	453208.0000.0000
CHECKED BY:	R. VASAVADI		
APPROVED BY:	J. KING		**FIGURE 4**
DATE:	JANUARY 2024		

TRC
3 Corporate Drive
Suite 202
Clifton Park, NY 12065
Phone: 518.348.1190

FILE: PhaseIII_RI.aprx

Coordinate System: NAD 1983 StatePlane New York East FIPS 3101 Feet; Map Rotation: 0
Saved By: LLILL on 1/3/2024, 1:06:29 AM; File Path: T:\PROJECTS\NYSDEC\453208_DutchessCountyFireTraining\2-APRX\Phase III_RI\Phase III_RI.aprx; Layout Name: Figure 2 - Phase III RI Proposed MW Location Map

APPENDIX A

SITE SPECIFIC HEALTH AND SAFETY PLAN

SITE-SPECIFIC HEALTH AND SAFETY PLAN

Dutchess County Fire Training Center
392 Creek Road, Hyde Park, New York 12601
NYSDEC Site No. 314128
Work Assignment No. D09812-22.1

Prepared for:
New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway, 12th Floor
Albany, NY 12233

Prepared by:
TRC Engineers, Inc.
3 Corporate Drive, Suite 202
Clifton Park, New York 12065

TRC Project No.: 453208.0000.0000

May 2024

Table of Contents

List of Tables

List of Appendices

1. Site/Project Contact Information

Table 1 – Site/Project Contact Information			
Site Information			
Site Name	**Site No.**	**Address**	
Dutchess County Fire Training Center	NYSDEC Site No. 314128	392 Creek Road, Hyde Park, NY 12601	
Client Contact			
Name	**Organization**	**Title**	**Primary Phone No.**
Anthony Bollasina	NYSDEC	Project Manager	(518) 402-2754
TRC Personnel and Project Role			
Name	**Role**	**Email**	**Primary Phone No.**
Michael Glenn	Health and Safety Officer (HSO)	mglenn@trccompanies.com	(949) 697-7418 (cell)
David Sullivan	Assistant HSO	dsullivan@trccompanies.com	(978) 758-2809 (cell)
James Magda	Contract Manager	jmagda@trccompanies.com	(315) 415-4315 (cell)
Justin King	Project Manager	jking@trccompanies.com	(518) 860-7656 (cell)
Jonathan Bone	Office Safety Coordinator (OSC)	jbone@trccompanies.com	(315) 436-0853 (cell)
Andrew Fishman	Field Staff	afishman@trccompanies.com	(518) 478-5210 (cell)
Rich DePolo	On-Site HSO/Field Staff	rdepolo@trccompanies.com	(838) 218-5279 (cell)
Subcontractor Information			
Company Name	**Service**	**Primary Contact**	**Primary Phone No.**
TestAmerica Laboratories	Laboratory Analytical Services	N/A	N/A
Greenstar Environmental	Utility Locating Services	Pete Nimmer	917-655-5123
Parratt Wolff	DPT Drilling Services	Sean Pepling	315-437-1429
AARCO Environmental	HSA/Air Rotary and IDW Disposal Services	Dennis Mayer and Sean Tuthill	631-586-5900
Susan Anacker PLS	Land Surveying Services	Susan Anacker	315-724-6800
Hager Richter Geoscience, Inc.	Borehole Geophysics Services	Rob Garfield	
Emergency Assistance			
Service	**Name**	**Emergency No.**	**Primary Phone No**
Ambulance	Dutchess Ambulette Inc	911	(845) 471-2018
Early Incident Intervention	WorkCare	1-888-449-7787	Not applicable
Fire	Roosevelt Fire District	911	(845) 454-5070
Hospital	MidHudson Regional Hospital of Westchester Medical Center	911	(845) 483-5000
Police	Hyde Park Police Department	911	(845) 229-9340
Poison Control Center	Upstate New York Poison Center	911	(800) 222-1222

Spill	CHEMTREC	Not applicable	1-800-424-9300 (TRC No. CCN 671126)
Spill (Federal)	National Response Center	1-800-424-8802	Not applicable
Spill (State)	New York State Spill Hotline	1-800-457-7362	Not applicable

2. Medical Facility Identification and Directions

Nearest Hospital: MidHudson Regional Hospital of Westchester Medical Center

Hospital Address: 241 North Road, Poughkeepsie, NY 12601

Hospital Telephone Number: (845) 483-5000

Directions to Hospital (see Map below):

10/20/21, 11:18 AM Bing Maps - Directions, trip planning, traffic cameras & more

bing maps

A 392 Creek Rd, Poughkeepsie, NY 12601
B MidHudson Regional Hospital, 241 North Rd, Poughkeepsie, NY 12601

9 min , 3.6 miles
Light traffic (Leave at 11:18 AM)
Via E Dorsey Ln, NY-9G
· Local roads

A 392 Creek Rd, Poughkeepsie, NY 12601

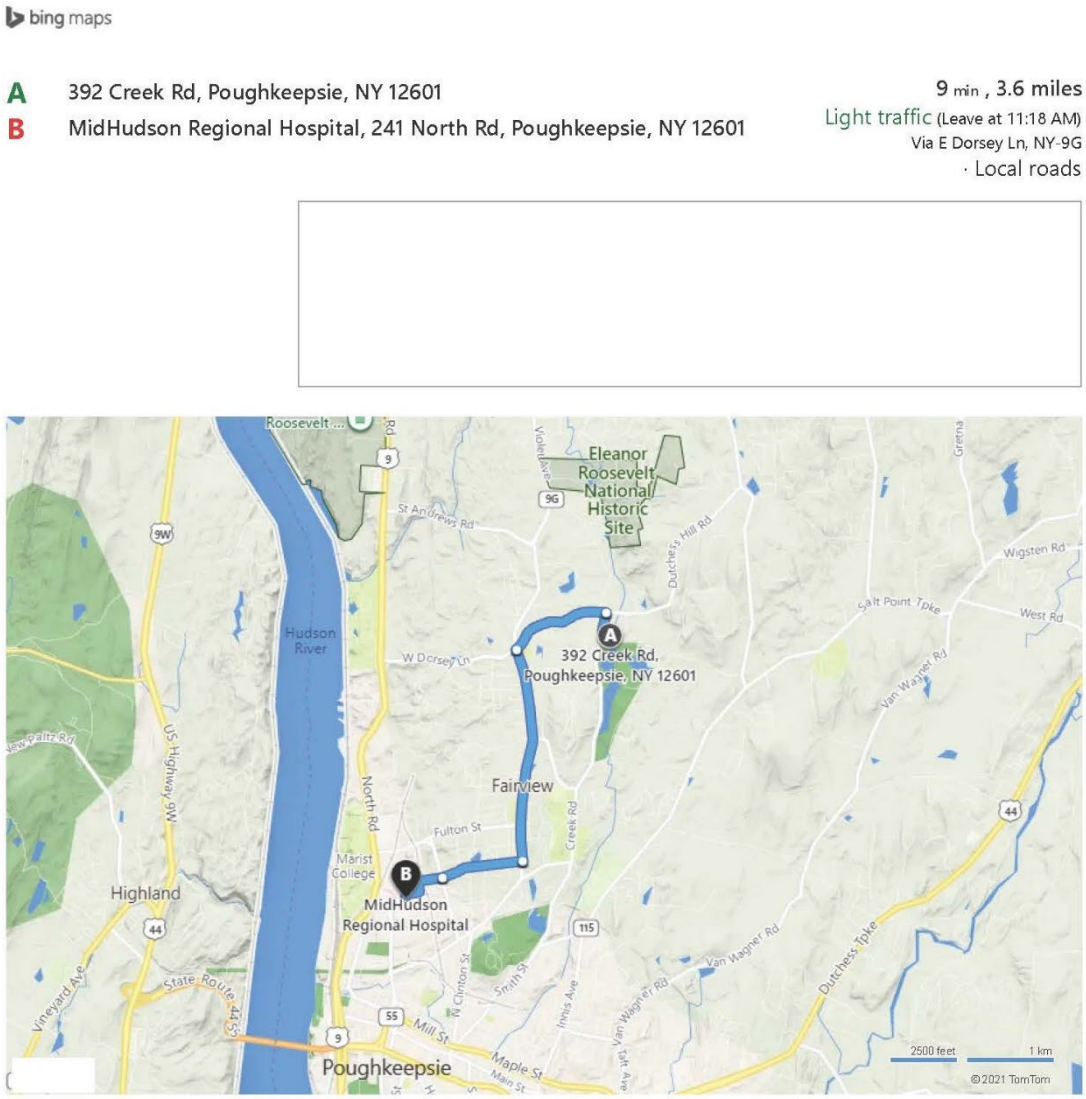
↑	1.	Depart and head toward **Creek Rd / County Hwy-100**	0.1 mi
↱	2.	Turn **right** onto **Creek Rd / County Hwy-100**	0.2 mi
↰	3.	Turn **left** onto **E Dorsey Ln / County Hwy-40**	0.8 mi
↰	4.	Turn **left** onto **NY-9G / Violet Ave**	1.6 mi
↱	5.	Turn **right** onto **E Cedar St**	0.6 mi
↑	6.	Road name changes to **W Cedar St**	0.2 mi
↰	7.	Turn **left** onto **Garden Street Ext**	157 ft
↑	8.	Road name changes to **Garden St**	272 ft
↱	9.	Turn **right** onto **Baker Ave**	0.1 mi
↰	10.	Turn **left**	108 ft
	11.	Arrive at your destination on the left The last intersection before your destination is Baker Ave	

B MidHudson Regional Hospital

These directions are subject to the Microsoft® Service Agreement and are for informational purposes only. No guarantee is made regarding their completeness or accuracy. Construction projects, traffic, or other events may cause actual conditions to differ from these results. Map and traffic data © 2021 TomTom.

https://www.bing.com/maps 1/1

Map to Hospital:



3. Utility Clearance

To be completed by Greenstar Environmental around all proposed soil boring/monitoring well locations.

4. Scope of Work Summary

The specific Phase III Remedial Investigation scope of work to be completed from the approved Work Assignment Amendment No. 1 (WA No. 22.1) includes the following:

4.1 Utility Locating Survey

Prior to intrusive activities, a private utility locating survey will be conducted, in addition to the public utility mark outs, in the proposed soil boring and monitoring well locations shown on **Figures 1** and **2**, respectively. Subsurface utilities/structures/anomalies will be identified on the ground surface with spray paint and/or pin flags. A utility survey report, including a map showing the locations and types of subsurface features identified, will be prepared and included in the Phase III RI Field Activities Summary

Report.

TRC will discuss any required soil boring repositioning, due to identified subsurface utilities / structures / anomalies, with the NYSDEC Project Manager prior to installation. It is anticipated that minor offsets (10 feet or less) will not require prior notification/approval.

4.2 Supplemental Vadose Zone PFAS Impact Delineation Sampling

To further delineate vadose zone PFAS impacts found during the Phase I and II RI, this subtask includes advancing up to 40 additional soil borings. The proposed soil boring locations are shown as green icons on **Figure 1**. The following field activities will be completed under this subtask:

- Prior to advancement of each soil boring, pavement or vegetation will be removed to allow the hand collection of up to 2 surface soil samples at depths of 0 to 0.5 feet and 0.5 to 1.5 feet below ground surface (bgs).
- Soil borings will then be advanced via direct push technology (DPT) from 1.5 to 10 feet bgs, groundwater, or refusal, whichever is encountered first. Soil cores will be collected continuously to each boring termination depth using PVC dual tube liners. Up to 2 subsurface soil samples collected from each boring will submitted for analysis: the sample collected from 1.5 to 5 feet bgs and the 2-foot interval collected directly above the apparent water table. No saturated soil samples will be collected.
- In areas/locations not accessible with a DPT drill rig, hand auguring to the proposed terminal depth or refusal, whichever is encountered first, will be completed.
- Soil samples collected under this subtask will be submitted to a TRC Standby laboratory for the analysis of PFAS (21 compound list) by USEPA Method 537 Modified.
- Boreholes will be tremie grouted to a depth of 0.5 feet bgs and restored at the surface to match the surrounding surface (i.e., asphalt, concrete, gravel, etc.).
- Location information for each soil boring will be collected via a global positioning system (GPS) device.
- IDW will be containerized in 55-gallon steel drums and transported off-Site under a separate subtask described below.

4.3 Ground Surface Covering and Vegetation Sampling

TRC will collect samples of ground surface coverings and vegetation in areas determined to be PFAS impacted during the Phase I and II RI. The primary purpose of the sampling is to determine the presence/absence of PFAS impacts present in these materials. The secondary purpose of the sampling will be to evaluate alternatives for disposal and/or recycling (asphalt and concrete) or re-use as cover (woody vegetation, chipped and spread over excavated surfaces) under a future IRM and/or Remedial Action. Ground surface cover and vegetation samples will be submitted to TRC's Standby laboratory for analysis of PFAS (21 compound list) by USEPA Method 537 Modified. Additionally, as part of this subtask, TRC will install a semi-permanent stream gage consisting of a perforated PVC stilling well and staff gage. The semi-permanent stream gage will be located adjacent to the inlet culvert connecting the Fall Kill to the on-Site water impoundment or other accessible location and anchored/secured as appropriate. The stream gage will be utilized for hydraulic monitoring described below.

Collection and analysis of the following are included:

- Asphalt pavement – Up to five samples in "hot spot" areas identified during the Phase I and II RI. TRC will attempt to hand pulverize asphalt samples to the extent feasible. Further sample grain size reduction may be performed by the laboratory to meet analysis requirements.

- Concrete – Up to three samples in "hot spot" areas identified during the Phase I and II RI. TRC will attempt to hand pulverize concrete samples to the extent feasible. Further sample grain size reduction may be performed by the laboratory to meet analysis requirements.
- Woody Vegetation – Up to seven samples, throughout the eastern wooded area and biased to different species of trees larger than six-inches in diameter. TRC will utilize a tree-borer for the collection of woody vegetation samples.

4.4 Overburden Monitoring Well Installation

To determine the presence/absence of PFAS contamination in the overburden aquifer in identified data gap areas, up to three off-Site overburden monitoring wells, co-located with select bedrock monitoring wells, will be installed near the western and eastern Site perimeters. The three overburden monitoring well locations are shown as pink icons on **Figure 2**. As part of this subtask, the following will be completed:

- It is anticipated that vegetation clearing will be required to create vehicular access to proposed monitoring wells located east of the Fall Kill. Vegetation clearing will be completed as needed.
- No soil sampling will be performed during drilling. Boreholes of adjacent bedrock monitoring wells will be sampled via DPT as described in the following subtask.
- The upper 3 feet of soil at each well location will be removed by hand and a length of PVC pipe will be installed to prevent potential soil fall-in during drilling activities.
- Following installation of the upper temporary PVC casing, the monitoring wells will be installed via 4.25-inch inner diameter (ID) hollow stem augers (HSAs). HSAs will be advanced to the apparent groundwater depth (estimated between 5 to 10 feet bgs) or refusal, whichever is encountered first.
- Overburden monitoring wells will be constructed using 2-inch diameter PVC riser and 10 feet of 0.01-slot PVC screen. At each location, the well screen will be set approximately 7 feet below and 3 feet above the apparent groundwater table (as conditions allow). If shallow groundwater is encountered, the screen length may be adjusted as needed.
- The annulus between the well and borehole wall will be backfilled with No. 1 sand to 1 foot above the well screen. Following the filter sand, a minimum 0.5-foot-thick hydrated bentonite seal will be installed. The remaining annulus will be filled with a cement/bentonite grout to approximately 1 foot bgs, as conditions allow.
- Where installed in asphalt pavement or landscaped areas, monitoring wells will be completed with flush mount manholes within a concrete pad. Where completed in vegetated areas (i.e., not landscaped or regularly maintained), monitoring wells will be completed above ground surface within an approximately 3-foot-high steel standpipe, also set in a concrete pad.
- Following installation, the monitoring wells will be developed via pump and surge techniques. Development will be considered complete when either turbidity is below 50 NTUs, the well purges dry, or 10 well volumes have been removed, whichever occurs first.
- IDW generated during well installation and development activities will be containerized in 55-gallon drums.

4.5 Bedrock Monitoring Well Installation

4.5.1 Open Hole Bedrock Well Installation

To determine the presence/absence of PFAS contamination in shallow bedrock, TRC will install up to five bedrock monitoring wells around the perimeter of the Site. The secondary purpose for the five perimeter bedrock monitoring wells is to serve as sentinel points between the Site and off-Site sensitive receptors. For budgeting purposes, the scope is based on advancing each

location to a terminal depth of 50 feet below the encountered bedrock surface (estimated to range from approximately 5 to 25 feet bgs, based on Phase II RI findings) and that competent bedrock is present. The proposed bedrock well locations are shown in orange on the attached **Figure 2**. As part of this subtask, the following will be completed:

- Utilizing the DPT rig as described in the Supplemental Vadose Zone PFAS Impact Delineation subtask above, soil samples will be collected prior to mobilization of the driller for bedrock well construction. Soil samples will be screened using a PID, inspected for indications of contamination (e.g., staining, odors, etc.), and characterized using USCS and/or modified Burmister methods. Geologic descriptions of the soil and field screening results will be recorded.
- Prior to advancement of each soil boring, pavement or vegetation will be removed to allow the hand collection of up to 2 surface soil samples at depths of 0 to 0.5 feet and 0.5 to 1.5 feet bgs.
- A soil boring for each of the five bedrock monitoring well locations will then be advanced via DPT from 1.5 feet bgs to refusal, the assumed bedrock depth. Soil cores will be collected continuously to each boring termination depth using PVC dual tube liners. Soil samples will be screened using a PID, inspected for indications of contamination (e.g., staining, odors, etc.), and characterized using USCS and/or modified Burmister methods. Geologic descriptions of the soil and field screening results will be recorded.
- At each location, four soil samples will be submitted for analysis of PFAS by USEPA Draft Method 1633. The depth intervals to be selected for analysis will be: 0 to 0.5 feet bgs, 0.5 to 1.5 feet bgs, the depth interval directly above the apparent soil-groundwater interface, and the depth interval directly above the overburden-bedrock interface. Boreholes will be tremie grouted to a depth of 0.5 feet bgs and restored at the surface to match the surrounding surface (i.e., asphalt, concrete, gravel, etc.).
- Prior to advancing HSAs, the upper 3 feet of soil at each well location (offset several feet from the corresponding grouted soil boring) will be removed by hand and a length of PVC pipe will be installed to prevent potential soil fall-in during drilling activities.
- The boreholes for the monitoring wells will be advanced through the PVC pipe to bedrock using 8.25-inch ID HSAs.
- A 7.75-inch diameter pilot hole will be advanced through the HSAs using air rotary methods to approximately 5 feet into competent bedrock. A 6-inch diameter steel casing will then be installed and grouted into place prior to further advancement to limit potential for contaminant migration.
- Following a minimum 24-hour curing period, a 5.75-inch diameter borehole will be further advanced below the casing using air-rotary drilling methods to the selected completion depth for each bedrock well.
- Limited well development (i.e., sufficient to remove foreign material introduced by drilling and drill cuttings) will be completed on the new boreholes.
- Where completed in paved or landscaped areas, bedrock wells will be finished with flush bolt-down manholes with concrete pads. Where completed in heavily vegetated areas, bedrock wells will be finished with locking steel protective standpipes, also set in concrete pads.
- IDW generated during well installation and development activities will be containerized in 55-gallon drums.

4.5.2 Bedrock Borehole Geophysics

Following installation of the five open hole bedrock wells, a downhole geophysical survey will be

completed for the purpose of identifying fracture zones. The methods used to perform the geophysical survey at each location will include caliper, fluid temperature and conductivity, optical and acoustic televiewer, natural gamma, and/or heat-pulse flow meter under ambient and stress/pumping conditions.

The geophysical surveyor will supply a preliminary log for each well showing the results and fracture zones recommended for packer testing.

