Work Plan

College Point 3 Site

Site Number: 241122
Contract No.: C100902
Callout ID: 122995

College Point, Queens, New York

Prepared for:

New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau B
625 Broadway, 12th Floor
Albany, New York 12233-7017

Prepared by:

EnviroTrac Ltd.
5 Old Dock Road
Yaphank, NY 11980

August 2015

TABLE OF CONTENTS

FIGURES

APPENDIX

1.0 INTRODUCTION

This Work Plan describes the work to be implemented as part of LNAPL Recovery Pilot Test, Site Number 241122 for the work to be performed at the College Point 3 Site, located in College Point, Queens County, New York. All work will be completed in compliance with the "Scope of Work for LNAPL Recovery Pilot Test", dated March 2015, provided by URS Corporation (Engineer).

2.0 SITE DESCRIPTION

The College Point 3 site is located in College Point, Queens County, New York. The site lies within a predominately residential area and is currently zoned for residential use. Residential properties are located to the north, south, east, and west of the property. No wetlands or surface expressions of groundwater are located on the property.

All work will be conducted in accordance with the Project Scope of Work and within the limits identified in the Project Drawings. Major components of the remedial site work are as follows:

- Obtain all applicable building permits or approvals.
- Submit Work Plan for approval by Engineer (Under this cover).
- Submit Health and Safety Plan (HASP) including a Community Air Monitoring Plan (CAMP).
- Install and develop two (2) LNAPL recovery wells.
- Install and develop four (4) monitoring wells.
- Install one (1) oil skimmer and ancillary equipment.
- Install enclosure for equipment and storage.
- Install new 100A electrical service.
- Startup and testing of equipment.
- Survey all new wells.
- Transport and properly dispose of spoil material and development water.
- Site restoration.

3.0 SITE WORK

3.1 Permitting

The following permits are anticipated for the construction duration of the project;

- *Electrical Service and Installation:* In order to establish a new 100 Amp, 208 Volt, single phase, electrical service for the proposed recovery system enclosure a permit will be filed with the New York City Department of Buildings, Electrical Division.

- *NYCDOB Building Permit:* In order to permit the construction and installation of the prefabricated timber framed system enclosure, a temporary remediation shed Alteration 2 permit will be filed with the NYCDOB. This submission will include NYS professional engineer certified design drawings of the shed construction.

3.2 Use of the Site / Traffic Control

The project work area(s) will be confined to the areas indicated in the Construction Drawings. Access and egress will be controlled through limited access openings into the work zone. All efforts will be made to minimize impacts and limit traffic in areas outside the anticipated work zones. Barricades, caution tape, work signs, road cones and DOT barrels will be utilized to control vehicular and pedestrian traffic around the work zone. All disturbed areas will be returned to a condition comparable to the existing conditions upon completion of the project.

3.3 Utility Markouts and Locating

EnviroTrac will take every precaution necessary to identify and avoid private underground utilities (buried electric, phone and water lines, etc.). In addition to NY One-Call (1-800-278-4480), a private underground utility mark out will be called in advance of equipment mobilization and all available as-built layout of utilities will be reviewed by EnviroTrac prior to any subsurface work. A utility locating service will be retained to locate, mark, and stakeout existing underground utilities and service connections. If necessary, any located utilities will be exposed utilizing soft dig digging techniques.

4.0 EXECUTION

4.1 General

It is anticipated that a 4-man construction crew will be able to perform the majority of the site work. The crew will consist of Equipment Operators, laborers, mechanics, pipe fitters, electricians, and well drillers. In addition, EnviroTrac's engineering team members will be onsite during key portions of the installation, setup, testing, startup, and operation of the system. A dedicated site superintendent will also be on-site and will be responsible for daily documentation and field engineering requirements. This team will be responsible for the execution of all site work as described herein. Anticipated equipment utilized during work includes:

- Skid Steer Loader and attachments
- Mini excavator
- Hollow Stem Auger Drill Rig
- Mud Rotary Drill Rig
- Support Truck
- Hand Tools

All equipment shall be checked at the beginning and end of each working day. Equipment shall have an audible backup alarm.

Anticipated sequencing of work is as provided Appendix B; however some tasks may be performed concurrently and work may be adjusted in the field as needed.

4.2 Earthwork

4.2.1 Excavation

Earthwork shall be limited to the areas defined in the Contract Drawings and conducted in a fashion to minimize disturbance to adjacent areas and limit inconvenience to others. Nuisance dust and odors shall be minimized and monitored in accordance with the Site specific HASP. If deemed necessary, excessive dusts and odors shall be minimized utilizing water spray equipment.

For this proposed scope of work, it is not anticipated that excavation work should be conducted

at depths of more than 4 foot below grade. Excavations shall be open type and sloped or stepped as necessary to prevent injury. All excavations shall be stepped, and sloped, or braced in accordance with OSHA regulations, Subpart P, Excavations. Excavated materials shall be classified for proper off-site transportation and disposal. Facility permits shall be provided prior to off-site removals, and submitted under separate cover.

Excavation work shall be performed in a manner that will limit potential spills of contaminated material.

4.2.2 Material Storage, Transportation, and Disposal

As material is excavated, it shall be placed into a lined roll off steel dumpster. Pending proper waste characterization, all excavated material will be transported to a licensed disposal facility. It is anticipated for this project; the excavated shallow soil will be classified as non-hazardous waste, and therefore will be disposed of as such, pending analytical results. Any existing asphalt paving and/or concrete that will need to be demolished will be disposed of as Construction and Debris (C&D) material.

In the event analytical results indicate waste characterization other than clean, the accumulated waste shall not be transported from the site until the facility is approved by the Department's Representative and proper documentation has been provided. A letter of commitment shall be provided stating the facility is in compliance and is current with applicable permits, willing to accept the waste, potential restrictions in receiving the waste, potential additional sampling, and restrictions on deliveries. Facility and transporter permits shall be submitted separately. Material shall be transported directly from the site to the receiving facility in transport vehicles complying with applicable Federal, State, and local regulation. Transport vehicles shall be weighed at the receiving facility before and after discharging its contents. Manifests shall be signed by an authorized representative of the NYSDEC, and weigh tickets shall be immediately provided upon receipt.

During drilling operations, drill cuttings will be containerized in DOT approved steel 55 gallon drums. Each drum will be properly labeled and stored onsite until offsite disposal can be coordinated. The contents of each drum will be characterized using the results of collected laboratory samples. It is the intent to characterize each drum in order to determine the most cost

effect means of disposal. Soil cutting that are found to have limited impacts and can be classified as non-hazardous soil will be transferred into the roll off dumpster that contains the waste soils from the excavation activities associated with the system enclosure foundation. All soils that do not meet this classification will be transported off site to a licensed disposal facility in drums.

All waste manifests relating to the disposal of generated soil wastes, will be submitted to the engineer as part of the project record.

4.3 Well Installation

4.3.1 Well Installation

All wells will be installed in accordance with the provided Scope of Work. Two (2) 18 inch diameter recovery wells and four (4) 2 inch diameter monitoring wells will be installed. No soil samples will be obtained during the installation of the monitoring wells. The planned locations of all wells are provided on Figure 2. The exact locations of the wells will be as directed by the on-site representative of the New York State Department of Environmental Conservation.

The four monitoring wells will be installed utilizing a hollow stem auger rig operated by Associated Environmental Services, Inc. (Hauppauge, NY). The wells will be 2" Sch. 40, 0.02 slot PVC well screen. The depth of the screen and casing for each well will be based upon field observations utilizing existing monitoring wells at the site. No. 1 filter sand shall be installed to 2' above the screen. A minimum 2' bentonite chip seal shall be placed above the sand and the remaining annulus shall be finished with a cement-bentonite grout. The wells shall be finished approximately 6" below grade and will be protected by a bolt down steel cover. Further details of the well construction can be seen in Figure 6.

The new monitoring wells shall be developed within two to seven days of installation. The wells will be mechanically surged and pumped for a maximum of two hours. The wells will be continuously monitored for temperature, pH, specific conductivity and turbidity at a rate of one reading per casing volume. Pumping shall continue until readings have stabilized by less than a 10% change or the time limit has been reached. All liquid generated as part of the development process will be drummed and stored on-site for disposal.

The two 18 inch recovery wells will be installed by AARCO Environmental Services (Lindenhurst, NY) utilizing mud rotary methods. The wells will be 18”diameter continuous wire wrap stainless steel 0.050” slotted screen and 18” Sch. 40 stainless steel casing, or equivalent. #6-9 well gravel will be installed to 2’ above the screen. A minimum 2’ bentonite chip seal shall be placed above the sand and the remaining annulus shall be finished with a cement-bentonite grout. The wells will be finished to grade (temporarily) and their casings will be extended to rise into the treatment shed after it is constructed. Further details of the well construction can be seen in Figure 6.

The new recovery wells shall be developed within two to seven days. The wells will be mechanically surged and pumped for a maximum of two hours. Given the size of the wells and the volume of liquids to be removed, the pumping may be performed utilizing a vacuum truck. The wells will be continuously monitored for temperature, pH, specific conductivity and turbidity at a rate of one reading per casing volume. Pumping shall continue until readings have stabilized by less than a 10% change or the time limit has been reached. All liquid generated as part of the development process will be removed from the site and properly disposed of.

All equipment decontamination will be conducted at the end of each drilling phase and will be in accordance to standard NYSDEC protocols.

4.4 System Enclosure

The system enclosure will consist of a timber framed, pre-fabricated shed. The enclosure will be appropriately sized to accommodate all of the proposed recovery equipment, stored recovered product drums, and cover each of the two recovery wells. The enclosure will be 8 feet wide by 18 feet long with an interior height of at least 8 feet. The enclosure will be equipped with one set of double 3 foot wide doors on the 8 foot side facing Capstan Court and one 3 foot wide door on the northern 18 foot long wall. The enclosure will be constructed to include a raised plywood floor supported by 2x4 timber floor joists. The exterior of the shed will be ramped up from the existing grade level to meet the finished floor elevation of the shed. The exterior siding of the shed shall be constructed of T1-11 wood siding that shall be painted with an exterior latex paint. The finished paint color will be determined by the client. The roof of the enclosure shall be plywood sheathing overlaid with asphalt roofing shingles. Further details on the enclosure layout can be seen in Figure 4. In order to provide a stable, level base for the enclosure, an

appropriately sized concrete foundation will be constructed. The foundation will include a 4 inch thick slab-on-grade in order to provide the enclosure raised wooden floor with sufficient support. The foundation will have a footprint of 8 feet by 18 feet.

The enclosure will be equipped with the new 100 amp, 208V, single phase electrical service that will provide power to the recovery system and all ancillary equipment. The enclosure will be equipped with three (3) 75 watt lighting fixtures mounted to the interior ceiling. Heating will be provided by a 3.6kW wall mounted, hazardous location heater that will be actuated by a wall mounted thermostat. The enclosure ventilation will be controlled with a wall mounted intake ventilation fan and two (2) exhaust louvers. The ventilation fan primary control will come from a wall mounted thermostat. The treatment system will also be equipped with a real time lower explosive limit (LEL) detector in order to monitor the interior atmosphere for any potential hazardous vapors. This monitor will also provide secondary control over the ventilation fan if needed.

All electrical conduit, wiring, and equipment installed within the interior of the enclosure, shall be suitable for use in a Class I, Division 1 hazardous location conditions and shall be constructed in accordance with all applicable federal, state and New York City codes and standards.