4.5.3 Packer Testing

The findings of the borehole geophysical survey will be used to select up to three packer test zones at each open hole bedrock well location. Packer testing will consist of the following:

- A straddle packer assembly, pump and tubing, and instrumentation will be used to monitor changes in head and indicators of yield and packer tightness during pumping. After successfully inflating and setting the packers at each test interval, the subcontractor will initiate pumping of each test interval at a flow rate specified by TRC to permit monitoring water quality using a water quality meter and a flow cell. A flow rate will be determined to estimate fracture yield.
- At each packer interval, field sampling parameters (pH, temperature, salinity, conductivity, oxidation-reduction potential, dissolved oxygen and turbidity) will be recorded at frequent intervals during pumping.
- At each interval after field sampling parameters and flow have stabilized, a groundwater sample will be collected for laboratory analysis of PFAS by USEPA Draft Method 1633.
- IDW purge water generated during packer testing activities will be containerized in 55-gallon drums.

4.5.4 Bedrock Monitoring Well Completion

After review of the packer test analytical results and in consultation with the NYSDEC, TRC will select proposed well screen intervals for each bedrock monitoring well.

Under a separate mobilization, TRC's subcontracted driller will install monitoring wells to the agreed upon specifications. For budgeting purposes, each monitoring well will consist of 10 feet of 2-inch diameter Schedule 40 PVC 0.01-slot well screen and 65 feet of riser. The open hole between the bottom of the well screen and bottom of the borehole will be filled with a cement/bentonite grout via a tremie pipe. The annulus between the well and borehole wall will be backfilled with a No. 0 filter sand to 2 feet above the screen followed by a minimum 2-foot-thick hydrated bentonite seal. The remaining annulus will be filled with a cement/bentonite grout to approximately 1-foot bgs, as conditions allow. Following installation, each monitoring well will be developed utilizing pump and surging techniques, as appropriate.

If review of the geophysical and packer test results indicates a need for multi-level monitoring well systems, TRC will review available technologies and seek concurrence from the NYSDEC as appropriate.

4.5.5 Groundwater Sampling

Two weeks following development of the fully installed bedrock monitoring wells, TRC will collect a round of surface elevation measurements from all Site monitoring wells for the purpose of contouring groundwater surface elevations and estimating flow direction. The newly installed eight monitoring wells

(three overburden and five bedrock) will be sampled for PFAS by USEPA Draft Method 1633.

4.6 Overburden/Bedrock Aquifer Hydraulic Study

Following the groundwater sampling activities described above, up to two rising/falling head slug tests will be performed on each newly installed bedrock monitoring well and up to 6 overburden monitoring wells to estimate hydraulic conductivity.

Following slug testing, six pressure transducers (located in two bedrock wells, three overburden wells, and one in the Fall Kill stream gauge) will be deployed for data collection over an approximate one-month time period. Collected water level data will be used to evaluate the Fall Kill's influence on local overburden and bedrock groundwater flow.

4.7 Land Survey

The surveyor selected to perform activities under Tasks 3 and 4 will revisit the Site to survey locations and elevations (ground surface, top of protective casing elevation and top of PVC well casing) of the new monitoring wells.

4.8 Investigation Derived Waste

- Wash and rinse water from equipment decontamination, development water, purge water, and soil, rock, asphalt and concrete cuttings will be containerized in DOT-approved 55-gallon drums or bulk containers (solids – rolloff container and liquids - frac tank), if determined to be cost effective and feasible for extended on-Site storage, for off-site disposal.
- Used PPE and disposable sampling equipment will be bagged as regular refuse and disposed as solid waste, unless grossly contaminated.
- Containerized materials will be clearly marked to indicate the contents of the containers, the date of collection, and the source of the material.
- Materials containerized for off-site disposal will be staged at a predetermined location agreed on with the NYSDEC and Site property owner(s).

4.9 Tree Survey

TRC will conduct a survey of trees within the wooded area adjacent to the facility and west of the Fall Kill. The species and size (in diameter at breast height) will be recorded and each tree will be GPS located. A narrative summary, tabular listing, and figure of identified trees will be provided in the Phase III RI Field Activities Summary Report.

4.10 Blanding's Turtle Habitat Survey

TRC will conduct a Blanding's Turtle Habitat Survey in accordance with guidelines outlined in the Blanding's Turtle Habitats in Southern Dutchess County to determine the presence of suitable aquatic/wetland habitats, upland habitats, and migration corridors within the project boundaries. The Blanding's Turtle Habitat Survey will be limited to the Site parcel boundaries and conducted by one team of two qualified field biologists, who will record observations and data in accordance with the Supplemental Work Plan. Vegetation characteristics and water depth will be collected at wetland features previously delineated by TRC during the Step 1 FWIA (Task 3). Soils will be assessed for potential nesting suitability in upland areas. Points where vegetation characteristics, water depth, and soil plots, are collected, will be identified. Surveys will be conducted when the ground is free of snow and ice, preferably when leaves are on trees. Surveys will be conducted on clear days with no rain.

5. Hazard Assessment

This Health and Safety Plan (HASP) assumes that an ongoing hazard assessment process with the HSO (or his/her designee), Project Manager, OSC and field staff (including the On-Site HSO) will take place regularly (via meetings/teleconferences), supplemented by as needed communication on project safety needs, to ensure the project work is conducted at a high level of technical excellence both safely and efficiently. Where the on-going hazard assessment indicates the presence of hazards, tasks, or other activities that are not adequately covered by the HASP and supporting documentation and/or staff training levels, supplemental planning will be conducted and documented in a revised or higher-level HASP document and appropriately trained personnel assigned.

5.1 Chemical Hazards

The following contaminants are known and/or suspected to be present at the site:

- PFAS

TRC also anticipates the presence of the following chemicals in laboratory bottles used as sample preservatives: Sodium Hydroxide, Nitric Acid and Hydrochloric Acid. In addition, TRC anticipates the use of methyl alcohol (methanol) during decontamination procedures. Safety Data Sheets (SDS) for preservatives and decontamination products are provided in **Appendix A**. Sample bottles containing hazardous preservatives will be handled with care. Sample bottles will be checked for leaks and lids tightened. Cut resistant and chemical resistant gloves and safety glasses will be worn at all times when handling sample bottles (see Section 5.2 for information concerning edges and material handling).

Isobutylene may be used for brief periods each work day to calibrate a photoionization detector (PID). One hundred parts per million (ppm) isobutylene will be primarily contained in a Tedlar® bag. Any gas that is released to the air will quickly disperse and will not pose a threat to on-site workers. No further monitoring is required for isobutylene

5.2 Physical Hazards

Physical hazards that may be encountered at the site are outlined below. If hazards are identified by the ongoing hazard assessment process, which are not address by this HASP, work shall be stopped and the HSO (or his/her designee), Project Manager, OSC or On-Site OSC, as appropriate, shall be contacted to determine if additional safety procedures and programs should be employed at the site.

Dust – When conducting any ground disturbing activities, be cognizant that the dust has potential to contain hazardous chemicals and should not be inhaled. Whenever possible dust reduction by wetting shall be used. If dust is billowing, wetting the area, letting the dust settle, working from an upwind direction, and/or

respirator with P100 cartridges (with proper fit test, training and medical monitoring) is recommended to reduce exposure.

Edges/Material Handling – Cut resistant gloves are required to be worn at all times while performing tasks that have the potential for hand injuries. A glove selection guideline is presented in **Appendix B**.

TRC has a policy of using guarded blades for cutting tasks, fixed blade open knives are not to be used for work under this scope of work unless a variance is approved by the ECR Safety Manager.

Hand Tools – Use only the appropriate tool for the task at hand. Use the tool(s) as designed, described, and intended by the manufacturer. Hand tools will meet the manufacturer's safety standards. Hand tools will not be altered in any way. Makeshift tools will not be used. At a minimum, hand and eye protection will be used when working with hand tools (see glove selection guide provided herein). Wrenches, including adjustable, pipe, end and socket wrenches, will not be used when jaws are sprung to the point that slippage occurs. Impact tools such as drift pins, wedges and chisels, will be kept free of mushroom heads. Wooden handles will be free of splinters or cracks and secured tightly to the tool. At all times use appropriate hand protection when utilizing hand tools.

Heavy Equipment/Drill Rigs – Use caution around drill rigs, construction equipment, and open excavations. Ensure the equipment operator is aware of the location of on-site personnel at all times to avoid potential injuries (e.g., maintain eye contact with the equipment operator). A spotter should be used to direct the movement of heavy equipment. A swing zone should be established with cones behind any excavators to prevent injury during movement of equipment. Exercise caution and wear protective equipment as noted herein around the equipment to guard against crushing and pinching hazards. On-site personnel will maintain a distance (approximately 10 feet) from mechanical hazards associated with heavy equipment. All field team members working near or with equipment with emergency shut-off switches should be aware of the locations and situations when these switches should be used.

Hostile Individual(s) – Most personnel who are encountered during work will not be hostile, however if a hostile individual is encountered you should not confront them. You should back away and go to your vehicle or other safe location where you can isolate yourself from the hostile person(s). Once safe, if you are continuing to be harassed you should contact the local police for assistance. Contact the Project Manager or OSC once the situation is safe and under control.

Hunters/Firing Range, etc. – Be aware of surrounding activities that may involve hunting, firearms, etc. that may not be in your immediate area, but could be create an unsafe work environment.

Manual Lifting – Improper lifting can lead to a variety of injuries including back strains, muscle pulls and joint damage. It is important for all personnel to understand proper lifting techniques and to utilize safe lifting procedures when handling materials. Generally, no one person should lift more than 50 pounds

without assistance. Mechanical means should be used whenever possible.

Noise – Hearing protection must be worn when noise levels exceed 85 dBA in the work area. If you need to raise your voice to be heard at the work site, then hearing protection should be worn. Hearing protection will be worn near drill rigs.

Power Tools – All power tools will be inspected regularly (at least on a daily basis) and used in accordance with the manufacturer's instructions and its capabilities. Electrical tools will not be used in flammable areas, unless they are approved for that purpose. Portable electric tools will be used only with a GFCI. Proper hand, eye and hearing protection will be used when working with power tools and all appropriate safety guards must be in place. Personnel will be trained in the proper use of the specific tool. Any defective power tools will be immediately tagged and removed from service. Tools will be stored properly after use.

Pressurized Fluids/Gases – All compressed gases are hazardous due to the high pressures inside the cylinders. Even at a relatively low pressure, gas can flow rapidly from an open or leaking cylinder. Damaged cylinders can become projectiles resulting in severe injury and property damage. An unsecured or uncapped cylinder can become a cause of a major accident. Cylinders shall be secured when not in use, in transport, and as much as possible when in use.

Slips, Trips and Falls – Be aware of uneven ground and buried debris (e.g., metal, plastic, etc.) to avoid potential slip/trip/fall hazards, and use caution near open excavations. Maintain good housekeeping practices to minimize physical hazards.

Traffic Hazards – Driving to and from the site each day is considered a physical hazard. Directions and travel time to the site should be determined in advance (a.k.a. Journey Management Planning) and adequate time should be allocated to drive safely. The use of cellular phones is prohibited, and distracted driving should be avoided. Seatbelts shall be worn at all times while the vehicle is moving. Use caution around traffic flow. Ensure proper traffic control (e.g., signs, traffic cones, barriers, etc.) are in place prior to and throughout the work day where work takes place in or near traffic. Work personnel must wear ANSI-rated class 3 reflective traffic vests at all times. A site-specific traffic management plan describing procedures to be employed, including barriers, signage, etc., will be used for each drilling location.

Weather – Heat and cold stress are a potential concern for on-site workers. Take breaks as needed to cool down, replenish fluids and/or warm up. Please refer to **Appendix C** for the signs, symptoms and precautions for cold and heat stress. Work may occur during a time of year when thunderstorms are possible/likely. If thunder or lightning is noted by onsite personnel, work will cease until the storm passes (thunder and/or lightning ceases and is not observed over at least a 30-minute period). Personnel will seek shelter in buildings or vehicles.

Working Over/Near Water – All workers working over/near water will be required to wear a Type I, II, or III Personal Floatation Device (PFD). When continuous fall protection is used (without exception) to prevent employees from falling into the water, the drowning hazard has effectively been removed. Therefore, PFDs are not required when utilizing continuous fall protection.

5.3 Biological Hazards

Biological Waste – This includes feces, urine, needles/sharps and other materials which may contain biological matter from humans or animals. This material should be avoided and not handled in any way. If biological waste impedes the planned scope of work the Project Manager or OSC should be contacted to discuss appropriate actions.

Blood-Borne Pathogens – Injuries received in the field may require assistance from a field team member with appropriate first aid/first responder training to perform first aid. Contact with blood and certain body fluids can contain pathogens that may be transmitted by contact with an open wound by the caregiver. The following precautions should be used when giving first aid:

- Use nitrile gloves to avoid contact with blood/fluids. Spent bandages and gloves used to perform first aid should be placed in a plastic bag and properly disposed.
- Blood/fluid should be cleaned from surfaces that may be contacted by other individuals.
- Use an appropriate barrier if required to perform rescue breathing.

Ticks - Ticks generally favor areas of high grass and dense vegetation so to the extent possible, these areas should be avoided. It is advisable when entering these areas to tuck pants into socks and to wear a light colored long sleeve shirt to help spot ticks before they bite. DEET-based insect repellents may be worn to repel ticks but hands should be washed thoroughly after use and DEET should not be sprayed directly onto the skin surface. Self-checks should be made frequently and at least at the end of the field day for ticks when working in or near vegetated areas.

If discovered, the tick should be removed with a pair of tweezers and saved in a sealed plastic bag. Sometimes, tick bites occur but the tick may not stay attached, followed by a rash developing in the area within a few days of the bite**. If bitten by a tick or a bulls-eye like rash develops, it is advisable to consult WorkCare**.

Spiders – Spiders typically seek cover in dark protected areas. Common areas where spiders may be encountered are heavy vegetation and trees. Spiders also are found in basements and enclosed spaces such as sheds, protective well covers, etc. Spider bites may cause swelling, pain and respiratory problems. Avoid dense vegetation, and use caution when sampling in dark poorly illuminated locations. If bitten, wash the area and use ice on the bite area to reduce swelling. If respiratory stress, significant pain or swelling is noted, or discoloration around the bite area occurs, seek immediate medical attention.

Stinging Insects – Like spiders, wasps and yellow jackets often nest in dense vegetation and in the ground, or in protective casings on monitoring wells and shielded gate locks. A sting from these insects can cause pain, swelling, and respiratory problems that may be life-threatening to certain individuals. If stung, remove stinger (if present) using tweezers, or similar, and wash the area and use ice on the sting area to reduce swelling. If respiratory stress, significant pain or swelling is noted, or discoloration around the sting area occurs, seek immediate medical attention.

Dogs and Wild Animals – Dogs often are not leashed and may be unfriendly. Bites from dogs and wild animals can cause infections or transmit disease. In general, it is best to not approach dogs even if they appear to be friendly, and wild animals should never be approached. If bitten, the area should be washed with soap and water. If the bite resulted in puncturing or tearing of the skin, the wound should be covered with a sterile dressing and medical attention should be sought immediately. A description of the dog should be noted and if possible, the dog's owner.

Plants – There are many types of plants which can cause irritation or allergic type reactions. Examples of some encountered on TRC sites include the following:

Poison Ivy **–** the trademarks of this plant are its solid green, pointed leaves that hang from the stem in groups of three. It grows as both a vine and a shrub. The look of poison ivy can change with the seasons. It produces yellow-green flowers in the spring and its green leaves can change to yellow and red in autumn.

Wild Parsnip/Giant Hogweed **–** Both plants are part of the carrot family and can grow up to 15 feet tall. They look similar to giant Queen Anne's lace with bristly stalks. Contact with the sap from the plant can cause phytophotodermatits or irritation (sometimes severe) when skin is exposed to sunlight.

Pandemic Preparedness – A "pandemic" refers to an epidemic that has spread over several countries or continents, usually impacting a large number of people. A pandemic has the potential to significantly

impact routine services. A pandemic disease presents a serious health risk and could prevent TRC from performing project-related tasks. The risk to employee health and the business will vary based on the geographic area of the pandemic and the potential severity of the disease. Pandemic risk assessments will be performed by the TRC Corporate Safety team who will provide direction to field personnel.

TRC will follow health and travel precautions issued by the respective authorities. Employees should stay at home when sick or otherwise experience symptoms that are consistent with the pandemic disease. When at a project site, infection control measures should be enacted, which are essential components of pandemic management and a component of public health measures. These essential measures include:

- Practice frequent hand washing. According to the CDC, washing hands with soap and water is the best way to get rid of germs in most situations. If soap and water are not readily available, you can use an alcohol-based hand sanitizer that contains at least 60 percent alcohol. You can tell if the sanitizer contains at least 60 percent alcohol by looking at the product label.
- Obtain immunizations recommended by healthcare providers to help avoid disease.
- Practice social distancing to increase the space between employee work areas and decreasing the possibility of contact by limiting large or close contact gatherings and avoid shaking hands.
- Frequently disinfect all areas that are likely to have frequent hand contact (like doorknobs, faucets, handrails, etc.).

5.4 Radiological Hazards

No radiological hazards are expected at the site. If any new condition is encountered during this activity, the HASP will be adjusted accordingly.

6. Personal Protection Monitoring

Personal Protection Monitoring Equipment and Use Recommendations: The following table outlines monitoring equipment needs and rationale. Note that an upgrade to a higher level of respiratory protection (C or higher) will warrant revision or addendum to this HASP and consultation with the TRC Corporate Safety team before work recommences.

Table 2: Monitoring Equipment Use Recommendations

Instrument	Use Code	Action Levels	Notes/Rationale
PID	C	5 ppmv*	Recommended for VOC screening to monitor airborne VOC concentrations in breathing zone levels. If PID readings are sustained above 5 ppmv in the breathing zone for at least 5 minutes, move to an upwind location for 15 minutes. After 15 minutes, measure again. If PID readings are still above 5 ppmv in the breathing zone, contact the Project Manager or OSC to evaluate suitable response actions. Any upgrade in respiratory protection will be coordinated with the TRC Corporate Safety team. Withdraw from area if PID readings exceed 50 ppmv.
TSI Dustrak™ (or equivalent)	C	> 150 µg/m3; 15 minute average**	Used where contaminants could adhere to fugitive dust, and where fugitive dust migration could potentially serve as a significant exposure pathway. Half-faced APR for particulates to be used intermittently/temporarily where dust control measures cannot maintain dust levels below action level. Use is optional for dust levels below the action level. Use of a half-face APR for dust does not require CIH approval where dust action level excursions are limited in duration, and where dust control measures will be implemented until below the action level. However, personnel must be medically qualified, fit tested for half-face APR use, and trained in the use of the APR.
O^2/LEL	C	19.5%	Recommended for landfill, lagoon, excavation, sewer, and anaerobic degradation site work. Required for confined space work.
H_2S Meter	C	1 ppm	Recommended for landfill, lagoon, excavation, sewer, and anaerobic degradation site work. Required for confined space work.
CO	C	25 ppm	½ of the PEL (PEL = 50 ppm)
CGI	C	10% LEL	Recommended safe level to prevent explosive conditions.
MINIRAM (or equivalent)	O		Supplement operation of Dustrak™ stations for work near sensitive receptors.
Radiation meters	N/A		Not known or anticipated to be a Contaminant of Concern.

Table 2: Monitoring Equipment Use Recommendations			
Instrument	**Use Code**	**Action Levels**	**Notes/Rationale**

Notes:
* Site/project specific action levels for VOCs may be established in consultation with the OSC.
** Above background upwind levels

PID – Photoionization detector	LEL – Lower Explosive Limit	O_2 – Oxygen
H_2S – Hydrogen Sulfide	CO – Carbon Monoxide	ppm – Parts per Million
CGI – Combustible Gas Indicator	VOC – Volatile organic compound	ppmv – Parts per Million Volume
APR – Air Purifying Respirator	CIH – Certified Industrial Hygienist	PEL – Permissible Exposure Limit
µg/m3 – micrograms per cubic meter		

Use Codes: R – Required, C – Condition specific, O – Optional, N/A – Not applicable

Personal Protection Monitoring Procedures: When necessary, the OHSO will measure organic vapor concentrations in the breathing zone using a PID. Fugitive dust emissions are not anticipated to be a concern. When required, air monitoring for dust will be performed using a combination of real-time dust monitoring upwind and downwind of the work area, and at a point near the closest receptor.