In order to protect against vehicular traffic in the vicinity of the enclosure, six (6) 4 inch diameter steel bollards will be installed around the system enclosure and the electrical service meter stanchion. Each bollard will be 8 feet in length and imbedded 4 feet into the surrounding soil. Each bollard will be filled with concrete and painted with high visibility yellow paint.

4.5 Recovery System Equipment

The primary function of the proposed recovery system is to actively remove separate phase LNAPL from each of the two proposed recovery wells located within the system enclosure. It is the intent of the system to install one oil skimmer pump that will be periodically rotated in to service at each of the recovery wells. The actual schedule of the rotation will be determined at a later date and will primarily be based on static free phase LNAPL levels in each well and their respective recovery rates. Details of the recovery system can be seen in process and instrumentation diagram (P&ID) shown in Figure 3.

4.5.1 LNAPL Skimmer Pump

EnviroTrac will install one LNAPL skimmer pump in the proposed system enclosure. The skimmer pump shall be a model 6V Brill, manufactured by Oil Skimmers, Inc., Cleveland, OH. The skimmer pump is equipped with a ½ HP, single phase, explosion proof motor that drives the tubing pulley. The skimmer assembly shall be provided with a cart mounted 60" steel frame that includes the sludge pan and tubing guides. The manufacturer shall also provide a weighted pulley that will be positioned at the lower portion of the recovery well. A closed loop tube will be provided of sufficient length as to collect LNAPL from a depth of 20 feet bgs. Any additional ancillary materials to properly install the skimmer shall also be provided. The skimmer shall be installed in accordance with the manufacturer's specifications and recommendations.

4.5.2 Storage Drum(s)

EnviroTrac will provide three (3) steel DOT approved 55 gallon drums to be used for the collection and storage of any recovered LNAPL. The two drums in use will be positioned in the center of the enclosure and located such that recovered LNAPL from the skimmer can be routed from either of the two recovery wells. The drums will be open top type such that the lids may be swapped out based on if the drum is being used for recovery or storage.

4.5.3 Spill Containment

Each of the two active LNAPL drums will be positioned on top of a spill containment pallet in order to protect the surrounding area of any potential system leaks. The spill containment pallet shall be a 2-drum HDPE spill containment pallet with a capacity of 66 gallons. The pallet shall be a model 1620, manufactured by Eagle Manufacturing Co., Wellsburg, WV.

4.5.4 Level Switches & Sensors/Transmitters

As part of the oil skimmer's manufacturer's package, a high level float switch will be provided. The switch will be mounted in the lid of the LNAPL collection drum and will be positioned such that when the drum level is full the oil skimmer will be shut down. The switch is designed to be mounted into one of the existing 2 inch bung connections of the drum lid.

Additionally, a secondary liquid level sensor/transmitter will be installed in the second bung connection of the collection drum. The sensor/transmitter will be an ultrasonic model 3105, manufactured by Rosemount Inc., Emerson Process Management, located in Chanhassen, MN. The liquid level sensor will be ultrasonic, capable for use in a classified hazardous location, and output a 4-20 mA signal. The sensor will be capable of monitoring real time liquid levels and will be used to detect two preprogrammed set points, one at the half full level of the collection drum and one at the full level. Each of these two conditions will trigger a remote notification condition through the system telemetry unit and a visual alarm light on the control panel. The high level condition will also trigger a shutdown of the oil skimmer.

4.5.1 Lower Explosive Limit (LEL) Sensor

The treatment system enclosure shall be equipped with an LEL sensor. The LEL sensor shall be wall mounted and capable of monitoring the interior atmosphere of the enclosure on a real time basis. The sensor shall be a Nova-Sensor Elite, Model No. GC802-02, manufactured by Safety Systems Technology, Laguna Hills, CA and be cable of detecting elevated methane levels. The sensor will also be cable of outputting readings via a 4-20 mA signal that will be relayed to the system control panel.

In the event elevated readings are detected, the control panel will trigger the enclosure ventilation fan to come on and will generate an alarm condition. The alarm will activate a visual alarm light located on the control panel and initiate a remote notification through the control panel's telemetry unit.

4.5.2 Control Panel / Telemetry

The main control panel of the recovery system will be mounted on the exterior of the system enclosure housed in a NEMA 4X rated, painted steel, panel enclosure. The control panel will operate primarily as a means to control the system safety devices as well as provide telemetry for any alarm conditions. The proposed oil skimmer pump is equipped with an independent set of level sensors and control circuitry. The control panel will provide visual alarm lights as well as provide remote notifications, via fax, for each of the preprogrammed conditions. A list of the proposed interlock and alarm conditions are listed on Figure 3 and in the table below.

Input	Condition	Action
LSHH-101	High level in Tank T-1	Shut Oil Skimmer OS-1 OFF
LT-102	Midpoint level in Tank T-1	Fax notification, Activate alarm light
LT-102	High level in Tank T-1	Fax notification, Activate alarm light
LEL	High LEL detected	Turn ON intake fan, Activate alarm light, Fax notification

It should be noted that the oil skimmer, OS-1, receives power directly form the electrical distribution panel and operates independently of the system control panel.

4.6 Demobilization

Upon completion of work and final acceptance of the department's representative, demobilization will begin. The areas will be restored to preexisting conditions to the satisfaction of the Departments Representative.

5.0 SUBCONTRACTORS, WASTE DSIPOSAL FACILITIES, & WASTE TRANSPORTERS

5.1 Drilling Subcontractor for Installation of 2" Monitoring Wells

Associated Environmental Services, Inc.
25 Central Avenue #2
Hauppauge, NY 11788
(631) 234-4280

5.2 *Drilling Subcontractor for Installation of 18" Recovery Wells*

AARCO Environmental Services
50 Gear Avenue
Lindenhurst, NY 11757
(631) 586-5900

5.3 *Soil and Water Waste Removal & Disposal*

Primary:

Innovative Recycling Technologies, Inc.
690 N Queens Ave.
Lindenhurst, NY 11757
(631) 225-3044

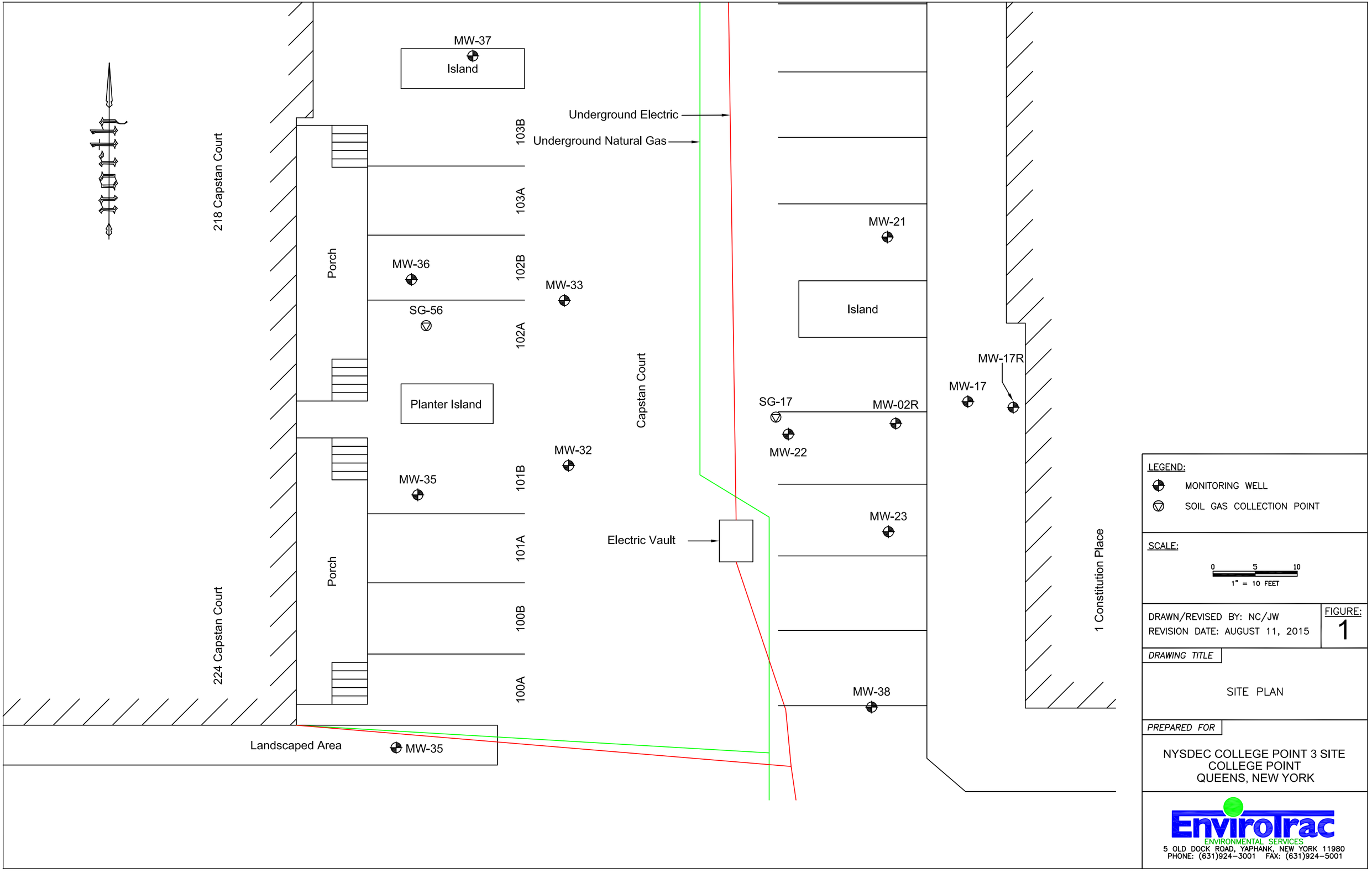
Secondary (with assumption of non-hazardous waste analytical results):

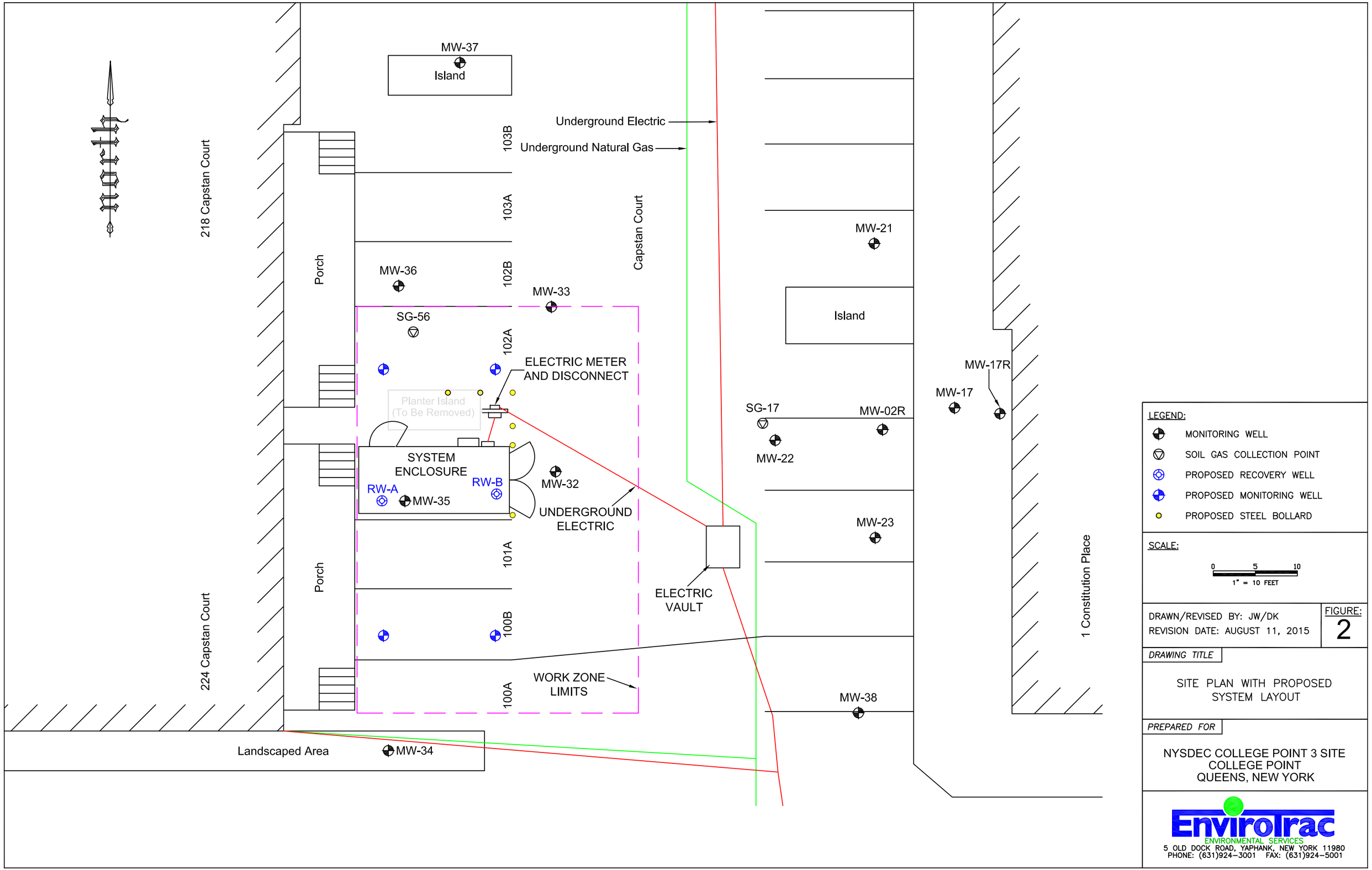
Republic Environmental Systems
2869 Sandstone Drive
Hatfield, PA 19440
(215) 822-8995

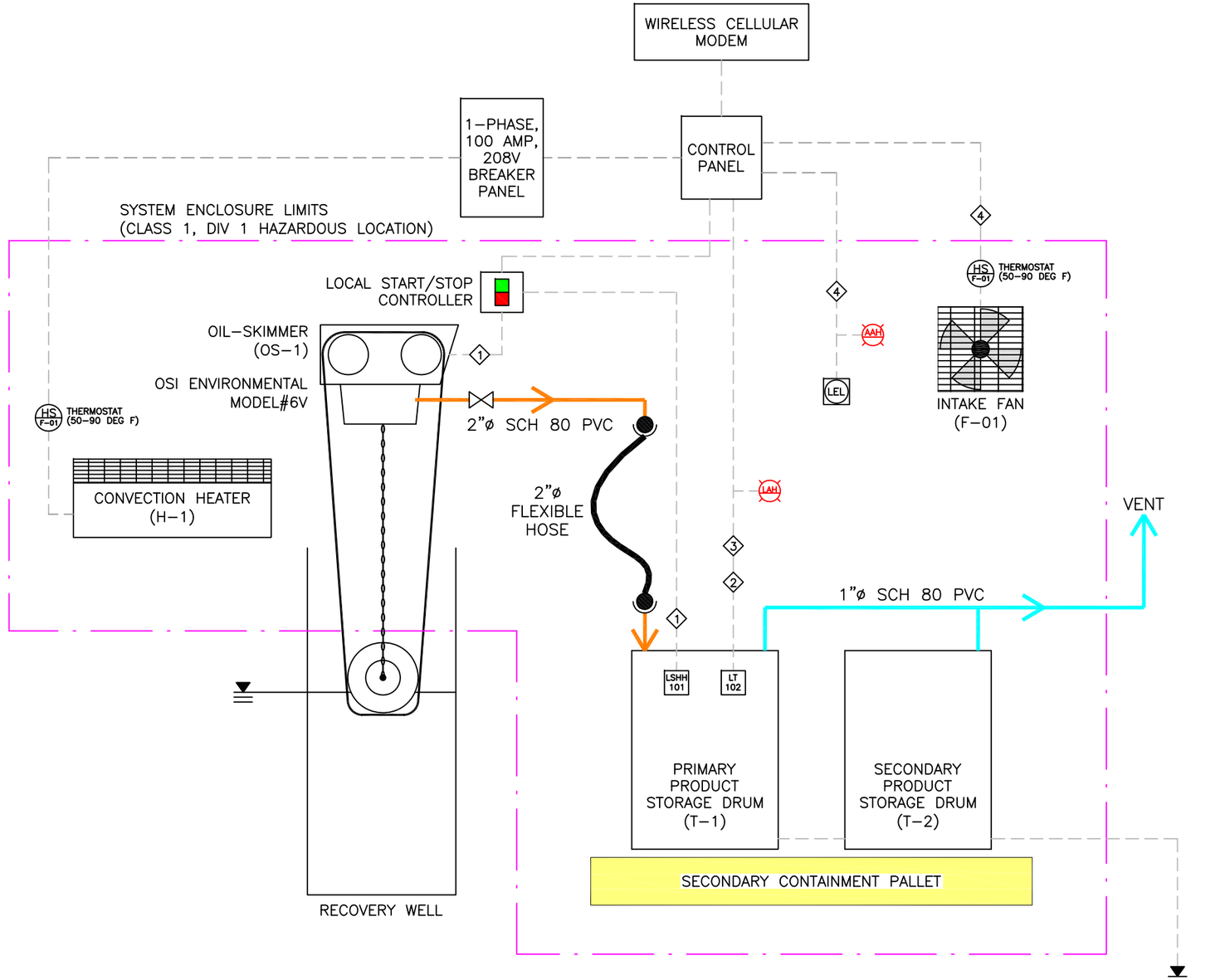
Construction & Debris (C&D) Disposal

Power Crush Inc.
140 Old Northport Rd
Kings Park, NY 11754
(631) 368-4000

FIGURES


MW-37
Island
Underground Electric
Underground Natural Gas
218 Capstan Court
103B
103A
102B
102A
Porch
MW-36
MW-33
SG-56
Planter Island
Capstan Court
MW-32
MW-35
101B
101A
100B
100A
Porch
Electric Vault
224 Capstan Court
Landscaped Area
MW-35
MW-21
Island
MW-17R
MW-17
SG-17
MW-02R
MW-22
MW-23
MW-38
1 Constitution Place
LEGEND:
MONITORING WELL
SOIL GAS COLLECTION POINT
SCALE:
0 5 10
1" = 10 FEET
DRAWN/REVISED BY: NC/JW
REVISION DATE: AUGUST 11, 2015
FIGURE:
1
DRAWING TITLE
SITE PLAN
PREPARED FOR
NYSDEC COLLEGE POINT 3 SITE
COLLEGE POINT
QUEENS, NEW YORK
EnviroTrac
ENVIRONMENTAL SERVICES
5 OLD DOCK ROAD, YAPHANK, NEW YORK 11980
PHONE: (631)924-3001 FAX: (631)924-5001


MW-37
Island
Underground Electric
Underground Natural Gas
218 Capstan Court
103B
103A
102B
102A
101A
100B
100A
Porch
Capstan Court
MW-36
MW-33
SG-56
ELECTRIC METER
AND DISCONNECT
Planter Island
(To Be Removed)
SYSTEM
ENCLOSURE
RW-A
RW-B
MW-35
MW-32
UNDERGROUND
ELECTRIC
ELECTRIC
VAULT
WORK ZONE
LIMITS
224 Capstan Court
Landscaped Area
MW-34
MW-21
Island
SG-17
MW-02R
MW-22
MW-23
MW-38
MW-17R
MW-17
1 Constitution Place
LEGEND:
MONITORING WELL
SOIL GAS COLLECTION POINT
PROPOSED RECOVERY WELL
PROPOSED MONITORING WELL
PROPOSED STEEL BOLLARD
SCALE:
0 5 10
1" = 10 FEET
DRAWN/REVISED BY: JW/DK
REVISION DATE: AUGUST 11, 2015
FIGURE:
2
DRAWING TITLE
SITE PLAN WITH PROPOSED
SYSTEM LAYOUT
PREPARED FOR
NYSDEC COLLEGE POINT 3 SITE
COLLEGE POINT
QUEENS, NEW YORK
EnviroTrac
ENVIRONMENTAL SERVICES
5 OLD DOCK ROAD, YAPHANK, NEW YORK 11980
PHONE: (631)924-3001 FAX: (631)924-5001



INTERLOCK SCHEDULE:

1. HIGH LEVEL IN T–1. SHUT DOWN OS–1.
2. PRODUCT LEVEL AT MIDPOINT OF T–1. FAX NOTIFICATION.
3. HIGH LEVEL IN T–1. SHUT DOWN OS–1, FAX NOTIFICATION.
4. HIGH LEL DETECTED. TURN ON INTAKE FAN, FAX NOTIFICATION.

INDICATOR LIGHT INDEX:

- LAH — LEVEL ALARM HIGH
- AAH — ANALYZER ALARM HIGH

SYSTEM LEGEND:

- LS — LEVEL SWITCH
- LT — LEVEL TRANSMITTER
- LEL — LEL SENSOR
- BALL VALVE
- HS — HAND SWITCH LOCALLY MOUNTED
- CONTROL PANEL INDICATOR LIGHT
- CONTROL INTERLOCK
- ELECTRIC LINE
- AIR FLOW DIRECTION
- FREE PRODUCT FLOW DIRECTION
- ENCLOSURE LIMITS