Personal Protection Exposure Limits: The following table summarizes anticipated concentrations and accepted exposure limits of chemicals potentially present within the work site.

Table 3: Summary of Exposure Limits – Known or Suspected Site Impacts		
Chemical of Concern	**Detected Concentration**	**OSHA PEL/ACGIH TLV**
Volatile Organic Compounds (VOCs)	Unknown	200 ppm (OSHA PEL for PCE) 200 ppm (OSHA PEL for TCE) 200 ppm (OSHA PEL for DCE)
Semi-volatile Organic Compounds (SVOCs)	Unknown	0.2 mg/m^3 (OSHA PEL for PAHs)
Polychlorinated Biphenyls (PCBs)	Unknown	1,000 $\mu g/m^3$ (OSHA PEL for PCBs containing 42% chlorine) 500 $\mu g/m^3$ (OSHA PEL for PCBs containing 54% chlorine)
Metals	Unknown	50 $\mu g/m^3$ (OSHA PEL for lead) 10 $\mu g/m^3$ (OSHA PEL for arsenic) 0.2 mg/m^3 (OSHA PEL for cadmium) 0.5 mg/m^3 (OSHA PEL for chromium) 0.2 mg/m^3 (OSHA PEL for selenium) 0.01 mg/m^3 (OSHA PEL for silver) 0.5 mg/m^3 (OSHA PEL for barium) 1.0 mg/m^3 (OSHA PEL for mercury)
PFAS (PFOS and PFOA)	Unknown	0.01 mg/m^3 (ACGIH TLV-TWA for skin notation)

Table 3: Summary of Exposure Limits – Known or Suspected Site Impacts		
Chemical of Concern	**Detected Concentration**	**OSHA PEL/ACGIH TLV**

Notes: Exposure and hazard data obtained from the NIOSH Pocket Guide to Chemical Hazards unless otherwise noted.

ppm – parts per million
OSHA – Occupational Safety and Health Administration
PCE – Tetrachloroethene
DCE – Dichloroethene
µg/m3 – micrograms per cubic meter
TLV – Threshold Limit Value
PEL – Permissible Exposure Limit
TCE – Trichloroethelene
PAHs – Polycyclic aromatic hydrocarbons

Table 4: Preservatives and Decontamination Products		
Chemical of Concern	**On-Site Usage and Potential Exposures**	**Control Method**
Hydrochloric Acid (HCl)	Less than 20 ml quantities used for sample preservation. Air phase exposure is expected to be minimal and incidental to sample containerization.	5 ppm (OSHA PEL)
Methyl Alcohol (methanol; MeOH)	Less than 20 ml quantities used for sample preservation. Air phase exposure is expected to be minimal and incidental to sample containerization.	200 ppm (OSHA PEL)
Nitric Acid (HNO_3)	Less than 20 ml quantities used for sample preservation. Air phase exposure is expected to be minimal and incidental to sample containerization.	5 mg/m3 (OSHA PEL)
Isobutylene	100 ppm gas for use during calibration of PID instruments.	No specific exposure limits for isobutylene (simple asphyxiant). Maintain oxygen levels above 19.5%. Before attaching regulator to cylinder, verify that the regulator is off. Before opening regulator, make sure that tubing connecting regulator to monitoring device/ Tedlar® bag is secure. To use a Tedlar® bag, put bag control valve in an open position and close after filling.

Table 4: Preservatives and Decontamination Products		
Chemical of Concern	**On-Site Usage and Potential Exposures**	**Control Method**
		Before disconnecting gas from the instrument and/or Tedlar® bag, verify the regulator is closed. Empty bag of contents after calibration in a downwind position and/or to avoid inadvertent inhalation.

Notes:

ppm – parts per million
ml – milliliters
PID – Photoionization Detector
OSHA – Occupational Safety and Health Administration
PEL – Permissible Exposure Limit

7. Personal Protective Equipment

TRC personnel will use Level D PPE as noted/modified below:

Table 5: Level D Personal Protective Equipment

Item	Rationale/Notes
Hardhat	American National Standards Institute/International Safety Equipment Association (ANSI/ISEA) Z89.1-2009 rated hard hats will be worn by personnel at all times when overhead hazards are present, including electrical.
Hearing protection	Hearing protection will be worn by all personnel exposed to at least 85 dB of sound during the workday. A good rule of thumb to use in determining whether background noise is 85 dB or higher is if you must shout to be understood by somebody about one arm-length away, that background noise is hazardous.
Safety boots (steel or composite toe and shank)	Electrical Hazard (EH) rated safety-toe safety boots will be worn by all personnel during project work described in this HASP.
Eye protection (safety glasses)	ANSI rated eye protection (Z87 or Z87+) is required to be worn at all times when onsite or when personnel are exposed to flying debris, chemical vapors or particulates. Chemical splash goggles will be worn for protection against chemical gases, vapors or particulates. Safety glasses will be worn for protection against flying objects.
Safety vest	ANSI Class 2 safety vest is required at all times when onsite. Utilize in areas in or near vehicular traffic of any kind on or off property.
Chemical Protective Clothing (CPC) and Gloves	CPC and gloves will be inspected according to TRC's Personal Protective Equipment Program. CPC will be chosen with assistance from the OSC according to the chemical hazards present. Gloves are to be changed between samples to avoid cross-contamination.
Cut resistant work gloves	As indicated herein, use Cut and Abrasion Resistance Level 2 to Level 4 gloves when necessary for hand protection during field tasks. See **Appendix B** for a Glove Selection Guide. ***Leather work gloves are expressly prohibited.***
Electrical Safety	8 cal/cm^2 Flame Resistant (FR) clothing
Face Coverings	Protect personnel from receiving or transmitting COVID-19.
Personal Floatation Device (PFD)	Type I, II, or III PFD is required to be worn at all times when working over/near water.

A basic first aid kit will be readily available on-site in the event of an emergency.

Fire extinguishers should be present within 50 feet of wherever more than 5 gallons of flammable or combustible liquids or 5 pounds of flammable gas are being used at the site, including operational

equipment. All personnel working on or around the equipment should know the location of and how to operate the fire extinguisher. Ensure the fire extinguisher is in working order by checking the manufacture and/or most recent inspection dates.

8. Personnel and Equipment Decontamination Plan

At minimum, personnel and equipment decontamination will include the following:

Equipment Decontamination: There is a possibility that site media contacted during work activities contain compounds described in **Table 3**. All equipment that comes in contact with media needs to be decontaminated before it is removed from the job site. To properly decontaminate equipment that comes in contact with media, the following procedure should be followed:

- Brush accumulated material off equipment that has come in contact with impacted media. The material shall be returned to the location from which it came or disposed of properly;
- Wipe parts of the equipment that came in contact with the media down with cloth, rags or heavy-duty paper towel damp with non-phosphate concentrated laboratory-grade soap (i.e. Alconox© or Liquinox©);
- Follow up with a wipe from a separate cloth, rags or heavy duty paper towel damp with potable water; and
- PPE and cloth, rags or heavy duty paper towels can be disposed of in the regular waste stream.
- If equipment becomes grossly impacted with site media, equipment shall be steam cleaned over a decontamination pad.

Personnel Decontamination: In general, contamination of personnel shall be prevented through the use of PPE. At minimum, nitrile gloves shall be worn during contact with impacted material or chemical in addition to other Level D PPE.

9. Required Personnel Training

TRC field personnel will have the training outlined below before on-site work activities:

Table 6: Project Training Requirements

(* required for all sites; but minimum recommended)
Check "A" if training required for everyone, and check "T" if training required for specific task or per notations.

A	T	Subject	Reference	
			29 CFR 1910	29 CFR 1926 or Other
☒	☐	HAZWOPER 40 hour*	1910.120	1926.65
☒	☐	3-Day HAZWOPER Supervised On-site*	1910.120	1926.65
☒	☐	8-Hour HAZWOPER Refresher*	1910.120	1926.65
☐	☒	8-Hour Supervisor HAZWOPER*	1910.120	1926.65
☐	☒	First Aid, CPR[*,1]	1910.151	1926.23,.50
☒	☐	Hazard Communication (HAZCOM)	1910.1200	1926.59
☐	☒	DOT/IATA Shipping Training	1910.1201	49 CFR 172.704
☐	☐			
☐	☐			
☐	☐			
Client-specific training:_____ ☐ Not Applicable ☐ Specify				
Client-specific training:_____ ☐ Not Applicable ☐ Specify				
Client-specific training:_____ ☐ Not Applicable ☐ Specify				

Note:
1 Per the TRC Health and Safety Policy and Procedure Manual, each TRC project will have at least one certified CPR/first aid trained person on site at all times. All Project Managers and anyone acting as the on-site Health and Safety Officer must be current in First Aid/CPR.

Project training requirements beyond those provided in the above table will require a HASP revision/upgrade or concurrence of the TRC Safety Director or ECR Safety Manager.

10. Medical Monitoring

Medical monitoring will apply routinely to all employees who are or may be exposed to hazardous substances or health hazards at or above the established permissible exposure limit, above the published exposure levels for these substances, without regard to the use of respirators, for 30 days or more a year (40 CFR 1910.120[f][2][i]). Said TRC field personnel will have the medical surveillance outlined in the table below prior to commencing on-site work activities.

Table 7: Medical Surveillance Required			
*Baseline is minimum recommended.			
	29 CFR 1910	**29 CFR 1926 or Other**	**Notes**
☒ HAZWOPER Physical - Baseline*	1910.120	1926.65	
☒ HAZWOPER Physical – Annual	1910.120	1926.65	
☐ HAZWOPER Physical - Biennial*	1910.120	1926.65	
Client-specific drug testing[1]	☐ Not Applicable ☐ Specify		
Client-specific medical monitoring[1]	☐ Not Applicable ☐ Specify		
Site-specific medical monitoring:	☐ Not Applicable ☐ Specify		
Note: [1] Client required drug testing or medical monitoring should be coordinated through the Project Manager.			

TRC has a Drug and Alcohol-Free Workplace Policy (TRC Academy Course #900013753). TRC may require employees or subcontractors to be tested upon reasonable suspicion, following accidents or incidents during work activities, or during travel to or from a project site. Client policies may be stricter in regard to procedures following an accident. Project Managers must be aware of these and inform employees and subcontractors of any additional requirements.

11. General Safety Requirements

The general safety rules listed below apply to all TRC personnel present at the site.

- A tailgate health and safety meeting will be held with all field team members each day prior to the start of work, the start of a new shift, upon changing of work conditions or job task duties, or when new field team members arrive onsite.
- Adhere to all requirements of this HASP.
- Wear protective clothing appropriate for the designated level of protection and decontaminate before entering clean areas when applicable.
- Use safety equipment in accordance with OSHA guidance and labeling instructions.
- Maintain safety equipment in good condition and proper working order and make sure that the equipment is calibrated prior to use.
- Immediately report unsafe acts or conditions to the Project Manager and OSC.
- Eating, drinking, and smoking are prohibited on site, except in designated areas.
- Maintaining a position upwind from intrusive activities is encouraged.
- The emergency shutoff switch should be demonstrated to be working prior to initiating drilling.
- An adequately stocked first-aid kit will be maintained at the work site.

12. Tailgate Safety Meetings

- A tailgate safety meeting will be conducted daily prior to commencement of the work day, the start of a new shift, upon changing of work conditions or job task duties, or when new field team members arrive onsite (see checklist provided in **Appendix D**).
- Topics covered by the tailgate safety meeting will include, but not be limited to, scope of work and who will conduct each task, potential hazards, weather forecast, PPE, emergency procedures and the route to the medical facility, site conditions and features, and, communication guidelines related to stakeholder engagement and visitors.
- Safety meetings must also be held to address modifications to this HASP and any addenda prepared to supplement the HASP.
- Subcontractors and personnel present at the tailgate safety meeting shall be required to sign an acknowledgement form after each meeting.

13. Emergency/Contingency Plan

Before commencing any on-site operations, the TRC OHSO will advise all personnel of potential emergencies. Personnel will be advised on their roles in the event of an emergency, and the steps to take for a timely and controlled response.

Communication networks/chain of command – All on-site personnel will communicate any accident, injury or near miss to the TRC OHSO who will provide instruction on how to proceed further.

First Aid / Safety Equipment – First aid equipment should be readily available in the event of an emergency. First aid equipment should include a well-stocked first aid kit, fire extinguisher and emergency eye wash.

Evacuation Plans and Refuge Area – All personnel should safely remove themselves from danger in the event of an emergency and safely access the refuge area. The refuge area should be in an upwind location a safe distance from the work zone. The refuge area will be determined during the daily safety briefing.

Notifications of Fire, Police and Emergency Facilities – In the event of an emergency that cannot be controlled by on-site personnel, the appropriate emergency contact shall be notified. All personnel shall remove themselves from the area of danger and wait for the arrival of help in the predetermined refuge area.

Non-Emergency Medical Assistance – If an injury does occur and it is not life threatening, then the employee or employee's supervisor/project manager should contact WorkCare as soon as possible, but within the first hour after an injury. WorkCare information is proved in **Appendix E**. This information will help assist the injured employee by connecting them with instant access to a medically qualified professional in order to provide guidance on appropriate first aid measures and medications.

14. Stop Work

TRC personnel are all empowered, responsible, authorized and obliged to stop work at any time we feel that our safety or the safety of others is, or could be, compromised. When a stop work occurs the Project Manager and/or OSC should be contacted to discuss the reason for the stop work and the corrective action(s) needed to resume work safely. Work on an activity shall not continue until the unsafe condition has been corrected.

15. Safe Catches

A "Safe Catch" is a potential hazard or incident that has not resulted in any personal injury. Unsafe working conditions, unsafe employee behaviors, improper use of equipment or use of malfunctioning equipment have the potential to cause work related injuries. It is everyone's responsibility to report and/or correct these potential incidents immediately. Please complete the form provided in **Appendix F** as a means to report these "Safe Catch" situations and submit to your local OSC Representative and Mike Glenn, National Safety Director.

16. Observations

Note that the Project Manager and/or OSC may notify field staff that their site activities may be the subject of Safety Observation, an integral part of the continuous improvement safety culture promoted at TRC. If subject to an observation, please note the following:

- The Observation will tend to focus on the highest risk activity (as a general example, drilling in a public right-of-way).
- Follow-up observations may need to occur on previous observations, depending on prior data collected.
- The observer's preparation before visiting the site will be a review of the HASP, JSAs, client-specific requirements, etc., and a review of the work scope with the Project Manager to ensure the context of the work is well understood in advance.
- Review items may include PPE, body use and positioning, work environment, operating procedures, and tools and equipment.
- The observation should last between 30 and 60 minutes.

Both positive and negative observations are candidates for documentation and later discussion. The overarching goals are to identify and correct questionable practices and to identify and promote good, safe and efficient practices. It is a data gathering process that will allow TRC safety specialists to identify root causes for safety issues in both categories to better inform policy decisions.

17. Incident Reporting

In case of an incident, TRC personnel must report the incident immediately to their project manager/supervisor and/or OSC as well as the client's representative and follow the TRC Incident Response and Reporting Process (see **Appendix G -** In Case of Emergency and Incident Reporting). Required Incident Notification or Auto Incident Report forms must be completed within 24 hours following the incident. If neither is available, the incident shall be reported to the TRC Safety Director. Incident/injury/exposure information must be recorded per TRC policy and will be the basis of any incident investigations.

18. Job Safety Analysis

It is anticipated that the standard operating procedures (SOPs) detailed in the Generic Field Activities Plan (FAP) will be utilized for all work practices. If site specific activities require additional or alternate procedures, TRC will assess the task hazards and controls using separate job safety analysis forms (JSAs). Prior to use in the field, JSAs will be reviewed and approved by the TRC Project Manager and OSC. JSA forms can be found in **Appendix H**.

19. Acknowledgement

All TRC personnel operating under this HASP must read the HASP and sign the acknowledgment page in **Appendix I**.

Figures

LEGEND

- TAX PARCEL BOUNDARY
- ONSITE WATER IMPOUNDMENT
- COUNTY PROPOSED BUILDING EXPANSION
- SURFACE WATER FLOW DIRECTION
- CULVERT OR STORM SEWER AND FLOW DIRECTION
- FENCELINE
- MECHANICAL PIPE PLUG
- SITE CHARACTERIZATION MONITORING WELL - NOVEMBER 2019
- SITE CHARACTERIZATION SOIL BORING - NOVEMBER 2019
- COUNTY SOIL BORING - SEPTEMBER 2019
- CORRUGATED STEEL PIPE
- SITE CHARACTERIZATION SURFACE WATER/ SEDIMENT SAMPLE - NOVEMBER 2019
- PHASE I RI FALL KILL SURFACE WATER/SEDIMENT SAMPLE - OCTOBER 2021
- PHASE I RI SURFACE SOIL SAMPLE - MAY 2022
- PHASE I RI SHALLOW SURFACE SOIL SAMPLE, BELOW PAVEMENT - MAY 2022
- PHASE I RI PONDED SURFACE WATER SAMPLE - MAY 2022
- PHASE I RI STORMWATER SAMPLE - MAY 2022
- PHASE II RI SOIL BORING AND MONITORING WELL - NOVEMBER 2022
- PHASE II RI SOIL BORING - NOVEMBER 2022
- PROPOSED IRM SOIL BORING LOCATION

NOTES:

1. LOCATIONS AND DIMENSIONS OF PHYSICAL FEATURES AND PROPERTY BOUNDARIES ARE APPROXIMATE.

BASE MAP: NEAR MAP IMAGERY DATED 4/14/2022
DATA SOURCES: TRC
SHEET SIZE: 11X17L

N

1:600
1" = 50'
0 25 50 FEET

PROJECT:
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DUTCHESS COUNTY FIRE TRAINING CENTER - SITE NO. 314128
392 CREEK ROAD
HYDE PARK, DUTCHESS COUNTY, NEW YORK

TITLE:
PROPOSED IRM SOIL BORING LOCATIONS

DRAWN BY:	L. LILL	PROJ. NO.:	453208.0000.0000
CHECKED BY:	J. KING	FIGURE 1	
APPROVED BY:	J. MAGDA		
DATE:	JANUARY 2024		

TRC
3 Corporate Drive
Suite 202
Clifton Park, NY 12065
Phone: 518.348.1190

FILE: IRM.aprx

LEGEND

- TAX PARCEL BOUNDARY
- ONSITE WATER IMPOUNDMENT
- COUNTY PROPOSED BUILDING EXPANSION
- CULVERT OR STORM SEWER AND FLOW DIRECTION
- SURFACE WATER FLOW DIRECTION
- FENCELINE
- MECHANICAL PIPE PLUG
- MONITORING WELL
- CORRUGATED STEEL PIPE
- PROPOSED OVERBURDEN MONITORING WELL
- PROPOSED BEDROCK MONITORING WELL

NOTES:

1. LOCATIONS AND DIMENSIONS OF PHYSICAL FEATURES AND PROPERTY BOUNDARIES ARE APPROXIMATE.

BASE MAP: NEARMAP IMAGERY DATED 4/14/2022
DATA SOURCES: TRC
SHEET SIZE: 11X17L

1:1,080
1" = 90'
0 45 90 FEET

PROJECT:
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DUTCHESS COUNTY FIRE TRAINING CENTER - SITE NO. 314128
392 CREEK ROAD
HYDE PARK, DUTCHESS COUNTY, NEW YORK

TITLE:
PHASE III RI
PROPOSED MONITORING WELL LOCATION MAP

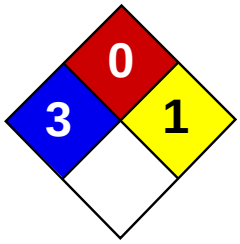
DRAWN BY:	L. LILL	PROJ. NO.:	453208.0000.0000
CHECKED BY:	R. VASAVADI		
APPROVED BY:	J. KING		**FIGURE 4**
DATE:	JANUARY 2024		

TRC
3 Corporate Drive
Suite 202
Clifton Park, NY 12065
Phone: 518.348.1190

FILE: PhaseIII_RI.aprx

Coordinate System: NAD 1983 StatePlane New York East FIPS 3101 Feet; Map Rotation: 0
Saved By: LLILL on 1/3/2024, 1:06:29 AM; File Path: T:\PROJECTS\NYSDEC\453208_DutchessCountyFireTraining\2-APRX\Phase III_RI\Phase III_RI.aprx; Layout Name: Figure 2 - Phase III RI Proposed MW Location Map

Appendix A
Safety Data Sheets



Material Safety Data Sheet
Hydrochloric acid MSDS

Section 1: Chemical Product and Company Identification

Product Name: Hydrochloric acid

Catalog Codes: SLH1462, SLH3154

CAS#: Mixture.

RTECS: MW4025000

TSCA: TSCA 8(b) inventory: Hydrochloric acid

CI#: Not applicable.

Synonym: Hydrochloric Acid; Muriatic Acid

Chemical Name: Not applicable.

Chemical Formula: Not applicable.

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:
1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Hydrogen chloride	7647-01-0	20-38
Water	7732-18-5	62-80

Toxicological Data on Ingredients: Hydrogen chloride: GAS (LC50): Acute: 4701 ppm 0.5 hours [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects:
Very hazardous in case of skin contact (corrosive, irritant, permeator), of eye contact (irritant, corrosive), of ingestion, . Slightly hazardous in case of inhalation (lung sensitizer). Non-corrosive for lungs. Liquid or spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract. Skin contact may produce burns. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Severe over-exposure can result in death. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Potential Chronic Health Effects:
Slightly hazardous in case of skin contact (sensitizer). CARCINOGENIC EFFECTS: Classified 3 (Not classifiable for human.) by IARC [Hydrochloric acid]. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to kidneys, liver, mucous membranes, upper respiratory tract, skin, eyes, Circulatory System, teeth. Repeated or prolonged exposure to the substance can produce target

organs damage. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.

Skin Contact:
In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used.Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion:
If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Non-flammable.

Auto-Ignition Temperature: Not applicable.

Flash Points: Not applicable.

Flammable Limits: Not applicable.

Products of Combustion: Not available.

Fire Hazards in Presence of Various Substances: of metals

Explosion Hazards in Presence of Various Substances: Non-explosive in presence of open flames and sparks, of shocks.

Fire Fighting Media and Instructions: Not applicable.

Special Remarks on Fire Hazards:
Non combustible. Calcium carbide reacts with hydrogen chloride gas with incandescence. Uranium phosphide reacts with hydrochloric acid to release spontaneously flammable phosphine. Rubidium acetylene carbides burns with slightly warm hydrochloric acid. Lithium silicide in contact with hydrogen chloride becomes incandescent. When dilute hydrochloric acid is used, gas spontaneously flammable in air is evolved. Magnesium boride treated with concentrated hydrochloric acid produces spontaneously flammble gas. Cesium acetylene carbide burns hydrogen chloride gas. Cesium carbide ignites in contact with hydrochloric acid unless acid is dilute. Reacts with most metals to produce flammable Hydrodgen gas.

Special Remarks on Explosion Hazards:

Hydrogen chloride in contact with the following can cause an explosion, ignition on contact, or other violent/vigorous reaction: Acetic anhydride AgClO + CCl4 Alcohols + hydrogen cyanide, Aluminum Aluminum-titanium alloys (with HCl vapor), 2-Amino ethanol, Ammonium hydroxide, Calcium carbide Ca3P2 Chlorine + dinitroanilines (evolves gas), Chlorosulfonic acid Cesium carbide Cesium acetylene carbide, 1,1-Difluoroethylene Ethylene diamine Ethylene imine, Fluorine, HClO4 Hexalithium disilicide H2SO4 Metal acetylides or carbides, Magnesium boride, Mercuric sulfate, Oleum, Potassium permanganate, beta-Propiolactone Propylene oxide Rubidium carbide, Rubidium, acetylene carbide Sodium (with aqueous HCl), Sodium hydroxide Sodium tetraselenium, Sulfonic acid, Tetraselenium tetranitride, U3P4 , Vinyl acetate. Silver perchlorate with carbon tetrachloride in the presence of hydrochloric acid produces trichloromethyl perchlorate which detonates at 40 deg. C.

Section 6: Accidental Release Measures

Small Spill:
Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. If necessary: Neutralize the residue with a dilute solution of sodium carbonate.

Large Spill:
Corrosive liquid. Poisonous liquid. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray curtain to divert vapor drift. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Neutralize the residue with a dilute solution of sodium carbonate. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up.. Keep container dry. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Never add water to this product. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, organic materials, metals, alkalis, moisture. May corrode metallic surfaces. Store in a metallic or coated fiberboard drum using a strong polyethylene inner package.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Face shield. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves. Boots.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
CEIL: 5 (ppm) from OSHA (PEL) [United States] CEIL: 7 (mg/m3) from OSHA (PEL) [United States] CEIL: 5 from NIOSH CEIL: 7 (mg/m3) from NIOSH TWA: 1 STEL: 5 (ppm) [United Kingdom (UK)] TWA: 2 STEL: 8 (mg/m3) [United Kingdom (UK)]Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Pungent. Irritating (Strong.)

Taste: Not available.

Molecular Weight: Not applicable.

Color: Colorless to light yellow.

pH (1% soln/water): Acidic.

Boiling Point:
108.58 C @ 760 mm Hg (for 20.22% HCl in water) 83 C @ 760 mm Hg (for 31% HCl in water) 50.5 C (for 37% HCl in water)

Melting Point:
-62.25°C (-80°F) (20.69% HCl in water) -46.2 C (31.24% HCl in water) -25.4 C (39.17% HCl in water)

Critical Temperature: Not available.

Specific Gravity:
1.1- 1.19 (Water = 1) 1.10 (20%and 22% HCl solutions) 1.12 (24% HCl solution) 1.15 (29.57% HCl solution) 1.16 (32% HCl solution) 1.19 (37% and 38%HCl solutions)

Vapor Pressure: 16 kPa (@ 20°C) average

Vapor Density: 1.267 (Air = 1)

Volatility: Not available.

Odor Threshold: 0.25 to 10 ppm

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, diethyl ether.

Solubility: Soluble in cold water, hot water, diethyl ether.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Incompatible materials, water

Incompatibility with various substances:
Highly reactive with metals. Reactive with oxidizing agents, organic materials, alkalis, water.

Corrosivity:
Extremely corrosive in presence of aluminum, of copper, of stainless steel(304), of stainless steel(316). Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Reacts with water especially when water is added to the product. Absorption of gaseous hydrogen chloride on mercuric sulfate becomes violent @ 125 deg. C. Sodium reacts very violently with gaseous hydrogen chloride. Calcium phosphide and hydrochloric acid undergo very energetic reaction. It reacts with oxidizers releasing chlorine gas. Incompatible with, alkali metals, carbides, borides, metal oxides, vinyl acetate, acetylides, sulphides, phosphides, cyanides, carbonates. Reacts with most metals to produce flammable Hydrogen gas. Reacts violently (moderate reaction with heat of evolution) with water especially when water is added to the product. Isolate hydrogen chloride from heat, direct sunlight, alkalies (reacts vigorously), organic materials, and oxidizers (especially nitric acid and chlorates), amines, metals, copper and alloys (e.g. brass), hydroxides, zinc (galvanized materials), lithium silicide (incandescence), sulfuric acid(increase in temperature and pressure) Hydrogen chloride gas is emitted when this product is in contact with sulfuric acid. Adsorption of Hydrochloric Acid onto silicon dioxide results in exothmeric reaction. Hydrogen chloride causes aldehydes and epoxides to violently polymerize. Hydrogen chloride or Hydrochloric Acid in contact with the folloiwng can cause explosion or ignition on contact or

Special Remarks on Corrosivity:

Highly corrosive. Incompatible with copper and copper alloys. It attacks nearly all metals (mercury, gold, platinium, tantalum, silver, and certain alloys are exceptions). It is one of the most corrosive of the nonoxidizing acids in contact with copper alloys. No corrosivity data on zinc, steel. Severe Corrosive effect on brass and bronze

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation.

Toxicity to Animals:
Acute oral toxicity (LD50): 900 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 1108 ppm, 1 hours [Mouse]. Acute toxicity of the vapor (LC50): 3124 ppm, 1 hours [Rat].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified 3 (Not classifiable for human.) by IARC [Hydrochloric acid]. May cause damage to the following organs: kidneys, liver, mucous membranes, upper respiratory tract, skin, eyes, Circulatory System, teeth.

Other Toxic Effects on Humans:
Very hazardous in case of skin contact (corrosive, irritant, permeator), of ingestion, . Hazardous in case of eye contact (corrosive), of inhalation (lung corrosive).

Special Remarks on Toxicity to Animals:
Lowest Published Lethal Doses (LDL/LCL) LDL [Man] -Route: Oral; 2857 ug/kg LCL [Human] - Route: Inhalation; Dose: 1300 ppm/30M LCL [Rabbit] - Route: Inhalation; Dose: 4413 ppm/30M

Special Remarks on Chronic Effects on Humans:
May cause adverse reproductive effects (fetoxicity). May affect genetic material.

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: Corrosive. Causes severe skin irritation and burns. Eyes: Corrosive. Causes severe eye irritation/conjuntivitis, burns, corneal necrosis. Inhalation: May be fatal if inhaled. Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract. Inhalation of hydrochloric acid fumes produces nose, throat, and larryngeal burning, and irritation, pain and inflammation, coughing, sneezing, choking sensation, hoarseness, laryngeal spasms, upper respiratory tract edema, chest pains, as well has headache, and palpitations. Inhalation of high concentrations can result in corrosive burns, necrosis of bronchial epithelium, constriction of the larynx and bronchi, nasospetal perforation, glottal closure, occur, particularly if exposure is prolonged. May affect the liver. Ingestion: May be fatal if swallowed. Causes irritation and burning, ulceration, or perforation of the gastrointestinal tract and resultant peritonitis, gastric hemorrhage and infection. Can also cause nausea, vomitting (with "coffee ground" emesis), diarrhea, thirst, difficulty swallowing, salivation, chills, fever, uneasiness, shock, strictures and stenosis (esophogeal, gastric, pyloric). May affect behavior (excitement), the cardiovascular system (weak rapid pulse, tachycardia), respiration (shallow respiration), and urinary system (kidneys- renal failure, nephritis). Acute exposure via inhalation or ingestion can also cause erosion of tooth enamel. Chronic Potential Health Effects: dyspnea, bronchitis. Chemical pneumonitis and pulmonary edema can also

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: Class 8: Corrosive material

Identification: : Hydrochloric acid, solution UNNA: 1789 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
Connecticut hazardous material survey.: Hydrochloric acid Illinois toxic substances disclosure to employee act: Hydrochloric acid Illinois chemical safety act: Hydrochloric acid New York release reporting list: Hydrochloric acid Rhode Island RTK hazardous substances: Hydrochloric acid Pennsylvania RTK: Hydrochloric acid Minnesota: Hydrochloric acid Massachusetts RTK: Hydrochloric acid Massachusetts spill list: Hydrochloric acid New Jersey: Hydrochloric acid New Jersey spill list: Hydrochloric acid Louisiana RTK reporting list: Hydrochloric acid Louisiana spill reporting: Hydrochloric acid California Director's List of Hazardous Substances: Hydrochloric acid TSCA 8(b) inventory: Hydrochloric acid TSCA 4(a) proposed test rules: Hydrochloric acid SARA 302/304/311/312 extremely hazardous substances: Hydrochloric acid SARA 313 toxic chemical notification and release reporting: Hydrochloric acid CERCLA: Hazardous substances.: Hydrochloric acid: 5000 lbs. (2268 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS D-2A: Material causing other toxic effects (VERY TOXIC). CLASS E: Corrosive liquid.

DSCL (EEC):
R34- Causes burns. R37- Irritating to respiratory system. S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 0

Reactivity: 1

Personal Protection:

National Fire Protection Association (U.S.A.):

Health: 3

Flammability: 0

Reactivity: 1

Specific hazard:

Protective Equipment:
Gloves. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Face shield.

Section 16: Other Information

References:
-Hawley, G.G.. The Condensed Chemical Dictionary, 11e ed., New York N.Y., Van Nostrand Reinold, 1987. -SAX, N.I. Dangerous Properties of Indutrial Materials. Toronto, Van Nostrand Reinold, 6e ed. 1984. -The Sigma-Aldrich Library of Chemical Safety Data, Edition II. -Guide de la loi et du règlement sur le transport des marchandises dangeureuses au canada. Centre de conformité internatinal Ltée. 1986.

Other Special Considerations: Not available.

Created: 10/09/2005 05:45 PM

Last Updated: 06/09/2012 12:00 PM

GASCO

MATERIAL SAFETY DATA SHEET - CALIBRATION CHECK GAS

PRODUCT NAME: ISOBUTYLENE (1 PPM – 0.9%) IN AIR

MSDS NO: 248 **Version:3** **Date: August, 2010**

1. Chemical Product and Company Identification

Gasco Affiliates, LLC
320 Scarlett Blvd.
Oldsmar, FL 34677

TELEPHONE NUMBER: (800) 910-0051 **24-HOUR EMERGENCY NUMBER: 1-800-424-9300**
FAX NUMBER: (866) 755-8920
E-MAIL: info@gascogas.com

PRODUCT NAME: ISOBUTYLENE (1 PPM – 0.9%) IN AIR
CHEMICAL NAME: Isobutylene in air
COMMON NAMES/ SYNONYMS: None
TDG (Canada) CLASSIFICATION: 2.2
WHIMIS CLASSIFICATION: A

2. COMPOSITION/ INFORMATION ON INGREDIENTS

INGREDIENT	%VOLUME	PEL-OSHA	TLV-ACGIH	LD_{50} or LC_{50} Route/Species
Isobutylene FORMULA: C_4H_8	0.0001-0.9	N/A	N/A	N/A
Air FORMULA: Mixture	99.0 to 99.9999	N/A	N/A	N/A

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Release of this product may produce oxygen-deficient atmospheres (especially in confined spaces or other poorly ventilated environments); individuals in such atmospheres may be asphyxiated. Isobutylene may cause drowsiness and other central nervous system effects in high concentrations; however, due to the low concentration of this gas mixture, this is unlikely to occur.

ROUTE OF ENTRY:

Skin Contact	Skin Absorption	Eye Contact	Inhalation	Ingestion
No	No	No	Yes	No

HEALTH EFFECTS:

Exposure Limits	Irritant	Sensitization	Reproductive Hazard	Mutagen
Yes	No	No	No	No

Carcinogenicity: --NTP: No IARC: No OSHA: No

EYE EFFECTS:
N/A.

SKIN EFFECTS:
N/A.

PRODUCT NAME: ISOBUTYLENE (1 PPM – 0.9%) IN AIR

INGESTION EFFECTS:
Ingestion unlikely. Gas at room temperature.

INHALATION EFFECTS:
Due to the small size of this cylinder, no unusual health effects from over-exposure are anticipated under normal routine use.

NFPA HAZARD CODES		HMIS HAZARD CODES		RATING SYSTEM
Health:	1	Health:	1	0= No Hazard
Flammability:	0	Flammability:	0	1= Slight Hazard
Reactivity:	0	Reactivity:	0	2= Moderate Hazard
				3= Serious Hazard
				4= Severe Hazard

4. FIRST AID MEASURES

EYES:
N/A

SKIN:
N/A

INGESTION:
Not required

INHALATION:
PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASED OF OVEREXPOSURE. RESCUE PERSONNEL SHOULD BE EQUIPPED THE SELF-CONTAINED BREATHING APPARATUS. Victims should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. If breathing has stopped administer artificial resuscitation and supplemental oxygen. Further treatment should be symptomatic and supportive.

5. FIRE-FIGHTING MEASURES

These containers hold gas under pressure, with no liquid phase. If involved in a major fire, they should be sprayed with water to avoid pressure increases, otherwise pressures will rise and ultimately they may distort or burst to release the contents. The gases will not add significantly to the fire, but containers or fragments may be projected considerable distances - thereby hampering fire fighting efforts.

6. ACCIDENTAL RELEASE MEASURES

In terms of weight, these containers hold very little contents, such that any accidental release by puncturing etc. will be of no practical concern.

7. HANDLING AND STORAGE

Suck back of water into the container must be prevented. Do not allow backfeed into the container. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Use only in well-ventilated areas. Do not heat cylinder by any means to increase rate of product from the cylinder. Do not allow the temperature where cylinders are stored to exceed 130^{o}F (54^{o}C).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Use adequate ventilation for extended use of gas.

PRODUCT NAME: ISOBUTYLENE (1 PPM – 0.9%) IN AIR

9. PHYSICAL AND CHEMICAL PROPERTIES

PARAMETER:	VALUE:
Physical state	: Gas
Evaporation point	: N/A
pH	: N/A
Odor and appearance	: Colorless, odorless gas

10. STABILITY AND REACTIVITY

Stable under normal conditions. Expected shelf life 48 months.

11. TOXICOLOGICAL INFORMATION

No toxicological damage caused by this product.

12. ECOLOGICAL INFORMATION

No ecological damage caused by this product.

13. DISPOSAL INFORMATION

Do not discharge into any place where its accumulation could be dangerous. Used containers are acceptable for disposal in the normal waste stream as long as the cylinder is empty and valve removed or cylinder wall is punctured; but GASCO encourages the consumer to return cylinders.

14. TRANSPORT INFORMATION

	United States DOT	Canada TDG
PROPER SHIPPING NAME:	Compressed Gas N.O.S. (Isobutylene in Air)	Compressed Gas N.O.S. (Isobutylene in Air)
HAZARD CLASS:	2.2	2.2
IDENTIFICATION NUMBER:	UN1956	UN1956
SHIPPING LABEL:	NONFLAMMABLE GAS	NONFLAMMABLE GAS

15. REGULATORY INFORMATION

Isobutylene is listed under the accident prevention provisions of section 112(r) of the Clean Air Act (CAA) with a threshold quantity (TQ) of 10,000 pounds.

16. OTHER INFORMATION

This MSDS has been prepared in accordance with the Chemicals (Hazard Information and Packaging for Supply (Amendment) Regulation 1996. The information is based on the best knowledge of GASCO, and its advisors and is given in good faith, but we cannot guarantee its accuracy, reliability or completeness and therefore disclaim any liability for loss or damage arising out of use of this data. Since conditions of use are outside the control of the Company and its advisors we disclaim any liability for loss or damage when the product is used for other purposes than it is intended.

MSDS/S010/248/ August, 2010

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

Effective date: 10.18.2017 **Revision**: 10.18.2017

Trade Name: Alconox

1 Identification of the substance/mixture and of the supplier

1.1 Product identifier

Trade Name: Alconox
Synonyms:
Product number: 1104-1, 1104, 1125, 1150, 1101, 1103, 1112-1, 1112

1.2 Application of the substance / the mixture : Cleaning material/Detergent

1.3 Details of the supplier of the Safety Data Sheet

Manufacturer
Alconox, Inc.
30 Glenn Street
White Plains, NY 10603
1-914-948-4040

Supplier

Emergency telephone number:
ChemTel Inc
North America: 1-800-255-3924
International: 01-813-248-0585

2 Hazards identification

2.1 Classification of the substance or mixture:

In compliance with EC regulation No. 1272/2008, 29CFR1910/1200 and GHS Rev. 3 and amendments.

Hazard-determining components of labeling:
Tetrasodium Pyrophosphate
Sodium tripolyphosphate
Sodium Alkylbenzene Sulfonate

2.2 Label elements:

Skin irritation, category 2.
Eye irritation, category 2A.

Hazard pictograms:

Signal word: Warning

Hazard statements:
H315 Causes skin irritation.
H319 Causes serious eye irritation.