DRAWN/REVISED BY: JW
REVISION DATE: JULY 8, 2015

FIGURE: 3

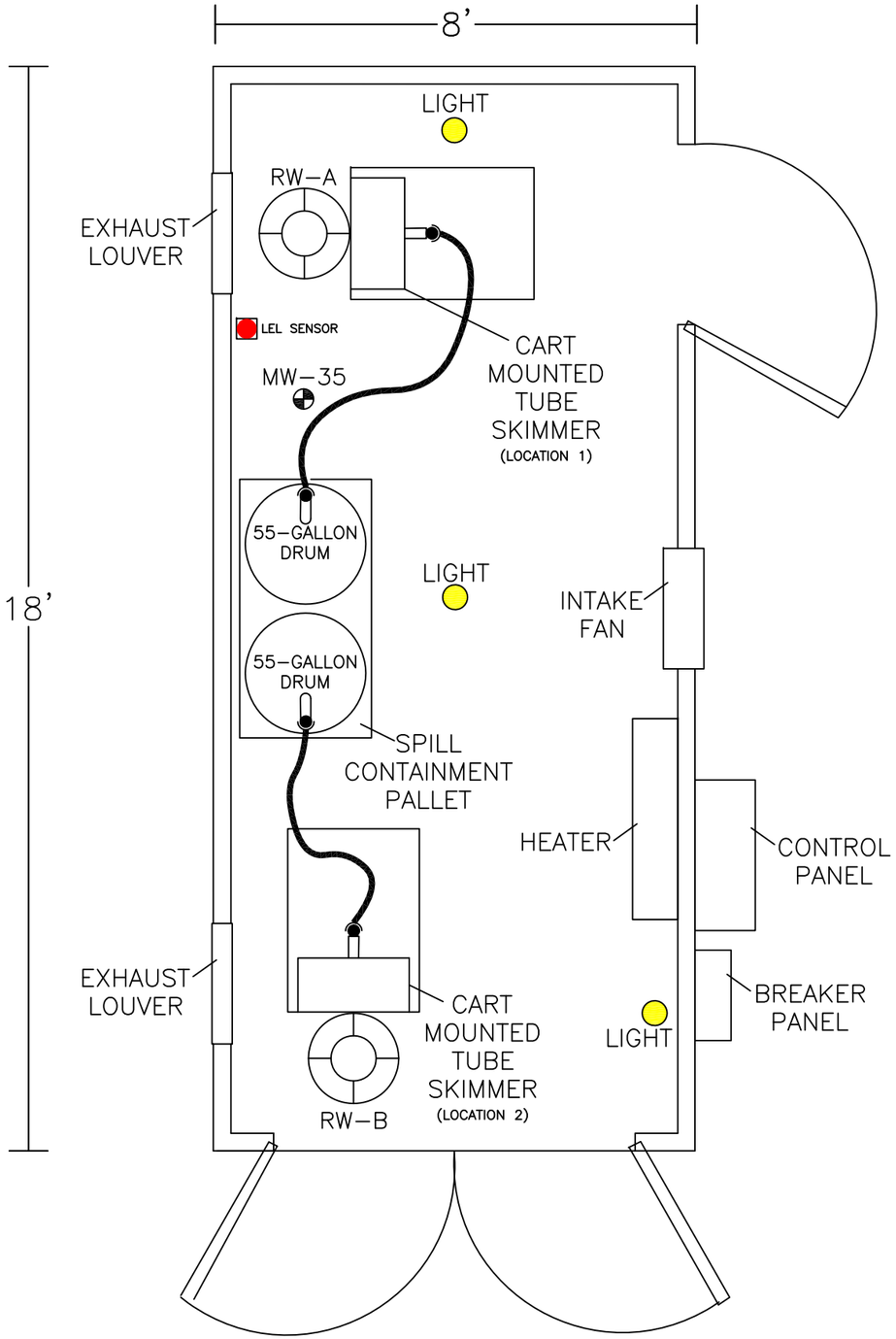
DRAWING TITLE

PRODUCT RECOVERY SYSTEM
PROCESS AND INSTRUMENTATION DIAGRAM

PREPARED FOR

NYSDEC COLLEGE POINT 3 SITE
COLLEGE POINT
QUEENS, NEW YORK

EnviroTrac
ENVIRONMENTAL SERVICES
5 OLD DOCK ROAD, YAPHANK, NEW YORK 11980
PHONE: (631)924–3001 FAX: (631)924–5001



DRAWN/REVISED BY: JW
REVISION DATE: JUNE 15, 2015

FIGURE: 4

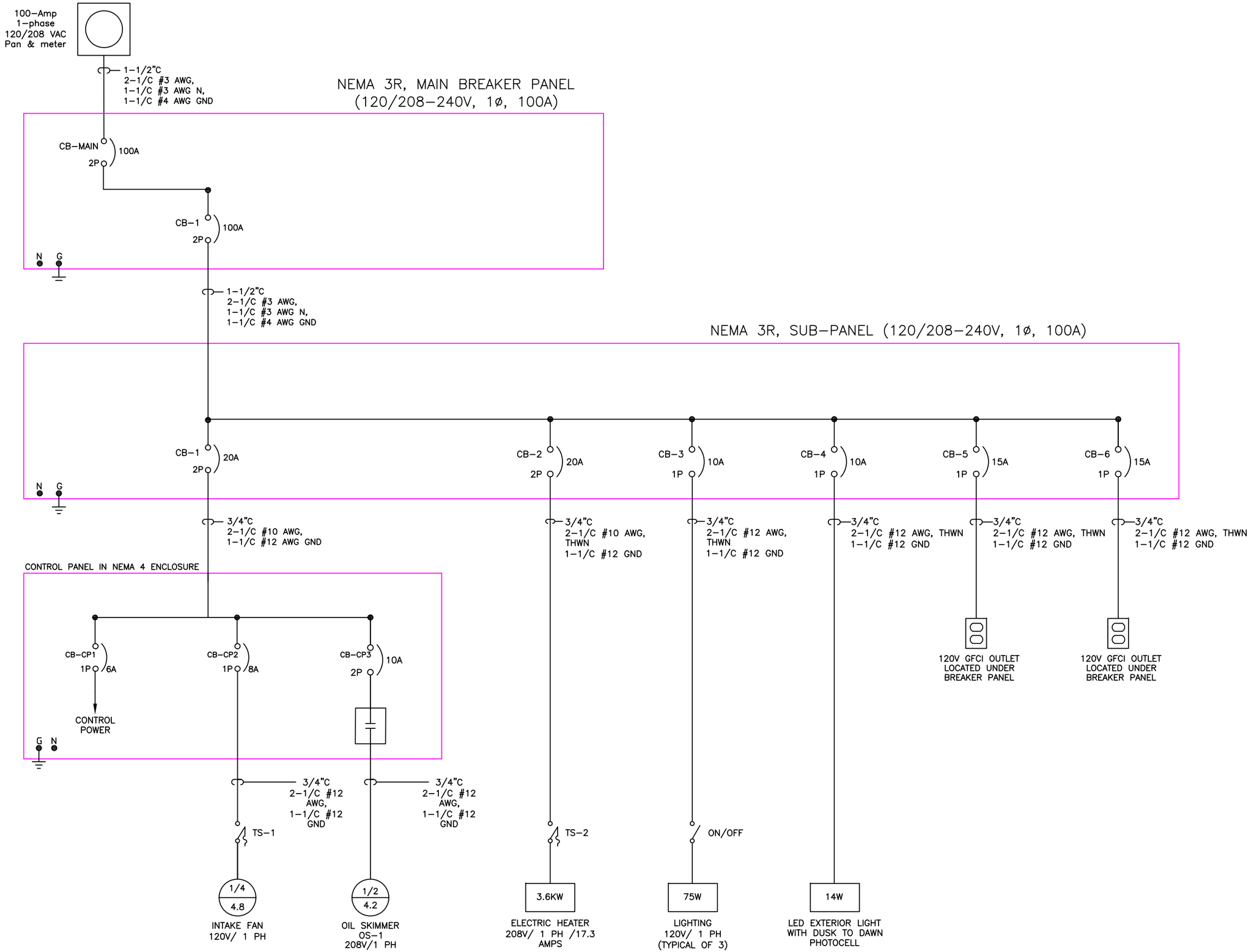
DRAWING TITLE

PRODUCT RECOVERY SYSTEM
ENCLOSURE LAYOUT

PREPARED FOR

NYSDEC COLLEGE POINT 3 SITE
COLLEGE POINT
QUEENS, NEW YORK

EnviroTrac
ENVIRONMENTAL SERVICES
5 OLD DOCK ROAD, YAPHANK, NEW YORK 11980
PHONE: (631)924-3001 FAX: (631)924-5001



LEGEND:

HP / FLA — MOTOR HORSEPOWER FULL LOAD AMPS

FULL VOLTAGE NON–REVERSING CONTACTOR

CB–X, 1P, 20A — CIRCUIT BREAKER (RATINGS AS SHOWN)

THERMOSTAT

SINGLE POLE SWITCH

SAMPLE BREAKER:

LABEL — CB–X — 1P — 20A — AMPERAGE — # OF POLES

DRAWN/REVISED BY: JW / OL
REVISION DATE: JULY 9, 2015

FIGURE: 5

DRAWING TITLE

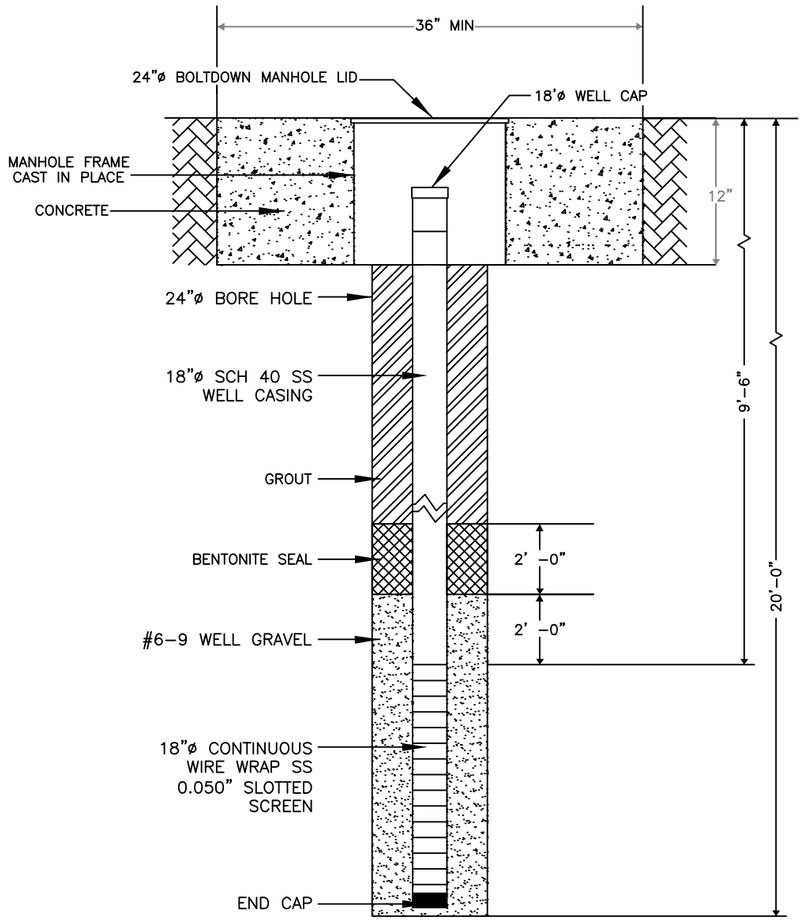
ELECTRICAL SINGLE LINE DIAGRAM

PREPARED FOR

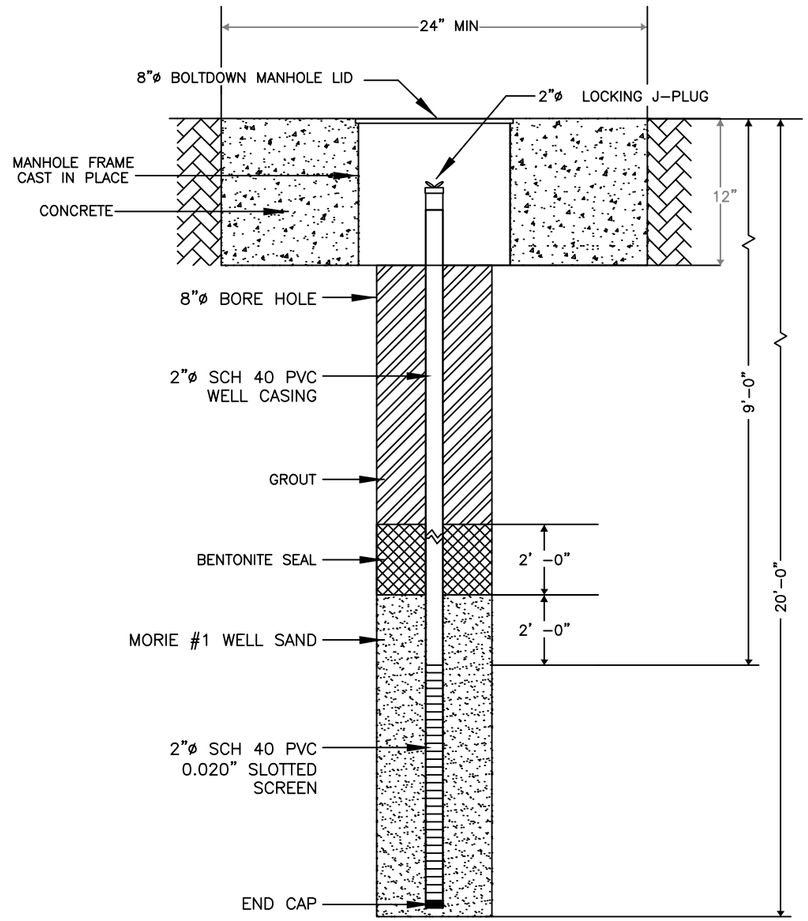
NYSDEC COLLEGE POINT 3 SITE
COLLEGE POINT
QUEENS, NEW YORK