Precautionary statements:
P264 Wash skin thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352 If on skin: Wash with soap and water.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P321 Specific treatment (see supplemental first aid instructions on this label).
P332+P313 If skin irritation occurs: Get medical advice/attention.
P362 Take off contaminated clothing and wash before reuse.
P501 Dispose of contents and container as instructed in Section 13.

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

Effective date: 10.18.2017 **Revision**: 10.18.2017

Trade Name: Alconox

Additional information: None.

Hazard description

Hazards Not Otherwise Classified (HNOC): None

Information concerning particular hazards for humans 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.

Classification system:

The classification is according to EC regulation No. 1272/2008, 29CFR1910/1200 and GHS Rev. 3 and amendments, and extended by company and literature data. The classification is in accordance with the latest editions of international substances lists, and is supplemented by information from technical literature and by information provided by the company.

3 Composition/information on ingredients

3.1 Chemical characterization : None

3.2 Description : None

3.3 Hazardous components (percentages by weight)

Identification	Chemical Name	Classification	Wt. %
CAS number: 7758-29-4	Sodium tripolyphosphate	Skin Irrit. 2 ; H315 Eye Irrit. 2; H319	12-28
CAS number: 68081-81-2	Sodium Alkylbenzene Sulfonate	Acute Tox. 4; H303 Skin Irrit. 2 ; H315 Eye Irrit. 2; H319	8-22
CAS number: 7722-88-5	Tetrasodium Pyrophosphate	Skin Irrit. 2 ; H315 Eye Irrit. 2; H319	2-16

3.4 Additional Information : None.

4 First aid measures

4.1 Description of first aid measures

General information: None.

After inhalation:

Maintain an unobstructed airway.

Loosen clothing as necessary and position individual in a comfortable position.

After skin contact:

Wash affected area with soap and water.

Seek medical attention if symptoms develop or persist.

After eye contact:

Rinse/flush exposed eye(s) gently using water for 15-20 minutes.

Remove contact lens(es) if able to do so during rinsing.

Seek medical attention if irritation persists or if concerned.

After swallowing:

Rinse mouth thoroughly.

Seek medical attention if irritation, discomfort, or vomiting persists.

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

Effective date: 10.18.2017 **Revision**: 10.18.2017

Trade Name: Alconox

4.2 Most important symptoms and effects, both acute and delayed

None

4.3 Indication of any immediate medical attention and special treatment needed:

No additional information.

5 Firefighting measures

5.1 Extinguishing media

Suitable extinguishing agents:

Use appropriate fire suppression agents for adjacent combustible materials or sources of ignition.

For safety reasons unsuitable extinguishing agents : None

5.2 Special hazards arising from the substance or mixture :

Thermal decomposition can lead to release of irritating gases and vapors.

5.3 Advice for firefighters

Protective equipment:

Wear protective eye wear, gloves and clothing.
Refer to Section 8.

5.4 Additional information :

Avoid inhaling gases, fumes, dust, mist, vapor and aerosols.
Avoid contact with skin, eyes and clothing.

6 Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures :

Ensure adequate ventilation.
Ensure air handling systems are operational.

6.2 Environmental precautions :

Should not be released into the environment.
Prevent from reaching drains, sewer or waterway.

6.3 Methods and material for containment and cleaning up :

Wear protective eye wear, gloves and clothing.

6.4 Reference to other sections : None

7 Handling and storage

7.1 Precautions for safe handling :

Avoid breathing mist or vapor.
Do not eat, drink, smoke or use personal products when handling chemical substances.

7.2 Conditions for safe storage, including any incompatibilities :

Store in a cool, well-ventilated area.

7.3 Specific end use(s):

No additional information.

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

Effective date: 10.18.2017 **Revision**: 10.18.2017

Trade Name: Alconox

8 Exposure controls/personal protection

8.1 Control parameters :

a) 7722-88-5, Tetrasodium Pyrophosphate, OSHA TWA 5 mg/m3

b) Dusts, non-specific OEL, Irish Code of Practice

(i) Total inhalable 10 mg/m3 (8hr)

(ii) Respirible 4mg/m3 (8hr)

(iii) Tetrasodium Pyrophosphate, OSHA TWA 5 mg/m3, (8hr)

8.2 Exposure controls

Appropriate engineering controls:

Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use or handling.

Respiratory protection:

Not needed under normal use conditions.

Protection of skin:

Select glove material impermeable and resistant to the substance or preparation. Protective gloves recommended to comply with EN 374. Take note of break through times, permeability, and special workplace conditions, such as mechanical strain, duration of contact, etc. Protective gloves should be replaced at the first sign of wear.

Eye protection:

Safety goggles or glasses, or appropriate eye protection. Recommended to comply with ANSI Z87.1 and/or EN 166.

General hygienic measures:

Wash hands before breaks and at the end of work.

Avoid contact with skin, eyes and clothing.

9 Physical and chemical properties

Appearance (physical state, color):	White and cream colored flakes - powder	**Explosion limit lower:** **Explosion limit upper:**	Not determined or not available. Not determined or not available.
Odor:	Not determined or not available.	**Vapor pressure at 20°C:**	Not determined or not available.
Odor threshold:	Not determined or not available.	**Vapor density:**	Not determined or not available.
pH-value:	9.5 (aqueous solution)	**Relative density:**	Not determined or not available.
Melting/Freezing point:	Not determined or not available.	**Solubilities:**	Not determined or not available.
Boiling point/Boiling range:	Not determined or not available.	**Partition coefficient (n-octanol/water):**	Not determined or not available.
Flash point (closed cup):	Not determined or not available.	**Auto/Self-ignition temperature:**	Not determined or not available.
Evaporation rate:	Not determined or not available.	**Decompositio n**	Not determined or not available.

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

Effective date: 10.18.2017 **Revision**: 10.18.2017

Trade Name: Alconox

Flammability (solid, gaseous):	Not determined or not available.	**Viscosity**:	a. Kinematic: Not determined or not available. b. Dynamic: Not determined or not available.
Density at 20°C:	Not determined or not available.		

10 Stability and reactivity

10.1 Reactivity : None

10.2 Chemical stability : None

10.3 Possibility hazardous reactions : None

10.4 Conditions to avoid : None

10.5 Incompatible materials : None

10.6 Hazardous decomposition products : None

11 Toxicological information

11.1 Information on toxicological effects :

Acute Toxicity:

Oral:

: LD50 > 5000 mg/kg oral rat - Product .

Chronic Toxicity: No additional information.

Skin corrosion/irritation:

Sodium Alkylbenzene Sulfonate: Causes skin irritation. .

Serious eye damage/irritation:

Sodium Alkylbenzene Sulfonate: Causes serious eye irritation .

Tetrasodium Pyrophosphate: Rabbit - Risk of serious damage to eyes .

Respiratory or skin sensitization: No additional information.

Carcinogenicity: No additional information.

IARC (International Agency for Research on Cancer): None of the ingredients are listed.

NTP (National Toxicology Program): None of the ingredients are listed.

Germ cell mutagenicity: No additional information.

Reproductive toxicity: No additional information.

STOT-single and repeated exposure: No additional information.

Additional toxicological information: No additional information.

12 Ecological information

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

Effective date: 10.18.2017 **Revision**: 10.18.2017

Trade Name: Alconox

12.1 Toxicity:

Sodium Alkylbenzene Sulfonate: Fish, LC50 1.67 mg/l, 96 hours.
Sodium Alkylbenzene Sulfonate: Aquatic invertebrates, EC50 Daphnia 2.4 mg/l, 48 hours. Sodium Alkylbenzene Sulfonate: Aquatic Plants, EC50 Algae 29 mg/l, 96 hours.
Tetrasodium Pyrophosphate: Fish, LC50 - other fish - 1,380 mg/l - 96 h.
Tetrasodium Pyrophosphate: Aquatic invertebrates, EC50 - Daphnia magna (Water flea) - 391 mg/l - 48 h.

12.2 Persistence and degradability: No additional information.

12.3 Bioaccumulative potential: No additional information.

12.4 Mobility in soil: No additional information.

General notes: No additional information.

12.5 Results of PBT and vPvB assessment:

PBT: No additional information.

vPvB: No additional information.

12.6 Other adverse effects: No additional information.

13 Disposal considerations

13.1 Waste treatment methods (consult local, regional and national authorities for proper disposal)

Relevant Information:

It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities. (US 40CFR262.11).

14 Transport information

14.1 UN Number: ADR, ADN, DOT, IMDG, IATA	None
14.2 UN Proper shipping name: ADR, ADN, DOT, IMDG, IATA	None
14.3 Transport hazard classes: ADR, ADN, DOT, IMDG, IATA	**Class:** None **Label:** None **LTD.QTY:** None

US DOT

Limited Quantity Exception: None

Bulk:
RQ (if applicable): None
Proper shipping Name: None
Hazard Class: None
Packing Group: None
Marine Pollutant (if applicable): No additional information.

Non Bulk:
RQ (if applicable): None
Proper shipping Name: None
Hazard Class: None
Packing Group: None
Marine Pollutant (if applicable): No additional information.

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

Effective date: 10.18.2017 **Revision**: 10.18.2017

Trade Name: Alconox

Comments: None	**Comments:** None
14.4 Packing group: ADR, ADN, DOT, IMDG, IATA	None
14.5 Environmental hazards :	None
14.6 Special precautions for user:	None
Danger code (Kemler):	None
EMS number:	None
Segregation groups:	None
14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: Not applicable.	
14.8 Transport/Additional information:	
Transport category:	None
Tunnel restriction code:	None
UN "Model Regulation":	None

15 Regulatory information

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

North American

SARA

Section 313 (specific toxic chemical listings): None of the ingredients are listed.
Section 302 (extremely hazardous substances): None of the ingredients are listed.

CERCLA (Comprehensive Environmental Response, Clean up and Liability Act) Reportable

Spill Quantity: None of the ingredients are listed.

TSCA (Toxic Substances Control Act):

Inventory: All ingredients are listed.
Rules and Orders: Not applicable.

Proposition 65 (California):

Chemicals known to cause cancer: None of the ingredients are listed.

Chemicals known to cause reproductive toxicity for females: None of the ingredients are listed.

Chemicals known to cause reproductive toxicity for males: None of the ingredients are listed.

Chemicals known to cause developmental toxicity: None of the ingredients are listed.

Canadian

Canadian Domestic Substances List (DSL):
All ingredients are listed.

EU

REACH Article 57 (SVHC): None of the ingredients are listed.

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

Effective date: 10.18.2017 **Revision**: 10.18.2017

Trade Name: Alconox

Germany MAK: Not classified.
EC 648/2004 – This is an industrial detergent. Contains >30% phosphate, 15-30% anionic surfactant, <5% EDTA salts
EC 551/2009 – This is not a laundry or dishwasher detergent
EC 907/2006 – Contains no enzymes, optical brighteners, perfumes, allergenic fragrances, or preservative agents

Asia Pacific

Australia

Australian Inventory of Chemical Substances (AICS): All ingredients are listed.

China

Inventory of Existing Chemical Substances in China (IECSC): All ingredients are listed.

Japan

Inventory of Existing and New Chemical Substances (ENCS): All ingredients are listed.

Korea

Existing Chemicals List (ECL): All ingredients are listed.

New Zealand

New Zealand Inventory of Chemicals (NZOIC): All ingredients are listed.

Philippines

Philippine Inventory of Chemicals and Chemical Substances (PICCS): All ingredients are listed.

Taiwan

Taiwan Chemical Substance Inventory (TSCI): All ingredients are listed.

16 Other information

Abbreviations and Acronyms: None

Summary of Phrases

Hazard statements:
H315 Causes skin irritation.
H319 Causes serious eye irritation.

NFPA: 1-0-0
HMIS: 1-0-0

Precautionary statements:
P264 Wash skin thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352 If on skin: Wash with soap and water.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P321 Specific treatment (see supplemental first aid instructions on this label).
P332+P313 If skin irritation occurs: Get medical advice/attention.
P362 Take off contaminated clothing and wash before reuse.
P501 Dispose of contents and container as instructed in Section 13.

Manufacturer Statement:

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 given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be 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

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

Effective date: 05/17/2017 **Revision** : 05/17/2017

Trade Name: Liquinox

1 Identification of the substance/mixture and of the supplier

1.1 Product identifier

Trade Name: Liquinox
Synonyms:
Product number: 1232-1, 1232, 1201-1, 1201, 1205, 1215, 1255

1.2 Application of the substance / the mixture : Cleaning material/Detergent

1.3 Details of the supplier of the Safety Data Sheet

Manufacturer **Supplier**
Alconox, Inc.
30 Glenn Street
White Plains, NY 10603
1-914-948-4040

Emergency telephone number:
ChemTel Inc
North America: 1-800-255-3924
International: 01-813-248-0585

2 Hazards identification

2.1 Classification of the substance or mixture:

In compliance with EC regulation No. 1272/2008, 29CFR1910/1200 and GHS Rev. 3 and amendments.

Hazard-determining components of labeling:
Alcohol ethoxylate
Sodium alkylbenzene sulfonate
Sodium xylenesulphonate
Lauramine oxide

2.2 Label elements:

Eye irritation, category 2A.
Skin irritation, category 2.

Hazard pictograms:

Signal word: Warning

Hazard statements:
H315 Causes skin irritation.
H319 Causes serious eye irritation.

Precautionary statements:
P264 Wash skin thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352 If on skin: Wash with soap and water.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P332+P313 If skin irritation occurs: Get medical advice/attention.
P501 Dispose of contents and container as instructed in Section 13.

Additional information: None.

Hazard description

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

Effective date: 05/17/2017 **Revision** : 05/17/2017

Trade Name: Liquinox

Hazards Not Otherwise Classified (HNOC): None

Information concerning particular hazards for humans 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.

Classification system:

The classification is according to EC regulation No. 1272/2008, 29CFR1910/1200 and GHS Rev. 3 and amendments, and extended by company and literature data. The classification is in accordance with the latest editions of international substances lists, and is supplemented by information from technical literature and by information provided by the company.

3 Composition/information on ingredients

3.1 Chemical characterization : None

3.2 Description : None

3.3 Hazardous components (percentages by weight)

Identification	Chemical Name	Classification	Wt. %
CAS number: 68081-81-2	Sodium Alkylbenzene Sulfonate	Acute Tox. 4; H303 Skin Irrit. 2 ; H315 Eye Irrit. 2; H319	10-25
CAS number: 1300-72-7	Sodium Xylenesulphonate	Eye Irrit. 2; H319	2.5-10
CAS number: 84133-50-6	Alcohol Ethoxylate	Skin Irrit. 2 ; H315 Eye Dam. 1; H318	2.5-10
CAS number: 1643-20-5	Lauramine oxide	Skin Irrit. 2 ; H315 Eye Dam. 1; H318	1-2

3.4 Additional Information: None.

4 First aid measures

4.1 Description of first aid measures

General information: None.

After inhalation:

Maintain an unobstructed airway.

Loosen clothing as necessary and position individual in a comfortable position.

After skin contact:

Wash affected area with soap and water.

Seek medical attention if symptoms develop or persist.

After eye contact:

Rinse/flush exposed eye(s) gently using water for 15-20 minutes.

Remove contact lens(es) if able to do so during rinsing.

Seek medical attention if irritation persists or if concerned.

After swallowing:

Rinse mouth thoroughly.

Seek medical attention if irritation, discomfort, or vomiting persists.

4.2 Most important symptoms and effects, both acute and delayed

None

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

Effective date: 05/17/2017 **Revision** : 05/17/2017

Trade Name: Liquinox

4.3 Indication of any immediate medical attention and special treatment needed:

No additional information.

5 Firefighting measures

5.1 Extinguishing media

Suitable extinguishing agents:

Use appropriate fire suppression agents for adjacent combustible materials or sources of ignition.

For safety reasons unsuitable extinguishing agents : None

5.2 Special hazards arising from the substance or mixture :

Thermal decomposition can lead to release of irritating gases and vapors.

5.3 Advice for firefighters

Protective equipment:

Wear protective eye wear, gloves and clothing.
Refer to Section 8.

5.4 Additional information :

Avoid inhaling gases, fumes, dust, mist, vapor and aerosols.
Avoid contact with skin, eyes and clothing.

6 Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures :

Ensure adequate ventilation.
Ensure air handling systems are operational.

6.2 Environmental precautions :

Should not be released into the environment.
Prevent from reaching drains, sewer or waterway.

6.3 Methods and material for containment and cleaning up :

Wear protective eye wear, gloves and clothing.

6.4 Reference to other sections : None

7 Handling and storage

7.1 Precautions for safe handling :

Avoid breathing mist or vapor.
Do not eat, drink, smoke or use personal products when handling chemical substances.
Conditions for safe storage, including any incompatibilities:
Store closed upright and in a cool dry place, should be 15 - 30 deg C or 60 - 90 deg F.

7.2 Specific end use(s):

No additional information.

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

Effective date: 05/17/2017 **Revision** : 05/17/2017

Trade Name: Liquinox

8 Exposure controls/personal protection

8.1 Control parameters :

No applicable occupational exposure limits

8.2 Exposure controls

Appropriate engineering controls:

Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use or handling.

Respiratory protection:

Not needed under normal conditions.

Protection of skin:

Select glove material impermeable and resistant to the substance.

Eye protection:

Safety goggles or glasses, or appropriate eye protection.

General hygienic measures:

Wash hands before breaks and at the end of work.
Avoid contact with skin, eyes and clothing.

9 Physical and chemical properties

Appearance (physical state, color):	Pale yellow liquid	**Explosion limit lower:** **Explosion limit upper:**	Not determined or not available. Not determined or not available.
Odor:	Not determined or not available.	**Vapor pressure at 20°C:**	Not determined or not available.
Odor threshold:	Not determined or not available.	**Vapor density:**	Not determined or not available.
pH-value:	8.5 as is	**Relative density:**	Not determined or not available.
Melting/Freezing point:	Not determined or not available.	**Solubilities:**	Not determined or not available.
Boiling point/Boiling range:	Not determined or not available.	**Partition coefficient (n-octanol/water):**	Not determined or not available.
Flash point (closed cup):	Not determined or not available.	**Auto/Self-ignition temperature:**	Not determined or not available.

Evaporation rate:	Not determined or not available.	**Decomposition temperature:**	Not determined or not available.
Flammability (solid, gaseous):	Not determined or not available.	**Viscosity:**	a. Kinematic: Not determined or not available. b. Dynamic: Not determined or not available.

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), 29CFR1910/1200 and GHS Rev. 3

Effective date: 05/17/2017 **Revision** : 05/17/2017

Trade Name: Liquinox	
Density at 20°C:	Not determined or not available.

10 Stability and reactivity

10.1 Reactivity : None

10.2 Chemical stability : None

10.3 Possibility hazardous reactions : None

10.4 Conditions to avoid : None

10.5 Incompatible materials : None

10.6 Hazardous decomposition products : None

11 Toxicological information

11.1 Information on toxicological effects :

Acute Toxicity:

Oral:

: LD50 >5000 mg per kg Rat, Oral) - product .

Chronic Toxicity: No additional information.

Skin corrosion/irritation:

Alcohol Ethoxylate: May cause mild to moderate skin irritation.

Sodium Alkylbenzene Sulfonate: Causes skin irritation.

Lauramine oxide: Causes skin irritation.

Serious eye damage/irritation:

Sodium Alkylbenzene Sulfonate: Causes serious eye irritation.

Alcohol Ethoxylate: Causes moderate to severe eye irritation and conjunctivitis.

Sodium xylenesulphonate: Rabbit: irritating to eyes.

Lauramine oxide: Causes serious eye damage.

Respiratory or skin sensitization: No additional information.

Carcinogenicity: No additional information.

IARC (International Agency for Research on Cancer): None of the ingredients are listed.

NTP (National Toxicology Program): None of the ingredients are listed.

Germ cell mutagenicity: No additional information.

Reproductive toxicity: No additional information.

STOT-single and repeated exposure: No additional information.

Additional toxicological information: No additional information.