EnviroTrac
ENVIRONMENTAL SERVICES
5 OLD DOCK ROAD, YAPHANK, NEW YORK 11980
PHONE: (631)924–3001 FAX: (631)924–5001

TYPICAL RECOVERY WELL DETAIL



TYPICAL MONITORING WELL DETAIL



DRAWN/REVISED BY: JW
REVISION DATE: JUNE 25, 2015

FIGURE: 6

DRAWING TITLE

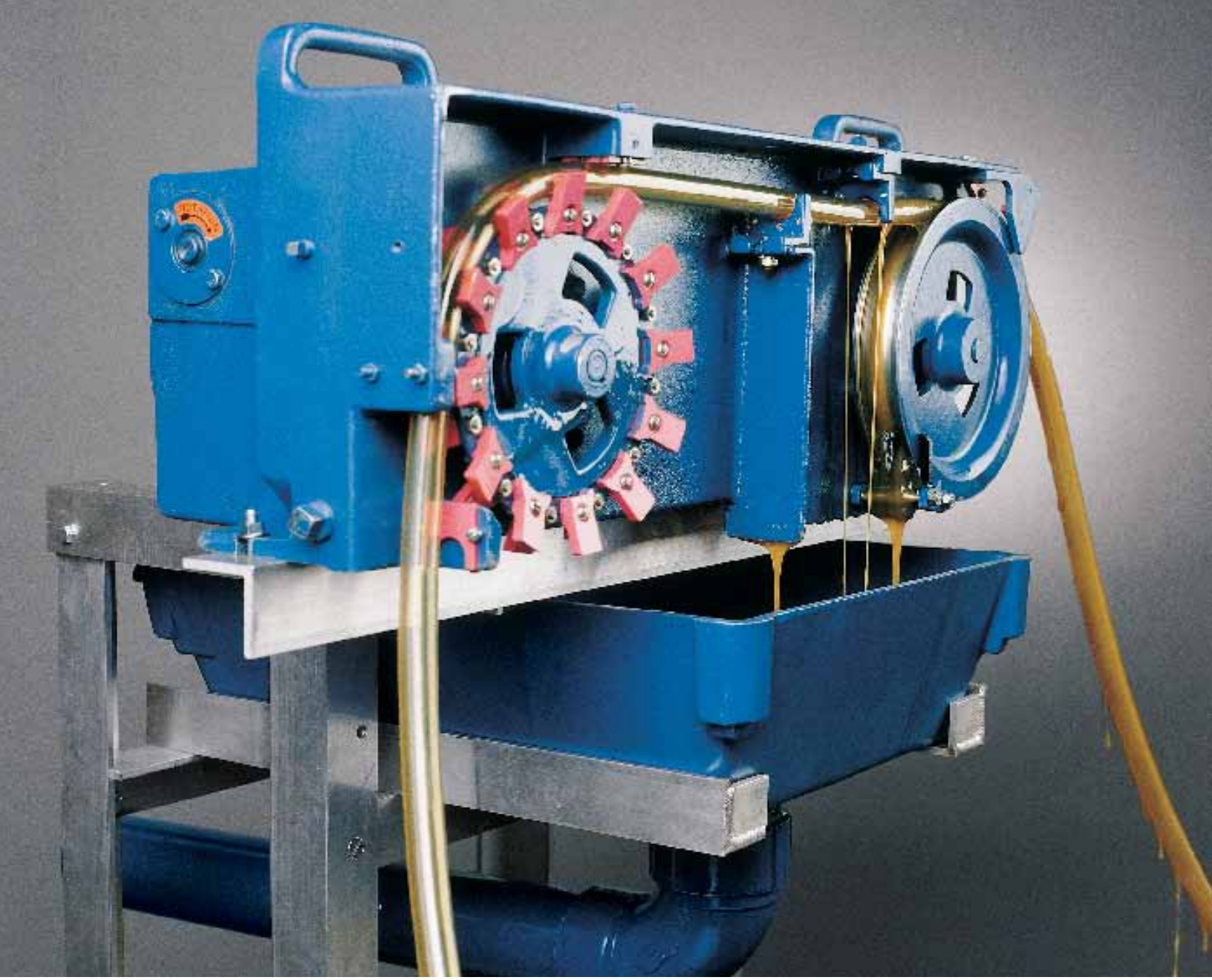
WELL CONSTRUCTION DETAILS

PREPARED FOR

NYSDEC COLLEGE POINT 3 SITE
COLLEGE POINT
QUEENS, NEW YORK

EnviroTrac
ENVIRONMENTAL SERVICES
5 OLD DOCK ROAD, YAPHANK, NEW YORK 11980
PHONE: (631)924-3001 FAX: (631)924-5001

APPENDIX A



Model 6V
Brill™

If you are confronted with an oil contamination problem that requires prompt, corrective action, we have the answer for you. It's our Model 6V Oil Skimmer. It's versatile, rugged, always dependable, and fully automatic.

OILSKIMMERS, INC.®
OSI ENVIRONMENTAL

440.237.4600
www.oilskim.com

Model 6V Brill™

10 reasons Oil Skimmers' Model 6V Brill™ will solve your outside and in-plant oil contamination problems. Save you time and money.

No assistance is required in the skimming operation. All you do is install the 6V, turn it on and it goes right to work skimming waste oils, mineral and vegetable oils, animal fats, oily froths and other contaminants from water, coolants and cleaning solutions.
The 6V is not intimidated by heavy debris, nor by gritty and crusted oil conditions that are typically encountered in waste oil skimming operations. The 6V is engineered to keep on skimming through all sorts of inclement environments, extreme hot or cold temperature conditions, and hard-to-get at places.
Take a few moments and read the "10-Reasons" the 6V could be the solution to your contamination problems.

1. Our unique method of oil removal

The 6V Brill™ utilizes a unique floating tube system. The closed loop tube, made of flexible, specially formulated plastic, attracts oil but not water. The 6V automatic skimmer continuously draws the oil-covered tube through scrapers and returns the clean tube to the water surface to gather more oil. The collector tube, which is sized to your application, snakes over and around floating debris to reach the contaminant The flexible tube flops so that it breaks through crusted oil or grease and makes these contaminants adhere to the outer surface. The tube will extend as far as 16 feet from shoreline or pit edge when the 6V is equipped with our balanced boom system.

2. Operates 'round the clock

If you want it to, the Model 6V Brill™ will operated unattended 24 hours a day, seven days a week. And as long and hard as it toils, it never loses its pace.

The Model 6V has high pickup capacity. Light oils can be removed at 240 gallons per day (GPO). Medium oil 600 GPO. Heavy oils 1,440 GPO. The higher the viscosity, the faster 6-V does its job.

3. Long lasting/low maintenance

The Model 6V Brill™ offers you exceptionally low maintenance, the external parts which contact the collector tube are spaceage, high-abrasion-resistant ceramic. These include the drive wheel, scrapers and pressure blocks. Other internal components, such as gears, and bearings, are of high-strength steel and bronze. The gearing is engineered to eliminate a big strain when in use, and thus requires minimal power demands.

The simple design not only eliminates frequent maintenance, but makes it a one-two-three procedure.

4. Variety of pre-fab mount systems

The Model 6V's versatility and flexibility are further enhanced by Oil Skimmers' own prefabricated mount systems. The appropriate system can be specified to your operation's requirements. Just choose from a cantilever, balanced boom, or angle-frame mount.

5. Non-clogging, lasting components

The Model 6V does not suffer from the clogging and parts maintenance problems often encountered with other types of skimming systems. It works around the debris that is present, always going after the oil you wish to remove.

The 6V has no tail pulleys or idler wheels to be hooked up below the surface of the pond, pit, or ditch being skimmed. Thus, installation, as well as continuous operation, does not require disagreeable underwater maintenance work. Nor does it require frequent replacement of the collecting device, which, in the 6V's case, is the highly durable sealed-end plastic tube. The tube is capable of withstanding temperatures of up to 200' F., and it will not fracture in freezing conditions.

Moveover, Oil Skimmers can outfit the 6V mechanism with heating elements to keep the oil moving in the coldest weather. For applications where there is exposure to high acidity or other harsh external environments, Oil Skimmers can treat all external metal parts with a special coating for added protection.

6. Manufactured by a reliable company with years of experience

Our skimmers are engineered to have an operational life of at least 20 to 25 years. These are the only products produced by Oil Skimmers, Inc., the leader in the automatic oil skimming field.

Over 40 years, we have installed thousands of units around the world. Our products are being used by large and small companies, such as: steel and aluminum mills, large manufacturing operations and other heavy industrial producers; food, chemical and oil processors; the rail, air and trucking service industries. In short, our 6V skimmers are useful in combatting almost any outside or in-plant oil contaminaion problem imaginable.

7. On-location survey, counsel

Oil Skimmers will provide a complete on-location survey of your operation's skimming needs, without obligation. And, we will be happy to provide you with our engineering manual on oil spill control, which contains bulletins on all phases of wastewater/oil separation applications, techniques and guidelines.

8. Worldwide rep/service organization

Our worldwide dealer and representative network affords you quick service and full satisfaction.

Our dealers and representatives are experts on all phases of oil/water separation projects, having been involved in countless plant applications.

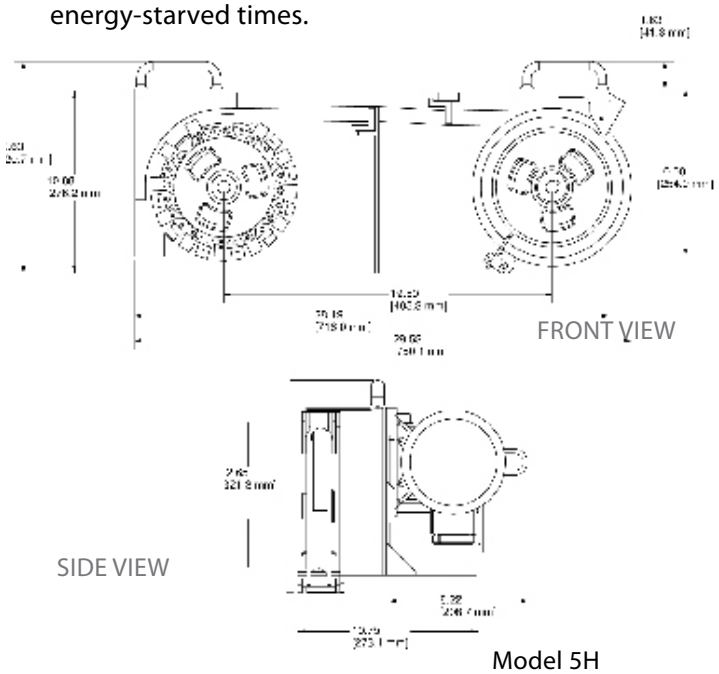
9. Complete inventory of equipment accessories and replacement parts

Oil Skimmers prides itself on high-quality products and outstanding service. Thus, we have developed an excellent inventory system, which ensures that orders for new equipment, prefabricated mounts, accessories, and all replacement components are readily available off-the-shelf.