12 Ecological information

12.1 Toxicity:

Sodium Alkylbenzene Sulfonate: Fish, LC50 1.67 mg/l, 96 hours.

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Sodium Alkylbenzene Sulfonate: Aquatic invertebrates, EC50 Daphnia 2.4 mg/l, 48 hours.
Sodium Alkylbenzene Sulfonate: Aquatic Plants, EC50 Algae 29 mg/l, 96 hours.
Lauramine oxide: Fish, LC0 24.3 mg/l, 96h [Killifish (Cyprinodontidae)]
Lauramine oxide: Aquatic invertebrates, (LC50): 3.6 mg/l 96 hours [Daphnia (Daphnia)].
Lauramine oxide: Aquatic plants, EC50 Algae 0.31 mg/l 72 hours [Algae]
Alcohol Ethoxylate: Aquatic invertebrates, (LC50): 4.01 mg/l 48 hours [Daphnia (daphnia)].

12.2 Persistence and degradability: No additional information.

12.3 Bioaccumulative potential: No additional information.

12.4 Mobility in soil: No additional information.

General notes: No additional information.

12.5 Results of PBT and vPvB assessment:

PBT: No additional information.

vPvB: No additional information.

12.6 Other adverse effects: No additional information.

13 Disposal considerations

13.1 Waste treatment methods (consult local, regional and national authorities for proper disposal)

Relevant Information:

It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities. (US 40CFR262.11).

14 Transport information

14.1 UN Number: None
ADR, ADN, DOT, IMDG, IATA

14.2 UN Proper shipping name: None
ADR, ADN, DOT, IMDG, IATA

14.3 Transport hazard classes:
ADR, ADN, DOT, IMDG, IATA

Class: None
Label: None
LTD. QTY: None

US DOT
Limited Quantity Exception: None

Bulk:
RQ (if applicable): None
Proper shipping Name: None
Hazard Class: None
Packing Group: None
Marine Pollutant (if applicable): No additional information.
Comments: None

Non Bulk:
RQ (if applicable): None
Proper shipping Name: None
Hazard Class: None
Packing Group: None
Marine Pollutant (if applicable): No additional information.
Comments: None

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Trade Name: Liquinox

14.4 Packing group: ADR, ADN, DOT, IMDG, IATA	None
14.5 Environmental hazards :	None
14.6 Special precautions for user:	None
Danger code (Kemler):	None
EMS number:	None
Segregation groups:	None

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

14.8 Transport/Additional information:

Transport category:	None
Tunnel restriction code:	None
UN "Model Regulation":	None

15 Regulatory information

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

North American

SARA

Section 313 (specific toxic chemical listings): None of the ingredients are listed.
Section 302 (extremely hazardous substances): None of the ingredients are listed.

CERCLA (Comprehensive Environmental Response, Clean up and Liability Act) Reportable

Spill Quantity: None of the ingredients are listed.

TSCA (Toxic Substances Control Act):

Inventory: All ingredients are listed.
Rules and Orders: Not applicable.

Proposition 65 (California):

Chemicals known to cause cancer: None of the ingredients are listed.

Chemicals known to cause reproductive toxicity for females: None of the ingredients are listed.

Chemicals known to cause reproductive toxicity for males: None of the ingredients are listed.

Chemicals known to cause developmental toxicity: None of the ingredients are listed.

Canadian

Canadian Domestic Substances List (DSL):
All ingredients are listed.

EU

REACH Article 57 (SVHC): None of the ingredients are listed.

Germany MAK: Not classified.

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Trade Name: Liquinox

Asia Pacific

Australia

Australian Inventory of Chemical Substances (AICS): All ingredients are listed.

China

Inventory of Existing Chemical Substances in China (IECSC): All ingredients are listed.

Japan

Inventory of Existing and New Chemical Substances (ENCS): All ingredients are listed.

Korea

Existing Chemicals List (ECL): All ingredients are listed.

New Zealand

New Zealand Inventory of Chemicals (NZOIC): All ingredients are listed.

Philippines

Philippine Inventory of Chemicals and Chemical Substances (PICCS): All ingredients are listed.

Taiwan

Taiwan Chemical Substance Inventory (TSCI): All ingredients are listed.

16 Other information

Abbreviations and Acronyms: None

Summary of Phrases

Hazard statements:

H315 Causes skin irritation.
H319 Causes serious eye irritation.

Precautionary statements:

P264 Wash skin thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352 If on skin: Wash with soap and water.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P332+P313 If skin irritation occurs: Get medical advice/attention.
P501 Dispose of contents and container as instructed in Section 13.

Manufacturer Statement:

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 given is designed only as guidance for safe handling,

use, processing, storage, transportation, disposal and release and is not to be 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.

NFPA: 1-0-0

HMIS: 1-0-0

Appendix B
Glove Selection Guideline

APPENDIX B: GLOVE SELECTION GUIDELINE

HAZARD	EXAMPLE TASKS	ANSI CUT/ABRASION RATING*	REPRESENTATIVE GLOVE
Impact Hazards, Med/Heavy Duty Puncture Cut	Drilling/direct push activities. Construction. Heavy materials handling. Power tools. Air knifing. Excavation.	ANSI Cut and Abrasion Resistance **Level 5** **EN 388 4521**	Hexarmor®Chrome Hexarmor® GGT5 Hexarmor® L5 Hexarmor® SteelLeather III Ironclad® Kong Glove
Med/Heavy Duty Puncture Cut Oil/Solvent Resistant	Tasks where materials are treated with oil or solvents.	ANSI Cut and Abrasion Resistance **Level 3 - 4** **EN 388 4522**	Ansell Alpha-Tec ® Memphis® Ultra Tech Nitrile Cut & Splash Best® Neoprene 6780 Hexarmor™ TenX Threesixty
Medium Duty Cut/Puncture Gloves with Oily Surface Grip	Light materials handling, wet service	ANSI Cut and Abrasion Resistance **Level 3** **EN 388 44xx**	Best®Zorb-It Ultimate HV 4567 Ansell® Cut Protective Glove 97-505 Ansell HyFlex® 11-511 Ansell HyFlex® 11-624
Med/Heavy Duty Cut/Puncture	Light Materials Handling. System O&M. Use of Hand Tools. Hand Augering. Heavy Equipment Operator.	ANSI Cut and Abrasion Resistance **Level 2** **EN 388 33xx**	Perfect Fit® PF570 Hexarmor® Level Six 9010/9012 Ironclad® Cut Resistant Glove Ansell HyFlex® 11-511 Ansell HyFlex® 11-624 Ansell® Cut Protective Glove 97-505
Light Duty Cut/Puncture Abrasion Only	Handling soil and Groundwater Samples. Opening spoons. Well construction.	ANSI Cut and Abrasion Resistance **Level 2 - 4** **EN 388 21xx**	Memphis® Ninja Max N9676GL Memphis® UltraTech Dyneema 9676 Memphis® Ninja Ice (Cold Weather) Ansell HyFlex® 11-511 Ansell® Cut Protective Glove 97-505 Ansell® Powerflex 80-813 Ironclad™ Workforce
Light Duty Glove Cut/Abrasion (used under nitrile gloves)	Groundwater Sampling.	ANSI Cut and Abrasion Resistance **Level 2** **EN 388 21xx**	Ansell HyFlex® 11-500 Ansell HyFlex® 11-624 Ansell GoldKnit
* Reference to ANSI and EN 388 glove testing standards. Listed gloves meet the standards in the table, but are not the only gloves that meet the standard.			
This selection chart is not intended to address all chemical hazards. Gloves used for chemical protection shall provide cut/puncture resistance, or be used in tandem with cut/puncture protection. Nitrile gloves used for environmental sampling must be used in tandem with a cut/puncture resistant glove.			
Gloves available in high visibility colors have shown to be effective and are preferred.			

Appendix C
Heat and Cold Stress

COLD STRESS

Ambient air temperatures during site activities may create cold stress for on-site workers. Procedures for recognizing and avoiding cold stress must be followed. Cold stress can range from frostbite to hypothermia. The signs and symptoms of cold stress are listed below.

Frostbite is defined as the actual freezing of one or more layers of skin. In severe cases, organs and structures below the skin can become frozen. Usually, body areas exposed to the most cold, and least body warmth, are affected first. These areas include fingers, toes, ears, and the tip of your nose. Frostbite is characterized by pain and loss of dexterity in the affected limb. The tissue initially appears reddened, but may progress to white, blue, or black.

> **FIRST AID:** Bring the affected employee indoors and call the local emergency clinic. Rewarming of frostbitten parts is best left to a medical doctor in a controlled setting.

Hypothermia is the condition that occurs when the body's natural warming mechanisms (muscle activity and shivering) cannot counteract the loss of body heat to the environment. The onset of hypothermia is greatly hastened by being wet. Hypothermia is marked by severe, uncontrollable shivering. The patient will show signs of excessive fatigue, drowsiness, irritability, or euphoria. As hypothermia progresses, the patient will begin to lose consciousness, blood pressure will drop, shivering will cease, and the patient may slip into a coma and possibly die.

> **FIRST AID:** If these symptoms occur, remove the patient to a warm, dry place. If clothing is wet, remove and replace with dry clothing. Keep the patient warm, but not overheated. The patient should be gradually rewarmed to prevent shock. If the patient is conscious and alert, warm liquids should be provided. Coffee and other caffeinated liquids should be avoided because of diuretic and circulatory effects. Notify the emergency clinic if conditions worsen, the patient loses consciousness, or the patient has an altered mental status. Have the patient transported to an emergency facility.

General Precautions The reduction of adverse health effects from cold exposure can be achieved by adopting the following work practices.

- Provide adequate insulating clothing to maintain core temperature at 98.6° F if work is to be performed in air temperatures below 40° F. Wind chill cooling rates and the cooling power of air are critical factors. The higher the wind speed and the lower the air temperature in the work area, the greater the insulation value of the protective clothing should be.
- If the air temperature is 32° F or less, hands should be protected by mittens/gloves.
- If only light work is involved and if the clothing on the worker may become wet on the job site, the outer layer of clothing should be impermeable to water. With more severe work under such conditions, the outer layer should be water repellent, and the outer layer should be changed as it becomes wet. The outer garments should include provisions for easy ventilation in order to prevent wetting of the inner layer by sweat.
- If available clothing does not give adequate protection to prevent cold injury, work should be modified or suspended until adequate clothing is available, or until weather conditions improve.
- For prolonged work, heated shelters should be available. Workers should be encouraged to use these at regular intervals, with the frequency depending on the severity of the environmental exposure. When entering the shelter, the outer layer of clothing should be removed and the remainder of the clothing

loosened to permit heat evaporation, or a change of work clothing should be provided.

- Warm, sweet drinks, such as hot cocoa or soup, should be available at the work site to provide caloric intake and fluid volume. The intake of coffee should be limited because of diuretic and circulatory effects.
- The weight and bulk of cold-weather gear should be included in estimating the required work performance and weights to be lifted in the field.

Workers should be instructed in safety and health procedures regarding cold work environments as part of the pre-work safety meeting. The training program should include instruction in preventing, recognizing, and treating cold stress conditions.

Wind Chill Chart

Wind (mph) \ Temperature (°F)	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45	26	29	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Frostbite Times: 30 minutes, 10 minutes, 5 minutes

$$\text{Wind Chill (°F)} = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

Where, T= Air Temperature (°F) V= Wind Speed (mph) *Effective 11/01/01*

HEAT STRESS

There is a potential for heat stress from the use of protective clothing and climate conditions. One or more of the following procedures may be employed to alleviate potential heat stress problems in the event that site conditions warrant the use of personal protective equipment (PPE), or ambient temperatures exceed 85° F. Heat stress training must be emphasized during the daily safety meetings, and adequate supplies of potable water must be provided to workers each day.

General Precautions Provide plenty of liquids. To replace body fluids (water and electrolytes) lost because of sweating, use a 0.1 percent saltwater solution, more heavily salted foods, or commercial drink mixes. The commercial mixes may be preferable for those employees on a low sodium diet. Employees on low sodium diets, or other special diets, are advised to contact their personal physician for recommendations regarding appropriate electrolyte replacement fluids/beverages.

In extremely hot weather, conduct operations in early morning or evening and rotate shifts of workers wearing impervious clothing. Install mobile showers and/or hose-down facilities to reduce body temperature and cool protective clothing.

Ensure that adequate shelter is available for breaks to protect personnel against heat, which can decrease physical efficiency and increase the probability of accidents.

Acclimatization for workers not accustomed to working in elevated temperature environments will be considered and implemented as appropriate in accordance with American Conference of Governmental and Industrial Hygienists (ACGIH) Guidelines.

Heat Stress Monitoring

For monitoring the body's recuperative ability toward excess heat, one or more of the following techniques should be used as a screening mechanism. Monitoring of personnel wearing impervious clothing should commence when the ambient temperature is 70° F or above. Frequency of monitoring should increase as the ambient temperature increases or as slow recovery rates are indicated. When temperatures exceed 80° F, regardless of the use of Personal Protective Equipment (PPE), workers will be monitored for heat stress after every work period.

Good hygienic standards must be maintained by the employee to aid in the prevention of heat stress illnesses. At a minimum, frequent changes of clothing and daily showering should occur with clothing being allowed to dry during rest periods. Persons who notice skin problems should immediately inform their supervisor.

Heart rate (HR) should be measured by the radial pulse for 30 seconds as early as possible in the resting period. The HR at the beginning of the rest period should not exceed 110 beats/minute. If the HR is higher, the next work period should be shortened by 25 percent. The HR is then measured again, once each minute for 2 minutes (a total of three measurements), after the initial rest period measurement. The HR should decrease by ten beats per minute between each measurement (a total reduction of 20 beats). If the HR does not decrease, the work period should be reduced by an additional 25 percent.

Body temperature can be measured orally with a clinical thermometer as early as possible in the resting period. Oral temperature (OT) at the beginning of the rest period should not exceed 99°F. If it is greater than 99°F, the next work period should be shortened by 25 percent. The OT should be measured again at the end of the rest period to make sure that it has dropped below 99° F.

Effects of Heat Street

If the body's physiological processes fail to maintain a normal body temperature because of excessive heat loading, a number of physical reactions can occur. The severity of these reactions ranges from mild (such as fatigue, irritability, anxiety, and decreased concentration, dexterity, or movement) to severe (fatal).

Heat-related illnesses include:

Heat rash (also known as prickly heat rash) is caused by continuous exposure to heat and humid air and aggravated by chafing clothes. Heat rash decreases the ability to tolerate heat as well as being a nuisance. Signs are not limited to, but may include, a red prickly rash.

FIRST AID: Employees exhibiting signs of heat rash will be directed to shower and change into clean, dry clothing.

Heat cramps are caused by profuse perspiration with inadequate fluid intake and electrolyte replacement (especially salts). Signs are muscle spasms and pain in the extremities and abdomen, and may occur several hours after work has stopped.

FIRST AID: Employees showing signs of heat cramps will be directed to lie in a cool, shady area, and drink cool fluids. If symptoms persist or worsen, the employee will be transported to an emergency facility.

Heat exhaustion is caused by increased stress on various organs to meet increased demands to cool the body. Signs are shallow breathing; pale, cool, moist skin; profuse sweating; dizziness and lassitude.

FIRST AID: Employees with signs of heat exhaustion will be brought to a cool, shady location and given fluids. After recovering, the employee will be dismissed for the day. If employee is unconscious, or conditions persist, the employee will be transported to a hospital.

Heat stroke is the most severe form of heat stress. The body must be cooled immediately to prevent severe injury and/or death. Signs and symptoms are red, hot, dry skin; no perspiration; nausea; dizziness and confusion; strong, rapid pulse; and/or coma.

FIRST AID: HEAT STROKE IS A MEDICAL EMERGENCY. Employees will be brought to a cool area, aggressively treated by removing constricting clothes and applying wet towels or ice packs, and transported without delay to an emergency facility.

Appendix D
Tailgate Meeting/Checklist

Daily Pre-Job Safety Briefing

Project Name: _____ Project Number: _____

Work Location: _____ Date: _____

Tasks Performed: _____ Time: _____ AM PM

Client Name: _____ Submitted By: _____

Weather: _____

Refuge Area: _____

First Aid/CPR Persons: _____

Potential Hazards: _____

For Emergencies Dial 911 **For Non-Emergencies Dial WorkCare (888) 449-7787**

Personal Protective Equipment Required

	Yes	*No*	*Specify*
Clothing	☐	☐	_____
FR, reflective vest, chemical, other (specify)			
Eye/Face	☐	☐	_____
Safety glasses, goggles, face shield, other (specify)			
Respirator	☐	☐	_____
1/2 face, full face, other (specify)			
Foot Protection	☐	☐	_____
Safety toe, EH rated, rubber boots, other (specify)			
Hand Protection	☐	☐	_____
Kevlar, chemical, EH, other (specify)			
Head Protection	☐	☐	_____
hard hat, electrical hazard, other (specify)			
Fall Protection	☐	☐	_____
body harness, lifelines, barricades, other (specify)			
Hearing Protection	☐	☐	_____
Other:			_____

Procedures/Programs Required	*Yes*	*No*
Confined Space	☐	☐
Hot Work	☐	☐
Signs/Barricades	☐	☐
LOTO/Energy Control	☐	☐
Scaffolds/Aerial Lifts	☐	☐
_____	☐	☐
_____	☐	☐
_____	☐	☐
_____	☐	☐
Employee Certification/Training Required		
HAZWOPWER	☐	☐
Asbestos Awareness	☐	☐
Asbestos Inspector	☐	☐
XRF Trained	☐	☐
_____	☐	☐
_____	☐	☐
_____	☐	☐

Additional Considerations

Work Procedures: ☐ Dig Safe

☐ Working clearances ☐ _____

☐ _____

People: ☐ Worker fatigue ☐ Other site activities

☐ Public safety ☐ Pedestrian control ☐ Experience

☐ Traffic control ☐ Other utilities

☐ _____

Tools/Equipment: ☐ Eye wash ☐ First Aid Kit

☐ Inspection of tools/equipment

☐ Specialized tools/equipment

☐ Correct tool/equipment for the job

☐ _____

Special Precautions: ☐ Environmental

☐ Condition of structures ☐ Weather conditions

☐ Lighting conditions ☐ Terrain ☐ Water bodies

☐ Adjacent structures

☐ _____

If Conditions CHANGE…Stop Work, Review and Revise the Plan!!

Daily Pre-Job Safety Briefing

Hazards Associated with the Job

☐ Hazardous Chemicals	☐ Heavy Equipment	☐ Slip/Trip and Falls	☐ Work in Active Rail ROW	☐ Confined space
☐ Biological Waste	☐ Hostile Individual(s)	☐ Traffic Hazards	☐ Work in Active Substation	☐ Hot Work
☐ Asbestos	☐ Ladder	☐ Trenches Excavations	☐ Animals/Insects	☐ Radioactive Materials
☐ Dust	☐ Lighting	☐ Utilities	☐ Plants	☐ Boom/Scissor Lift
☐ Edges/Material Handling	☐ Manual Lifting	☐ Water/Boat Safety	☐ _____	☐ _____
☐ Electricity	☐ Pressurized Fluids/Gases	☐ Weather (hot/cold)	☐ _____	☐ _____

List all hazards associated with this task	**Signature of Crew Members Present**	
	Print Name	Sign Name
Barriers to eliminate/control above hazards?		
Supervisor Signature:		

Post Task Safety Analysis

Did any injuries or incidents occur today? If yes, explain.

☐ Yes ☐ No

Was the injury or incident reported the safety department?

☐ Yes ☐ No ☐ N/A

What problems did you have with today's work assignment?

What can we do tomorrow to improve performance?

Appendix E
WorkCare Program Information

EARLY INCIDENT INTERVENTION®

Immediate Access to Medical Advice for Work Related Incidents

(888) 449-7787

INTRODUCTION

WorkCare, Inc. (WorkCare) and TRC have partnered together to promote Incident Intervention®, a resource designed to support company safety goals/targets—while reducing runaway-costs associated with workplace injuries and illnesses.