10. Cost savings and energy benefits

You will be surprised at how quickly the 6V can pay for itself ... It offers you savings through reduced labor, eliminated water or liquid contamination, and less need to use treatment chemicals.

The Model 6V is also built to save on energy with a variety of low-power-consumption electric motors which can be specified for your particular needs. Lastly, many of our customers have discovered yet another major advantage to the 6V: The oil that it skims can often be reclaimed for further use or even sold to salvagers. Thus, Oil Skimmers can help turn your "problem" into a profitable situation in these energy-starved times.

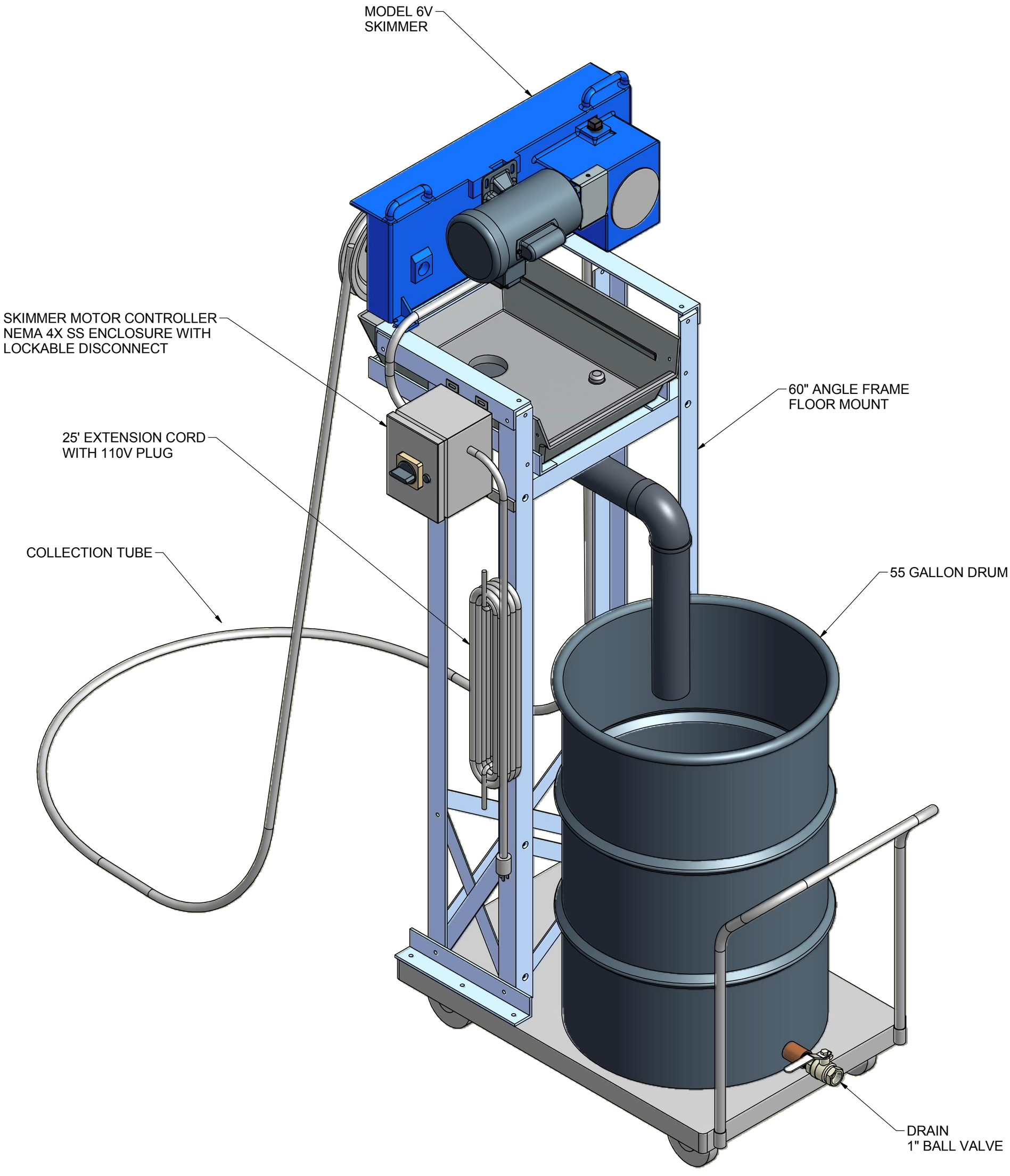


Model 5H

In addition to the 6V, Oil Skimmers, Inc., produces a compact skimmer for the removal of oils, grease and floating sludge from in-plant tanks and vats. The Model 5H, is perfect for hard-to-get-at places. Like the 6V, it is fully automatic and it will work 24 hours a day, 7 days a week. It skims waste oils, mineral and vegetable oil, animal fats, oily froths, and other contaminants from water, coolants and cleaning solutions.
Your Oil Skimmers representative will be happy to tell you more about the 5H.

OILSKIMMERS, INC.®
OSI ENVIRONMENTAL

For further information, call or write:
OIL SKIMMERS, INC.
P.O Box 33092
Cleveland, Ohio 44133 USA
Toll Free: 1-800-200-4603. Direct:(440) 237-4600
Website: www.oilskim.com
Email: info@oilskim.com



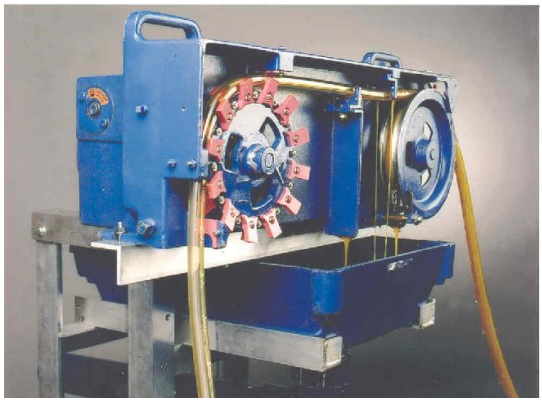
OILSKIMMERS, INC.

TOLERANCE ON DIMENSIONS UNLESS OTHERWISE NOTED	SCALE:	APPROVED BY:	DRAWN BY: CLDS
FRACTIONAL DIMENSIONS ± 1/32"	DATE: 03/23/11		REVISION:
DECIMAL DIMENSIONS 0.0 = ± 0.060" 0.00 = ± 0.030" 0.000 = ± 0.005"	TITLE: ANGLE FRAME CART MOUNT-60"		
ANGULAR DIMENSIONS ± 1°			DRAWING NUMBER: 110322

SHEET 1 OF 1

OILSKIMMERS, INC.®
P.O. BOX 33092 CLEVELAND, OHIO 44133
PHONE: (440) 237-4600 FAX: (440) 582-2759
E-MAIL: info@oilskim.com
WEB: www.oilskim.com

Oil Skimmers Inc. Quotation



TO: **EnviroTrac**
5 Old Dock Rd
Yaphank, NY 11980

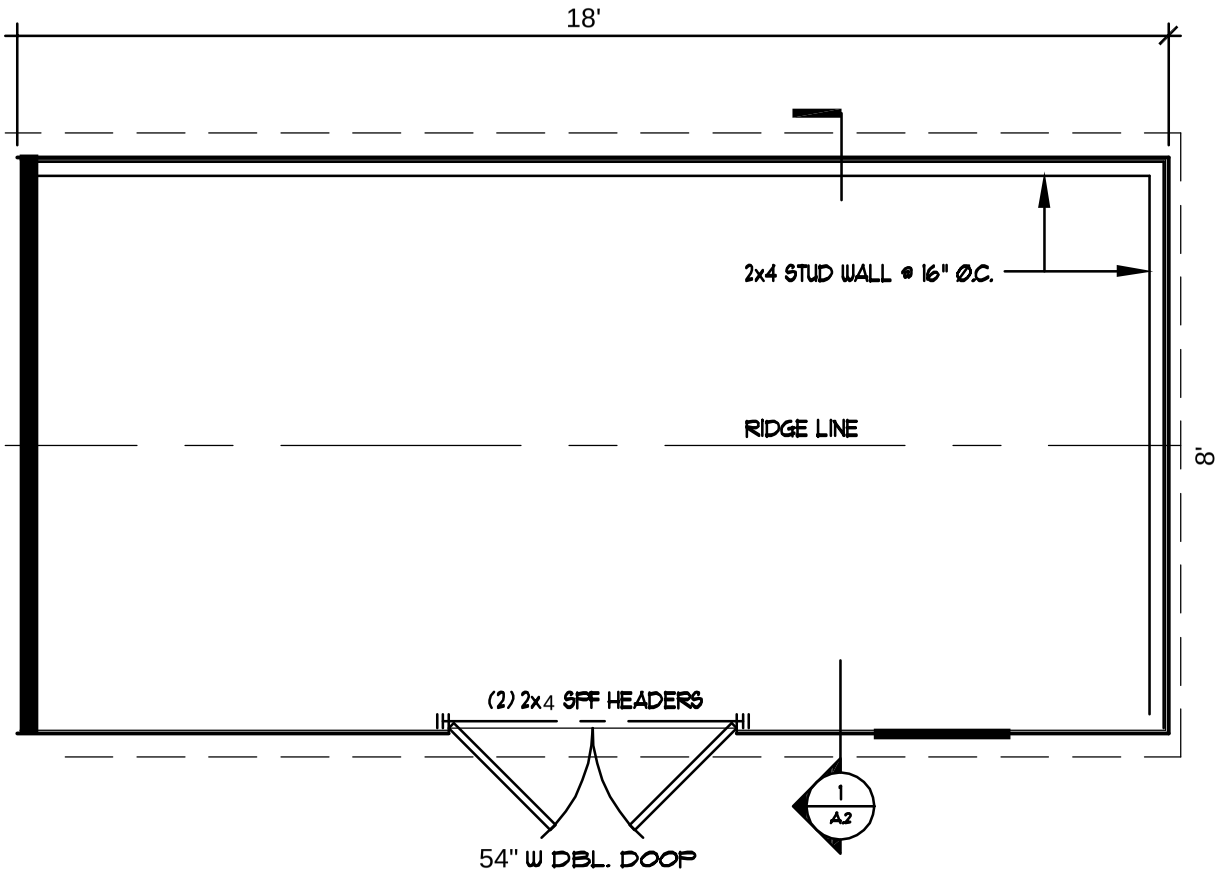
ATTN: **Nick Carroll**
(631) 924-3001

Date	17-Feb-15
Quote No.	E69021715
Prices Firm	60 Days
Delivery	3 weeks
Terms	Net 30 Days
FOB	Cleveland, OH

Prices quoted do not include any applicable Federal, state or local taxes
All Prices in US DOLLARS