PURPOSE

Early Incident Intervention provides TRC employees with **IMMEDIATE** telephonic access to WorkCare clinicians at the time of a presumed, non-emergency workplace injury or illness. Clinicians provide expert guidance on the evaluation of symptoms, appropriate first aid, and the need for additional medical evaluation or treatment.

When utilizing this service within the first hour of an incident, known as the "Golden Hour," licensed medical staff can guide the case so that medical evaluation and treatment are rendered appropriately.

> ***"…helps the worker traverse the unpredictable terrain of work-related injuries and illness."***

PRINCIPLES OF EARLY INCIDENT INTERVENTION

- Utilizes principles of the "Golden Hour."
- Provides workers immediate clinician support at the time of an incident.
- Focuses on providing the right care, at the right time in the proper setting.

BENEFITS FOR EMPLOYEES

- Instant access to a medically qualified professional for evaluation of symptoms and possible outcomes.
- Professional guidance on appropriate first aid measures and medications.
- Professional advice regarding the need for additional medical evaluation or treatment.

BENEFITS FOR TRC

- Point of contact for emergency and non-emergency medical clinicians.
- Triages the incident to determine risk and urgency, delivering interventions that are consistent with medical guidelines for the specified injury and illness.
- Maintains communication with clinicians to ensure accurate and timely reporting.

Appendix F
Safe Catch Form

Safe Catch Report

A “Safe Catch” is a potential hazard or incident that has not resulted in any personal injury. Unsafe working conditions, unsafe employee behaviors, improper use of equipment or use of malfunctioning equipment have the potential to cause work related injuries. It is everyone’s responsibility to report and/or correct these potential incidents immediately. Please complete this form as a means to report these “Good Catch” situations and submit to your local OSC Representative and Mike Glenn, SVP/National Safety Director.

Complete ALL field entries:

Employee Name:		Date:	
Location:		Office:	
Project Number:		Practice:	

Conditions

Please check all appropriate conditions:

☐ Unsafe Act	☐ Unsafe Condition	☐ Unsafe Equipment	☐ Unsafe Use of Equipment

Description of Incident or Potential Hazard:

Task Performed at Time of Incident:

Causes (Primary and Contributing):

Corrective Action(s) Taken (remove the hazard, replace, repair, or retrain):

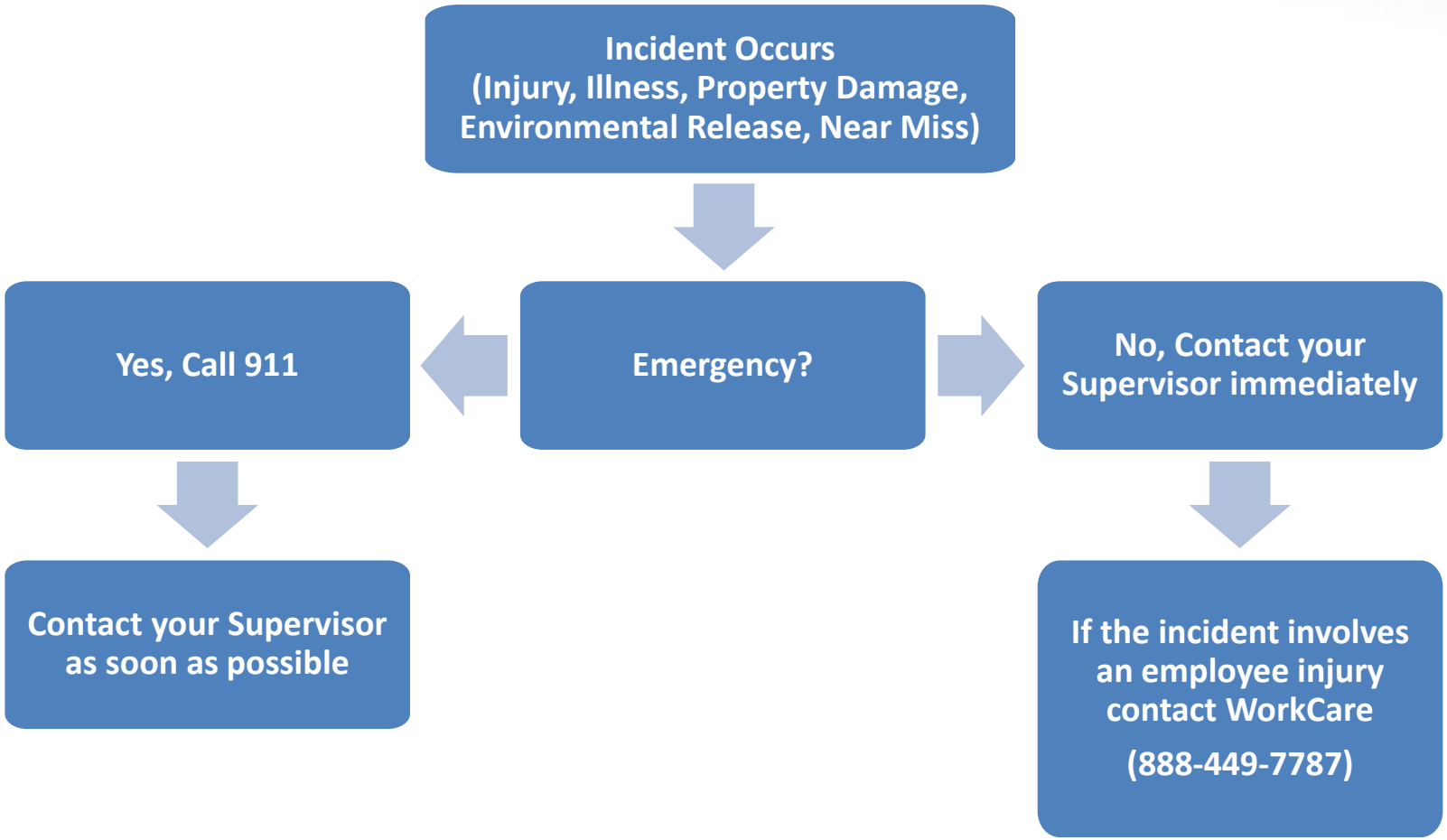
Employee Signature:		Date Completed:	

Our Mission: To reduce the frequency of incidents by applying local lessons learned globally.

If you have any questions about this report or would like additional information, please reference Compliance Program CP019 TRC Incident Response and Lessons Learned Program, located on TRCNET or contact Mike Glenn, SVP/National Safety Director at mglenn@trcsolutions.com.

Appendix G
In Case of Emergency and Incident Reporting

Incident Response Flow Chart - Employees



In Case of Injury at Work

1. If emergency care **is** needed, or if you are in a motor vehicle incident, call 9-1-1.

2. If emergency care **is not** needed, notify your supervisor **prior** to the initial contact with **WorkCare (888.449.7787).**

3. Supervisor must notify a Corporate Health and Safety Team Member.

Submit the appropriate form(s): TRC Incident Notification Report or TRC Auto Incident Report **within 24 hours** to Mike Glenn, VP, National Safety Director.

TRC
Results you can rely on

Appendix H
Job Safety Analysis Forms

Job Safety Analysis Template

COMPANY/ PROJECT NAME or ID/ LOCATION (City, State)	DATE PREPARED FOR HASP:	☐ NEW ☐ REVISED
TRC		
JSA WORK ACTIVITY (Description):	List of Contractor(s) and key work activity:	

SITE SPECIFIC JSA AUTHOR	POSITION / TITLE	DEPT	SIGNATURE

TRC HEALTH AND SAFETY MANAGEMENT	POSITION / TITLE	APPROVAL DATE

PERSONAL PROTECTION EQUIPMENT (PPE) QUICK SUMMARY
Required PPE (indicate with "R") vs. Must Have Available On-site (indicate "A")

___ REFLECTIVE VEST ____HARD HAT _____GLOVES: **ANSI Cut Level ____ Kevlar** ____SAFETY GLASSES _____GOGGLES _____FACE SHIELD	____ HEARING PROTECTION ___SAFETY SHOES: Protective Toe ____ 5pt.HARNESS / LANYARD PPE CLOTHING: ____Coveralls ___Tyvek Suit ____Nomex ___Other (specify):	RESPIRATORY PROTECTION: ☐ NA ____½ face Air Purifying Respirator (APR) ____Particulate Mask: ☐ PM100 ☐ PM95 ____ Cartridge: ☐ P100-Multigas ☐ _____ _____Full face ARP; specify cartridge type: ____ Air Supplied Respirator ____SCBA ____Air-line	Additional PPE: .

Always perform a Safety Assessment (Hazard Hunt): 1) prior to starting work; 2) when changing tasks; and 3) throughout the day. Focus on each new task, procedures, and skill sets to be used.

[1] JOB TASKS	[2] POTENTIAL HAZARDS	[3] HAZARD CONTROLS (beyond wearing "Required" PPE)
1)	a.	
	b.	

Always perform a Safety Assessment (Hazard Hunt): 1) prior to starting work; 2) when changing tasks; and 3) throughout the day. Focus on each new task, procedures, and skill sets to be used.		
[1] JOB TASKS	**[2] POTENTIAL HAZARDS**	**[3] HAZARD CONTROLS (beyond wearing "Required" PPE)**
2)		
3)		

Always perform a Safety Assessment (Hazard Hunt): 1) prior to starting work; 2) when changing tasks; and 3) throughout the day.

[1] JOB TASKS	[2] POTENTIAL HAZARDS	[3] HAZARD CONTROLS (beyond wearing "Required" PPE)
3)		
4)		

	LOCATION(S) WHERE HAZARD IS TO BE EXPECTED	[3] HAZARD CONTROLS (beyond wearing "Required" PPE)
1.	a.	a.
2.	a.	a.
3.	a.	a.

Field Notes:

LIMITATION: As part of TRC's EHS Policy, a JSA is provided by TRC for its employees. The purpose of a JSA is NOT to identify all hazards associated with a task, but to identify key potential hazards to get TRC and other onsite personnel thinking about other potential safety hazards and mitigating actions for unsafe conditions and behavior during various works. TRC recognizes that JSA's may not cover every conceivable step or hazard that emerges during a job, so we've provided a "Field Change" section below to amend a JSA if required. The JSA does not supersede or replace any local, state or federal permit, regulation, statute or other entities policies and procedures but is simply a tool for enhancing the execution of safe work at a jobsite under TRC's supervision. Similarly, all subcontractors are required to provide their own JSA(s) for their specialty prior to performing any work for TRC or its customers in accordance with TRC's EHS Policy; however, any unsafe condition or hazard not covered in any JSA is ultimately the direct responsibility of the person or entity performing the work.

Appendix I
Acknowledgement

PERSONAL ACKNOWLEDGEMENT

A component of the HASP, designed to provide personnel safety during work activities described herein, requires that you receive training as described in the HASP prior to working at this site. Additionally, you are required to read and understand the HASP. When you have fulfilled these requirements, please sign and date this personal acknowledgement:

Name (Printed)	Signature	Date
Name (Printed)	Signature	Date
Name (Printed)	Signature	Date
Name (Printed)	Signature	Date
Name (Printed)	Signature	Date
Name (Printed)	Signature	Date
Name (Printed)	Signature	Date
Name (Printed)	Signature	Date
Name (Printed)	Signature	Date
Name (Printed)	Signature	Date

APPENDIX B

SITE SPECIFIC COMMUNITY AIR MONITORING PLAN

SITE-SPECIFIC COMMUNITY AIR MONITORING PLAN

Dutchess County Fire Training Center
392 Creek Road, Hyde Park, NY 12601
NYSDEC Site No. 314128

Work Assignment No. D09812-22.1

Prepared for:

New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway, 12th Floor
Albany, NY 12233

Prepared by:

TRC Engineers, Inc.
3 Corporate Drive, Suite 202
Clifton Park, New York 12065

TRC Project No.: 556071.0000.0000

July 2024

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List of Figures

List of Appendices

1. Introduction

This Site-Specific Community Air Monitoring Plan (SSCAMP) is developed for utilization during ground intrusive work activities during the Phase III Remedial Investigation at the Dutchess County Fire Training Center site, NYSDEC Site No. 314128, located at 392 Creek Road, in the Town of Hyde Park, Dutchess County, New York (referred to as the "Site").

TRC Engineers, Inc. (TRC) developed this SSCAMP to describe the procedures for real-time air monitoring for volatile organic compounds (VOCs) and particulate levels which will be continuously monitored and observed during ground intrusive activities. This CAMP was developed based on the requirements of New York State Department of Health (NYSDOH) Generic CAMP, Appendix 1A and Fugitive Dust and Particulate Monitoring, Appendix 1B, of NYSDEC DER-10, included here as **Appendix A**.

2. Purpose

The CAMP requires real-time monitoring for VOCs and particulates (i.e., dust) at the downwind perimeter of the work area at the Site. 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 businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of ground intrusive 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 do not spread contamination off-site through the air.

3. Air Monitoring Protocol

All instrumentation and equipment will be calibrated daily and maintained in proper operating condition in accordance with the manufacturer's specifications. Each calibration event, any equipment and instrument malfunctions, unusual conditions, air monitoring station locations, and any exceedances of action levels and countermeasures implemented will be documented in the daily field logs or a dedicated log book.

3.1 CAMP Station Location

A total of two CAMP stations will be used to monitor VOCs and particulate for the duration of the investigation whenever ground-intrusive work is being performed. These stations will be placed upwind (identified at DCFTC-UW) and downwind (identified as DCFTC-DW) at a distance between 20 to 40 feet of each work area, as determined appropriate for the subject intrusive location and setting. CAMP stations will be placed between work activities at the Site and potential receptors, where applicable and to the extent practical. This will allow for CAMP stations to be moved to accommodate the work areas while ensuring

that a CAMP station is placed between any work area and each potential receptor. CAMP station locations will be recorded at the end of each day.

Maps showing the proposed soil boring and monitoring wells subject to SSCAMP activities are provided on **Figures 1** and **2**.

3.2 VOC Monitoring, Response Levels, and Corrective Actions

VOCs will be monitored at both locations on a continuous basis. Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work will be performed using equipment appropriate to measure the types of contaminants known or suspected to be present (i.e., photoionization detector MiniRae 2000 or equivalent). The equipment will be calibrated daily and will be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the Site exceed 5 parts per million (ppm) above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.
- If total organic vapor levels at the downwind perimeter of the work area persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities will 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 work area or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.
- All 15-minute readings will be recorded and will be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes will also be recorded.

3.3 Particulate Monitoring, Response Levels, and Corrective Actions

Particulate concentrations will be monitored at both locations on a continuous basis. The particulate monitoring will 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 (i.e., TSI DustTrak Model 8520 or equivalent). The equipment will be equipped with telemetry to notify TRC field personal via email and SMS text

messages to indicate exceedance of the action level. In addition, fugitive dust migration will be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (µg/m3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, work activities must be shutdown until dust suppression techniques can be employed. Work may resume with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 µg/m3 above the upwind level and provided that no visible dust is migrating from the work area. Note dust complaints from any owner of an adjacent or nearby property will be managed by the Contractor in a manner equivalent to an exceedance of an action level in the SSCAMP.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 µg/m3 above the upwind level, work will be stopped and a reevaluation of activities will be initiated. Work will be able to be resumed provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 µg/m3 of the upwind level and in preventing visible dust migration.

3.4 Work Within 20 Feet of Potential Exposed Individuals or Occupied Structures

While not planned, if work areas fall within 20 feet of potentially exposed populations or occupied structures, the existing continuous monitoring locations for VOCs and particulates will be relocated to reflect the nearest potentially exposed individuals and the location of ventilation system intakes for nearby structures. Background reading in the occupied spaces will be collected prior to commencement of the planned work to establish baseline readings within the occupied spaces.

If total VOC concentrations at the wall of the occupied structure closest to the work area or next to intake vents exceed 2 ppm above background for a sustained period of over one hour, intrusive work will be stopped until VOC concentrations at the wall return to background.

If total particulate concentrations at the wall of the occupied structure closest to the work area or next to intake vents exceed 150 µg/m3 work activities should be suspended until controls are implemented and are successful in reducing the total particulate concentration to 150 µg/m3 or less at the monitoring point.

The use of engineering controls such as adding water for dust suppression, vapor/dust barriers, temporary negative-pressure enclosures, or special ventilation devices will be considered in situations of elevated VOCs and particulates as described above to prevent exposures related to the work activities and to control dust.

4. Reporting

Any exceedance of a SSCAMP threshold or action level will be reported to the NYSDEC and NYSDOH

immediately and additionally via email within 24 hours of the time it is recorded. The notification will include the instrument readings; location of the monitoring station where the exceedance was recorded; readings at upwind locations; date, time, and duration of elevated readings (i.e., number of 15-minute time-weighted exceedances); activities being performed at the time of the exceedances; and descriptions of countermeasures implemented to control the exceedance and prevent future occurrences.

All readings will be recorded and provided to the NYSDEC and NYSDOH on a weekly basis and upon request.

Figures
Proposed Soil Boring/Monitoring Well Location Maps

LEGEND

- TAX PARCEL BOUNDARY
- ONSITE WATER IMPOUNDMENT
- COUNTY PROPOSED BUILDING EXPANSION
- SURFACE WATER FLOW DIRECTION
- CULVERT OR STORM SEWER AND FLOW DIRECTION
- FENCELINE
- MECHANICAL PIPE PLUG
- SITE CHARACTERIZATION MONITORING WELL - NOVEMBER 2019
- SITE CHARACTERIZATION SOIL BORING - NOVEMBER 2019
- COUNTY SOIL BORING - SEPTEMBER 2019
- CORRUGATED STEEL PIPE
- SITE CHARACTERIZATION SURFACE WATER/ SEDIMENT SAMPLE - NOVEMBER 2019
- PHASE I RI FALL KILL SURFACE WATER/SEDIMENT SAMPLE - OCTOBER 2021
- PHASE I RI SURFACE SOIL SAMPLE - MAY 2022
- PHASE I RI SHALLOW SURFACE SOIL SAMPLE, BELOW PAVEMENT - MAY 2022
- PHASE I RI PONDED SURFACE WATER SAMPLE - MAY 2022
- PHASE I RI STORMWATER SAMPLE - MAY 2022
- PHASE II RI SOIL BORING AND MONITORING WELL - NOVEMBER 2022
- PHASE II RI SOIL BORING - NOVEMBER 2022
- PROPOSED IRM SOIL BORING LOCATION

NOTES:

1. LOCATIONS AND DIMENSIONS OF PHYSICAL FEATURES AND PROPERTY BOUNDARIES ARE APPROXIMATE.

BASE MAP: NEAR MAP IMAGERY DATED 4/14/2022
DATA SOURCES: TRC
SHEET SIZE: 11X17L

N

1:600
1" = 50'
0 25 50 FEET

PROJECT:
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DUTCHESS COUNTY FIRE TRAINING CENTER - SITE NO. 314128
392 CREEK ROAD
HYDE PARK, DUTCHESS COUNTY, NEW YORK

TITLE:
PHASE III RI PROPOSED SOIL BORING LOCATIONS

DRAWN BY:	L. LILL	PROJ. NO.:	453208.0000.0000
CHECKED BY:	J. KING	FIGURE 1	
APPROVED BY:	J. MAGDA		
DATE:	JANUARY 2024		

TRC
3 Corporate Drive
Suite 202
Clifton Park, NY 12065
Phone: 518.348.1190

FILE: IRM.aprx

Coordinate System: NAD 1983 StatePlane New York East FIPS 3101 Feet; Map Rotation: 0
-- Saved By: LLILL on 1/9/2024, 09:18:41 AM; File Path: T:\1-PROJECTS\NYSDEC\453208_DutchessCountyFireTraining\2-APRX\IRM\IRM.aprx; Layout Name: Figure 1- Proposed IRM Soil Boring Locations

LEGEND

- TAX PARCEL BOUNDARY
- ONSITE WATER IMPOUNDMENT
- COUNTY PROPOSED BUILDING EXPANSION
- CULVERT OR STORM SEWER AND FLOW DIRECTION
- SURFACE WATER FLOW DIRECTION
- FENCELINE
- MECHANICAL PIPE PLUG
- MONITORING WELL
- CORRUGATED STEEL PIPE
- PROPOSED OVERBURDEN MONITORING WELL
- PROPOSED BEDROCK MONITORING WELL

NOTES:

1. LOCATIONS AND DIMENSIONS OF PHYSICAL FEATURES AND PROPERTY BOUNDARIES ARE APPROXIMATE.

BASE MAP: NEARMAP IMAGERY DATED 4/14/2022
DATA SOURCES: TRC
SHEET SIZE: 11X17L

1:1,080
1" = 90'
0 45 90 FEET

PROJECT:
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DUTCHESS COUNTY FIRE TRAINING CENTER - SITE NO. 314128
392 CREEK ROAD
HYDE PARK, DUTCHESS COUNTY, NEW YORK

TITLE:
PHASE III RI
PROPOSED MONITORING WELL LOCATION MAP

DRAWN BY:	L. LILL	PROJ. NO.:	453208.0000.0000
CHECKED BY:	R. VASAVADI		
APPROVED BY:	J. KING		**FIGURE 2**
DATE:	JANUARY 2024		

TRC
3 Corporate Drive
Suite 202
Clifton Park, NY 12065
Phone: 518.348.1190

FILE: PhaseIII_RI.aprx

Coordinate System: NAD 1983 StatePlane New York East FIPS 3101 Feet; Map Rotation: 0
Saved By: LLILL on 1/3/2024, 1:06:29 AM; File Path: T:\PROJECTS\NYSDEC\453208_DutchessCountyFireTraining\2-APRX\Phase III_RI\Phase III_RI.aprx; Layout Name: Figure 2 - Phase III RI Proposed MW Location Map

Attachment 1
NYSDEC DER-10: NYSDOH Generic CAMP, Appendices 1A and 1B

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

BLANDING'S TURTLE HABITAT ASSESSMENT PLAN

Blanding's Turtle Habitat Assessment Plan

Dutchess County Fire Training Center
NYSDEC Site No. 314128

392 Creek Road
Hyde Park
Dutchess County, New York 12601

Prepared for:
New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway, 12th Floor
Albany, New York 12233

Prepared by:
TRC Engineers, Inc.
3 Corporate Drive, Suite 202
Clifton Park, NY 12065

May 2024

TABLE OF CONTENTS

FIGURES

APPENDICES

1.0 INTRODUCTION

1.1 Site Background

The Dutchess County Fire Training Center comprises approximately 9.7 acres of property and is located at 392 Creek Road near the intersection of Creek Road and East Dorsey Lane in Hyde Park, Dutchess County, New York (the Site, see **Figure 1**). The Site is located within an irregularly shaped parcel of land identified on the Dutchess County tax maps as tax parcel number 133200-6163-02-876717-0000.