ITEM	QUANTITY	DESCRIPTION	EACH	TOTAL
A	1	**Model 6V Oil Skimmer System, includes:** SC15 Safety Cover 1/2 HP, NEMA No. 56 Foot Mounted Motor 1725 RPM 60 HZ Explosion Proof Skimmer heat rod 300W **Specify one of the following:** O TEFCBB, 1 phase, 120/240 V, Capacitor Start O TEFCBB, 3 phase, 230/460 V	$7,290.00	$7,290.00
B	1	**Standard Collector Tube - estimated length of 50'**	$545.00	$545.00
C	1	**Weighted Pulley**	$500.00	$500.00
D	1	**Cart mount with 60" floor frame, includes:** Sludge pan Sludge pan heater - explosion proof Tube guides	$3,175.00	$3,175.00
E	1	**Model 6V Controller for motor, heat, high level; includes:** Explosion Proof Enclosure Hand Off/Auto Switch for skimmer motor with timer Sprecher + Schuh KT7 Motor Circuit Controller w/ Current-limiting short circuit protection Class 10 thermal overload protection Hand Off/Auto Switch for skimmer heaters controlled by thermostat Shut off control for tank high level Warning light for high level occurrence High level switch to fit 55 gallon drum	$5,800.00	$5,800.00
			TOTAL	**$17,310.00**

Quote Prepared By Jim Hebert



1 / A.1 FLOOR PLAN

GENERAL NOTES:

1. WDW. & DOOR SIZES & TYPE MAY VARY UPON OWNERS REQUEST
2. ROOF DESIGN: 30 PSF SNOW LOAD
   FLOOR FRMG.: 50 PSF TOTAL LOAD
   WIND SPEED: 90 MPH

IMPORTANT NOTE REGARDS CODES:

THE STRUCTURE IS A NON-PUBLIC GARDEN SHED.
REFER TO LOCAL CODE FOR FURTHER CLASSIFICATION.
OWNER MUST CONTACT LOCAL MUNICIPALITY AND ANY OTHER GOVERNING AGENCY HAVING JURISDICTION OVER THE PROJECT.
THE DESIGN OF STRUCTURE OF THE BUILDING MAY HAVE TO BE MODIFIED TO CONFORM TO LOCAL REGULATIONS. THE STRUCTURE IS DESIGNED TO SUPPORT THE LOADS INDICATED ON THESE DRAWINGS.

JUNE 26 2015

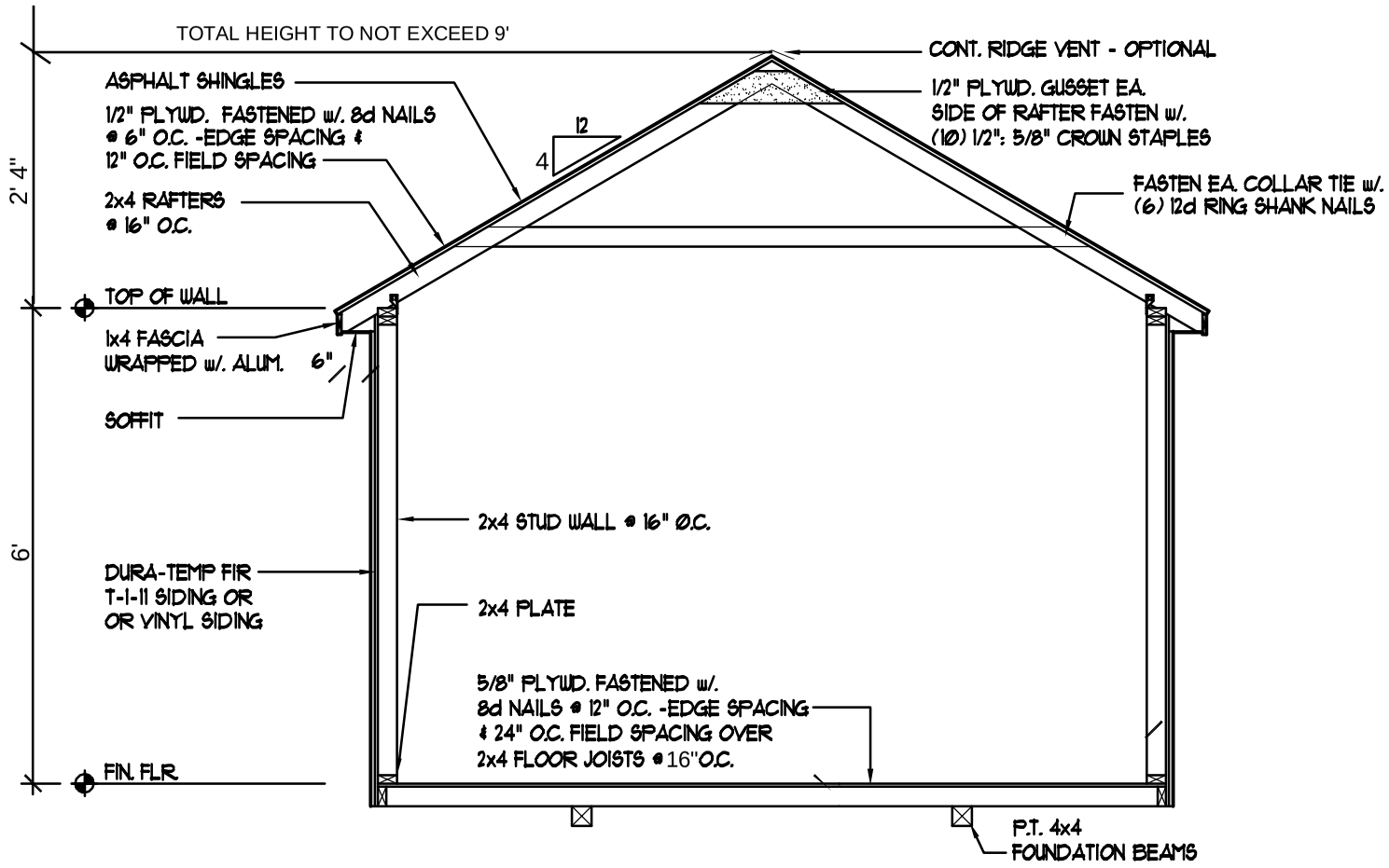
FLOOR PLAN

A.1

ENVIRO TRAC LTD
5 OLD DOCK ROAD
YAPHANK, NY 11980

8' X 18'
STANDARD
A-FRAME
SHED

KAUFOLDS COUNTRY SHEDS
AND GAZEBOS
724 MIDDLE COUNTRY RD
RIDGE, NY 11961



1 / A.2 SECTION

SCALE: 3/8" = 1'-0"

GENERAL NOTES:

1. DRIP EDGE AT ALL ROOF EDGES FOR LEAK-FREE QUALITY FINISH
2. OVERHANG FLUSH ON GABLES
3. FINISHED SOFFIT ON ALL BUILDINGS

JUNE 26 2015

SECTION

A.2

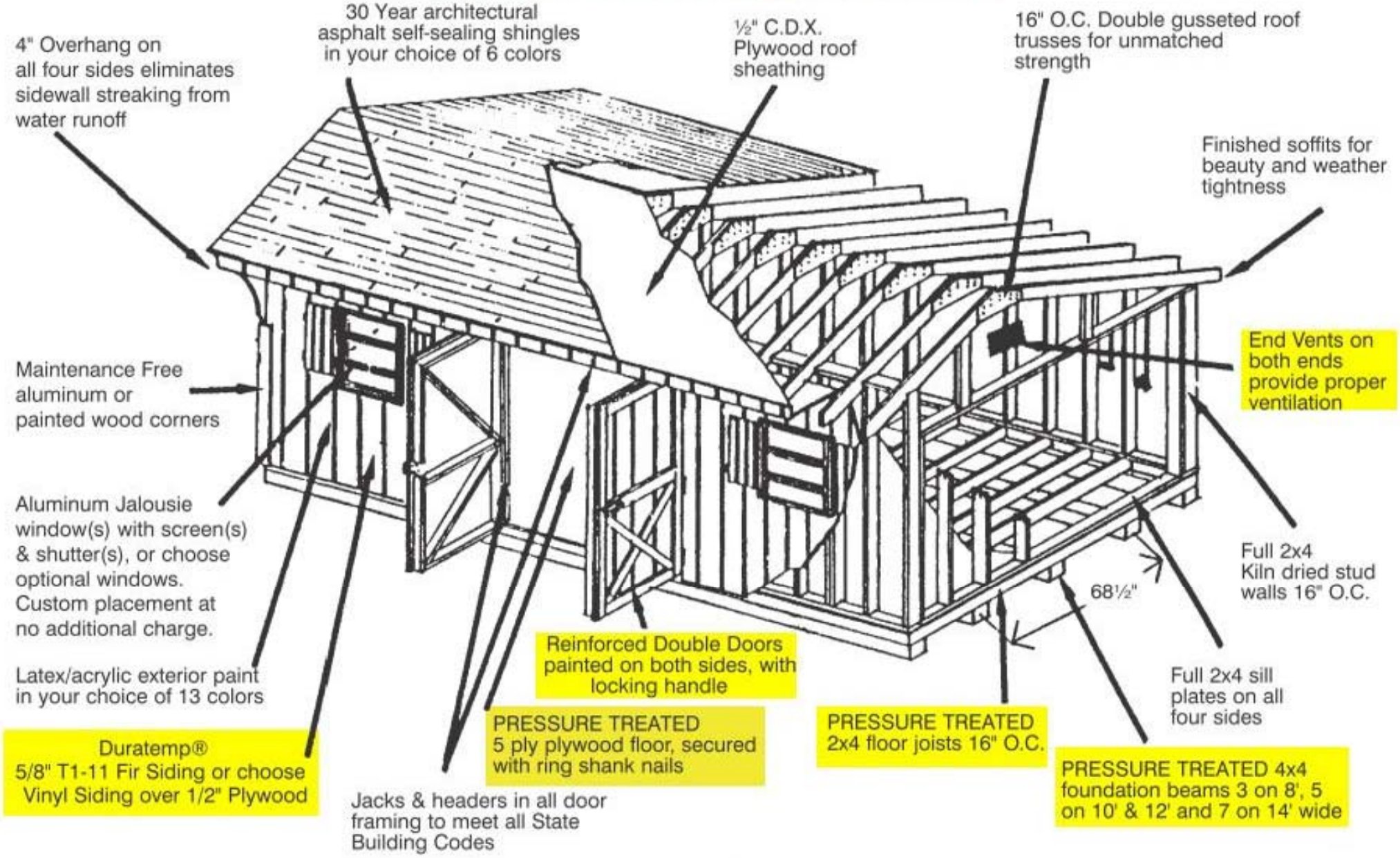
ENVIRO TRAC
5 OLD DOCK ROAD
YAPHANK, NY 11980