The land use of the Site is primarily commercial; however, mixed recreational and residential areas are on its borders. The Site is bordered to the north by East Dorsey Lane and residential properties; to the west by Creek Road and recreational sporting fields (Hyde Park Memorial Fields); to the south by the Dutchess County Emergency Response facility, undeveloped-forested land, Fall Kill, and wetlands; and to the east by a transmission line right-of-way, undeveloped forested land, and residential properties.

Investigatory surveys were conducted in July 2022 as part of a Step 1 Fish and Wildlife Impact Assessment (FWIA), completed under the Phase I Remedial Investigation. One wetland (W-MLM-1) and one stream (S-MLM-1 the Fall Kill River) were identified within the Site's boundaries during this effort (see **Figure 2**) The Fall Kill exhibits a perennial flow regime and flows south through an unnamed impoundment within an area identified as Fall Kill County Park, proceeding south-southwest toward the Hudson River. The Fall Kill, a "protected stream" designated as Class C and Class B waters, bisects the Site. Flanking both banks of the Fall Kill is one large wetland complex, designated wetland W-MLM-1. This wetland exhibited characteristics representative of PEM, PSS, and PFO wetland communities.

The New York Natural Heritage Program (NYNHP) was consulted on July 19, 2022, in order to identify any state-listed threatened, endangered, or special concern species, as well as identify any significant natural communities are located on or in the vicinity of the Site. A response from the NYNHP was received on September 8, 2022, and is attached in **Appendix A**. The NYNHP identified the state threatened Blanding's turtle (*Emydoidea blandingii*) as being documented within 0.67 miles of the Site. Due to the presence of Blanding's turtles in the general vicinity, this Habitat Assessment Plan has been prepared to assess the Site for suitable Blanding's turtle habitat.

1.2 Habitat Assessment Plan Purpose

The purpose of this Habitat Assessment Plan is to determine the feasibility of construction remediation efforts within the Site while minimizing, mitigating, and/or avoiding potential impacts

to Blanding's turtle habitat. Upon completion of the habitat assessment, a report will be prepared that documents the suitability of delineated wetland areas and other features, such as nesting areas, within the Site boundary as potential Blanding's turtle habitat. Documentation of these wetland and upland features will be used for design and minimization/avoidance purposes during any construction on the Site.

2.0 PROPOSED STUDIES

2.1 Wetland Habitat Assessment

In New York, the Blanding's turtle generally occurs in scrub/shrub wetlands dominated by willow (*Salix* spp.) and buttonbush (*Cephalanthus occidentalis*). Blanding's turtles regularly use vernal pool and other seasonal wetlands and associated habitat, and these features have proven to be an important part of their lifecycle. Though no vernal pools were identified during the 2022 delineation effort, TRC biologists will look for any potential features within the mapped wetlands that may trap seasonal flooding or runoff, and function in a similar manner to typically isolated vernal pools. Blanding's turtles are known to move long distances from their core habitat (less than one kilometer (km)) in search of feeding or nesting opportunities (Ross and Johnson 2018). High quality Blanding's turtle habitat consists of a mixed habitat complex that provides wetland and upland cover types used during foraging, breeding, nesting, summer, and overwintering activities in close proximity to one another (Kiviat 1993).

TRC biologists will perform Blanding's turtle wetland habitat assessments on all wetland and associated waterbodies in the spring/summer of 2024. The wetland habitat assessments will be completed by TRC biologists familiar with identification of Blanding's turtle habitat. For the purpose of this habitat assessment, wetlands are defined as areas that meet the criteria of the 1987 Corps of Engineers Wetland Delineation Manual (USACE 1987), the 2012 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, Version 2.0 (USACE 2012), and/or the 1995 DEC Freshwater Wetlands Delineation Manual (DEC 1995).

On-Site wetlands will be assessed and separated into segments, categorizing each segment as being potential core wetland habitat, associated wetland habitat, or non-suitable wetland habitat for Blanding's turtles, as defined below. These habitat criteria follow specific characteristics outlined in the *Conservation Plan for Populations of the Blanding's Turtle* (Ross and Johnson 2018) and the *Guidelines for Reviewing Projects for Potential Impacts to the Blanding's Turtle (NYSDEC 2010)*.

Core wetland habitat refers to a wetland with high suitability for Blanding's turtles to use and can exhibit the following characteristics:

- Open or absent tree canopy
- Dense shrub cover, particularly willow and buttonbush, with components of forbs and graminoids dispersed as hummocks and tussocks throughout the wetland.
- Fine organic and coarse debris
- Forested wetland perimeter
- Shallow (≥ 30 centimeters (cm)) and deep (≥ 120 (cm)) pools connected by channels.

Associated wetland habitat refers to a wetland with moderate potential suitability for Blanding's turtle use and is within 1,000 meters of a core wetland habitat (NYSDEC 2010). The core wetland habitat can be located off the Project site, though in this case, the core designation would be provided by NYNHP from their records, as the Project does not have access to all potential wetlands within 1000 meters of the Site.

Wetlands deemed as **non-suitable wetland habitat** are wetlands that do not:

- Display any of the criteria of a core wetland habitat.
- Occur within 1,000 meters of a core wetland habitat.
- Support standing water during any part of the year, or do not contain streams, rivers, or other waterbodies.

2.2 Upland Nesting Habitat Assessment

Blanding's turtles use a wide variety of upland habitats throughout the year. Of particular interest are locations turtles may use as nesting sites. Potential upland nesting sites include open, sunny areas dominated by cultivated crop land or loose, dry, and sandy or gravelly soils (Ross and Johnson 2018). Nesting habitat assessments will include all uplands located within the Site. No surveys will be conducted outside the Site parcel boundaries.

TRC biologists will identify potentially suitable nesting habitat patches within the Site that are upland areas consisting of loose, dry, sandy/gravelly soils in open areas and/or actively cultivated crops in any soil type. Pastures, hayfields or planted lawns in non-sandy/gravelly soils will not be considered suitable nesting habitat because these fields are not typically tilled and replanted each year. Gravel parking lots or yards will also not be considered suitable nesting habitat due to soil compaction and vehicular traffic, though the edges of these lots may contain loose berms or other suitable habitat for examination. Locations of potentially suitable nesting habitat will be identified from combined analysis of field site verification, Natural Resource Conservation Service soil maps, and aerial photography interpretation.

2.3 Data Collection

- Any Blanding's turtles (or other state/federal-listed species) discovered during the Habitat Assessment will be photo-documented, and have its location recorded through the use of a GPS survey beacon with sub-meter accuracy. No Blanding's turtles will be handled as part of the survey.
- All habitat segments will be photo documented. For each segment, data will be collected on hydrology, soils, plant communities, species composition, natural communities, wildlife observations, potential food sources, and water depth (if applicable).
- Each segment will be assessed for suitability for feeding, breeding, nesting, thermoregulatory opportunities, or as hibernacula, and rated on a scale of 1 to 4, with 1 being unsuitable and 4 being prime (core) habitat that supports all four criteria.

3.0 SUMMARY

This Blanding's Turtle Habitat Assessment Plan has been prepared for the Site to assess the potential for Blanding's turtle habitat. It is anticipated that survey work will be performed in spring or summer 2024. When field activities are complete, TRC will prepare a report with the findings identifying the extent of potential habitat within the Site. The report will consist of a cover type analysis depicting habitat type parameters and habitat quality for the Site. The report will include a corresponding figure documenting the findings of the survey, a photolog, and all field data collected as part of the survey. The report will be provided as an attachment to the Phase III Remedial Investigation Data Summary Report.

4.0 REFERENCES

Kiviat, E. 1993. Tale of two turtles: Conservation of the Blanding's turtle and bog turtle. News from Hudsonia 9:1-7.

New York State Department of Environmental Conservation, Division of Fish, Wildlife, and Marine Resources. 2021. Blanding's Turtle Fact Sheet. http://www.dec.ny.gov/animals/7166.html.

New York Natural Heritage Program. 2021. Vernal Pool. Available at: https://guides.nynhp.org/vernal-pool.

New York State Department of Environmental Conservation. 2010.Guidelines for reviewing projects for potential impacts to the Blanding's turtle.

New York State Department of Environmental Conservation, Division of Fish, Wildlife and Marine Resources, Albany, New York. 7 pp.

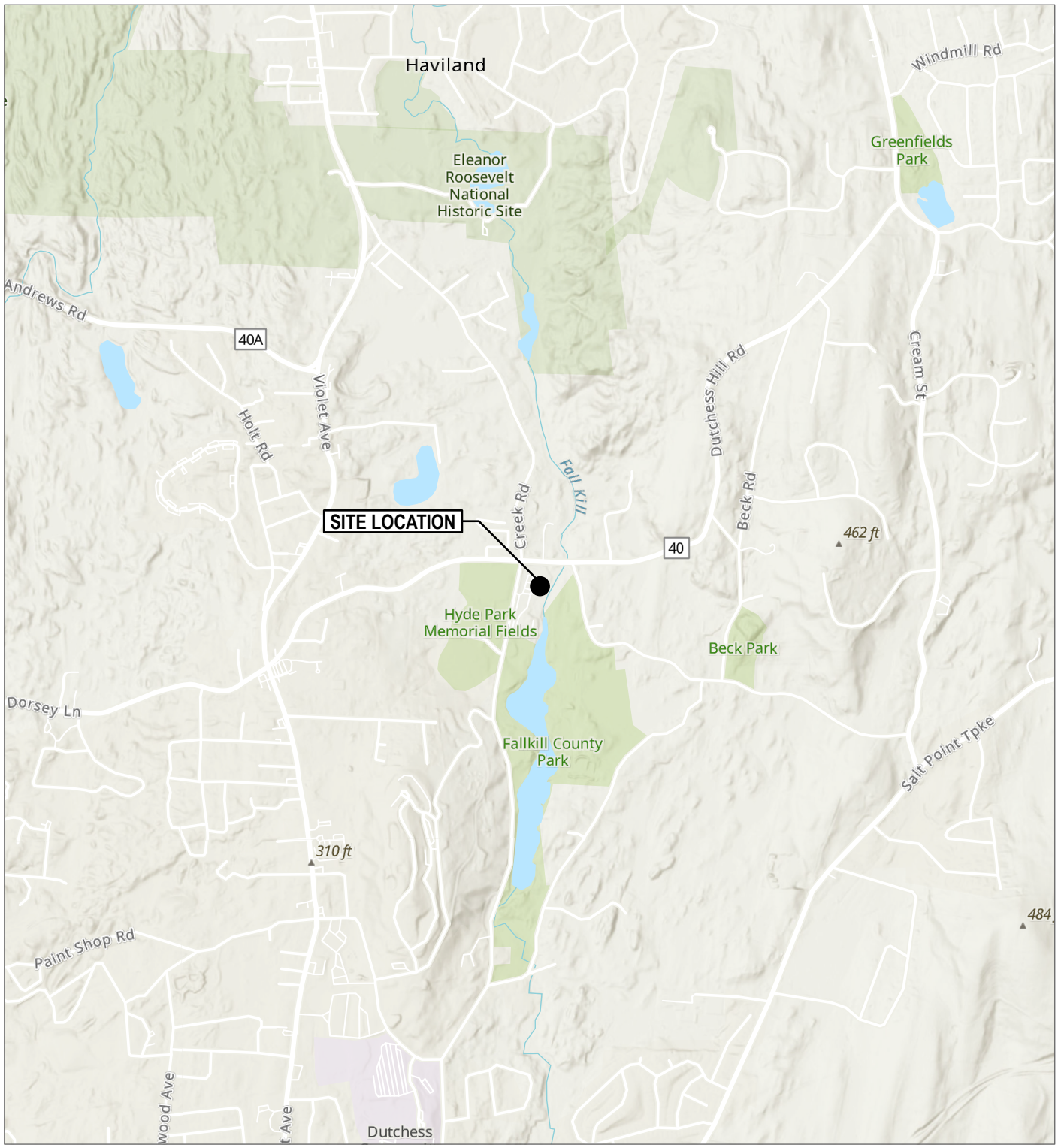
NYSDEC. 1995. Freshwater wetlands delineation manual. New York State Department of Environmental Conservation.

Ross, A.M., and G. Johnson. 2018. Conservation Plan for populations of the Blanding's turtle (Emydoidea blandingii). New York State Department of Environmental Conservation, Albany, New York. 98 pp.

United States Army Corps of Engineers (USACE). 1987. Corps of Engineers Wetlands Delineation Manual. Final Report. Wetlands Research Program Technical Report Y-87-1 (on-line edition), Waterways Experiment Station, Environmental Laboratory, Vicksburg, Mississippi. 143 pp.

United States Army Corps of Engineers (USACE). 2012. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region* (Version 2.0). U.S. Army Engineer Research and Development Center, Vicksburg, MS, 162 pp.

Figures



LEGEND

- SITE LOCATION

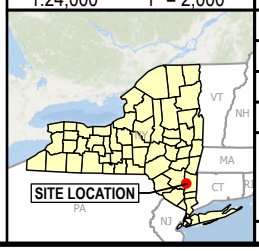
BASE MAP: ESRI TOPOGRAPHIC IMAGERY
DATA SOURCES: TRC

N

0 1,000 2,000

FEET

1:24,000 1" = 2,000'



PROJECT:
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DUTCHESS COUNTY FIRE TRAINING CENTER - SITE NO. 314128
392 CREEK ROAD
HYDE PARK, DUTCHESS COUNTY, NEW YORK

TITLE:

SITE LOCATION MAP

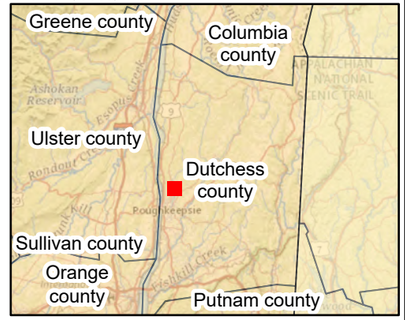
DRAWN BY:	L. LILL	PROJ. NO.:	453208.0000.0000
CHECKED BY:	J. KING		
APPROVED BY:	J. MAGDA		FIGURE 1
DATE:	MARCH 2023		

TRC
3 Corporate Drive
Suite 202
Clifton Park, NY 12065
Phone: 518.348.1190

FILE: PHASEI_RI

- BENTHIC INVERTEBRATE GRAB LOCATIONS
- WATER SAMPLE
- BIRD SURVEY LOCATION
- CULVERT
- STREAM PLOT
- WETLAND DATA POINT
- UPLAND DATA POINT
- NON JD DRAINAGE LINE
- WETLAND BOUNDARY LINE
- BANK/EDGE
- CONCRETE WATER IMPOUNDMENT
- STREAM
- PEM
- PFO
- PSS
- PROJECT BOUNDARY

BASE MAP: ESRI WORLD IMAGERY (CLARITY)
DATA SOURCES: ESRI, USGS, TRC



1:900
1" = 75'

0 25 50 75 100 125 150 175 200 FEET

PROJECT: **NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION**
DUTCHESS COUNTY FIRE TRAINING CENTER - SITE NO. 314128
392 CREEK ROAD, HYDE PARK, DUTCHESS COUNTY, NEW YORK

TITLE:

DELINEATED RESOURCES MAP

DRAWN BY:	M. RAYMOND	PROJ. NO.:	403739
CHECKED BY:	A. KAILAS		
APPROVED BY:	K. CARDINALI		**FIGURE 2**
DATE:	OCTOBER 2022		

TRC
3 CORPORATE DRIVE
CLIFTON PARK, NY 12065
PHONE: 518-348-1190

FILE: DCFT_Figures.aprx

Coordinate System: NAD 1983 2011 StatePlane New York East FIPS 3101 FEET US; Map Rotation: 0
Saved By: MRAYMOND on 10/28/2022 1:34:09 PM; File Path: T:\PROJECTS\NYSDEC\403208_DutchessCountyFireTraining\2-APRX\DCFT_Figures.aprx; Layout Name: NYSDEC - Dutchess County Fig5 Delineated Resources

Appendix A
Agency Consultation - NYNHP Response

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Fish and Wildlife, New York Natural Heritage Program
625 Broadway, Fifth Floor, Albany, NY 12233-4757
P: (518) 402-8935 | F: (518) 402-8925
www.dec.ny.gov

September 8, 2022

Keith Cardinali
TRC
215 Greenfield Parkway, Suite 102
Liverpool , NY 13088

Re: Dutchess County Fire Training Center (DCFTC)
County: Dutchess Town/City: Hyde Park

Dear Keith Cardinali:

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to the above project.

We have no records of rare or state-listed animals or plants, or significant natural communities at the project site.

Within 2/3 mile of the project site is a documented location of **Blanding's turtle** (*Emydoidea blandingii*, state listed as Threatened). Individual animals may travel 0.81 mile from documented locations. For information about any permit considerations for your project, please contact the Permits staff at the NYSDEC Region 3 Office, Division of Environmental Permits, at dep.r3@dec.ny.gov.

For most sites, comprehensive field surveys have not been conducted. We cannot provide a definitive statement on the presence or absence of all rare or state-listed species or significant natural communities. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other resources may be required to fully assess impacts on biological resources.

For information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the Permits staff at the NYSDEC Region 3 Office as described above.

Sincerely,

Heidi Krahling
Environmental Review Specialist
New York Natural Heritage Program

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