8'X18' STANDARD A-FRAME SHED

KAUFOLDS COUNTRY SHEDS AND GAZEBOS
724 MIDDLE COUNTRY RD
RIDGE, NY 11961

STANDARD FEATURES

FOR BACKYARD & NEW ENGLAND SERIES



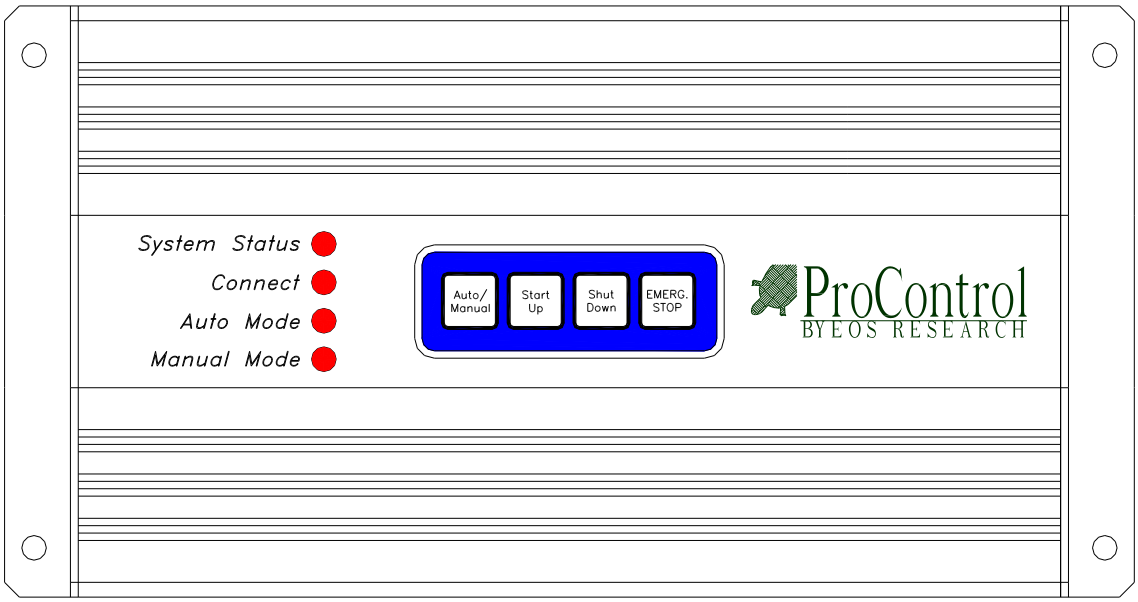
Kaufold's Duratemp® 5/8" T1-11 Fir Siding:

• Endures all temperatures and weather without cracking, splitting or checking • No boat patches •
• Keeps its paint at least twice as long • Won't show dents or hammer marks •

Maintenance Free 4" Dutch-Lap Vinyl Siding comes in 9 designer colors. The siding is installed over ½" CDX All-Wood Sheathing. Every piece of exterior wood is wrapped in aluminum (available in 9 complementing colors) creat

PROCONTROL series 2 plus

TYPE C
Product Specification



The **Type C** ProControls are our entry-level models, but don't let the low prices fool you. They're fully-capable PLC and SCADA systems with all the benefits of our other ProControl models, including stand-alone control, remote monitoring, on-board datalogging, and email/text alarm reporting. With industrially-hardened inputs, instrument power supplies, output relays, modem and keypad, the **Type C** contains everything you need for the core of your control/monitoring system. It's ideal for controlling pump stations, retrofitting to existing installations or when used to replace that old alarm dialer. With our free ProView™ software, the **Type C** becomes a sophisticated operations manager, allowing you to track flow rates and run times, receive alarm messages at your cell phone or pager, and download data for reporting purposes. So why use just an autodialer, when you can have a fully capable SCADA system for about the same price?

	Model C1	Model C2
INPUTS		
Discrete	Ten (10) protected discrete inputs. Support for 2 flowmeters or pulse accumulators with rates to 200Hz.	Eight (8) protected discrete inputs. Support for 2 flowmeters or pulse accumulators with rates to 200Hz
Analog	Two (2) 4-20ma inputs with built-in 24Vdc supply. Inputs are surge and short-circuit protected.	Two (2) 4-20ma inputs with built-in 24Vdc supply. Inputs are surge and short-circuit protected.
OUTPUTS		
Discrete	Eight (8) relay outputs rated at 1 Amp, 120VAC	Eight (8) relay outputs rated at 1 Amp, 120VAC
Analog		Two (2) 4-20ma outputs. PID loop control.

	Model C1	Model C2
DATALOGGING		
Discrete	250 points. All logging occurs on change of state.	2,000 points. All logging occurs on change of state.
Analog	500 points per channel	2,000 points per channel
Event	500 points	2,000 points
Totalizer	25 points per channel	50 points per channel
COMMUNICATIONS		
Cellular IP:	ProView™ Software, real-time monitoring from any broadband connection. Alarm and Status Emails, text messaging on alarm	
Analog phone modem:	ProView™ Software, real-time monitoring from any phone line. Alarm and Status fax reports, text/pager messages	
USER INTERFACE		
Keypad	1 x 4 membrane keypad.	
LEDs	LEDs: System Status, Communications Link, Auto Mode, Manual Mode	
PROCESS CONTROL		
System	Up to 32 regular system processes total (16 for C1) with 8 startup and 8 shutdown processes, specified by easy-to-understand Boolean (IF...THEN) logic	
Alarms	Generate shutdowns, emails, FAX reports and/or text messages.	
Analog	Four activation levels per analog input, On/Off control and alarm reporting	
Loops	PID loop control (Type C2 only) with user control of setpoint, proportional, integral and derivative gains and max change per calculation. Also open loop proportional algorithm.	
POWER		
System	10VAC, 30VA, external transformer provided	
I/O Supply	24 VDC and 12VDC available for powering sensors/instruments.	
ENVIRONMENTAL		
Dimensions	11.5" long x 6" wide x 3.5" high.	
Weight	4 lbs.	
Power Dissipation	20W max.	
Operating Temperature	-20C to +50C	
Humidity	95% R.H. non-condensing	

Crafted in the USA by people who know how to build something to last.

159 Walnut Street
Rochester, NH 03867
(603) 332-2099
(603) 332-2727 FAX
www.eosresearch.com

Product Data Sheet
July 2014
00813-0100-4840, Rev DB

Rosemount 3101, 3102, and 3105

Ultrasonic Liquid Level Transmitters

- Non-contacting measurement with no moving parts
- Integral LCD and buttons as standard for on-site programming
- Continuous measurement of level
- Volume or open channel flow calculations for the Rosemount 3102 and Rosemount 3105
- Two integral signal relays on the Rosemount 3102
- Easy to install and configure
- Rugged metal or plastic housing. PVDF wetted material
- Two-wire direct current loop-powered

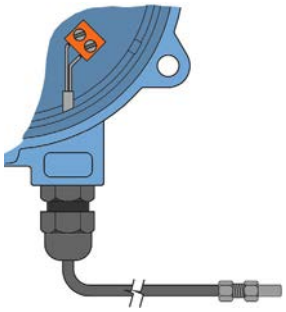
ROSEMOUNT®

EMERSON™
Process Management

Overview of the Rosemount 3101, 3102, and 3105

Metal housing material
(1/2–14 NPT conduit entries)

Glass-filled nylon housing material



Remote Temperature Sensor option (for the 3102 and 3105)

Applications

- Storage tank levels
- Open channel flow
- Effluent pits
- Reservoir level
- Buffer tanks

Measurement principle

The Rosemount 3100 Series is a liquid level transmitter based on ultrasonic technology that is suitable for many liquid applications. Ultrasonic pulse signals are transmitted and reflected from the liquid surface. The transmitter 'listens' for reflected signals (echoes) and measures the time-delay between transmitting and receiving. The distance to the liquid surface is automatically calculated using the computed time-delay.

The transmitter then calculates the liquid depth (level) and outputs the level as a 4–20 mA signal (and a digital HART® signal on the Rosemount 3102 and 3105).

The Rosemount 3101 is used for measuring the level only. The 3102 and 3105 can calculate distance-to-surface, contents (volume), or open channel flow, and then output the result as a 4–20 mA signal and a digital HART signal.

An integral temperature sensor continuously measures the air temperature around the transmitter. It then computes the speed of sound in air, automatically compensating the calculated distance for temperature effects. The Rosemount 3102 and 3105 have a Remote Temperature Sensor option.

Features and Benefits

- Measures liquid height, distance to liquid, volume, or flow in open channels
- Eliminates problems experienced with contacting instrumentation
- Simple set-up and operation with an integral LCD display and buttons
- Low cost of installation and commissioning.
  Minimal maintenance after installed
- Process downtime minimized
- Non-contacting measurement with no moving parts
- Two integral signal relays (on the Rosemount 3102 only)
- Corrosion resistant PVDF wetted material
- Two-wire 24 V direct current loop-powered
- Operating range up to 36 ft. (11 m)
- Automatic temperature compensation

Contents

Special features

Advanced software features on the HART transmitters (Rosemount 3102 and 3105 only)

- Learn routine (false echo registration)

  The transmitter can learn to ignore up to four false echoes, caused by the pulse signal reflecting off obstructions.

- Empty tank mapping

  When a tank is empty, the transmitter can learn to ignore up to four false echoes, without the need for user interaction.

- Present depth

  The bottom reference can be automatically set using a known user-entered depth.

- Set as empty

  When the tank is empty, the bottom reference can be automatically reset to the measured distance.

- Distance offset

  The distance to the surface can be adjusted by a user-entered positive or negative offset value.

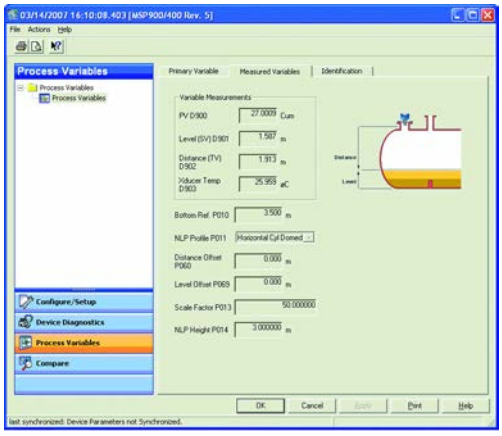
- Level offset

  The level can be adjusted by a user-entered positive or negative offset value.

- Bottom blanking

  The transmitter can be set to ignore an area of the tank bottom to avoid false echoes from obstructions.

Easy programming using built-in buttons and LCD



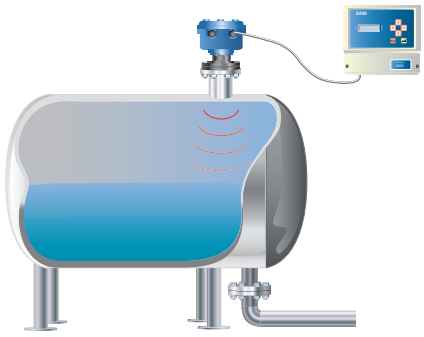
The Rosemount 3102 and 3105 are HART compatible and can be accessed remotely using a field communicator or

How to choose the right model

- Each model of the Rosemount 3100 Series has been designed for a specific purpose, as shown below:

Table 1. Choosing the right transmitter model

Application	Model	Range
Simple level measurement	3101 3102	26-ft. (8 m) range 36-ft. (11 m) range
Level measurement and local relays	3102	36-ft. (11 m) range
Level measurement in hazardous areas	3105	36-ft. (11 m) range
Open channel flow or volume measurement	3102 3105	Non-hazardous area Hazardous area



Level measurement with a Rosemount 3100 Series transmitter and Rosemount 3490 Controller Unit

Rosemount 3101 Level Transmitter Ordering

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment.
See page 9 for more information on Material Selections.

Table 2. Rosemount 3101 ordering information

★The Standard offering represents the most common models and options. These options should be selected for best delivery.
The Expanded offering is manufactured after receipt of order and is subject to additional delivery lead time.

Model	Product Description	
3101	Ultrasonic Level Transmitter, 1 to 26 ft. (0,3 to 8 m) range	
Signal Output		
Standard		**Standard**
L	4–20 mA	★
Housing Material		
Standard		**Standard**
A	Polyurethane-covered Aluminum	★
P	Glass Filled Nylon	★
Conduit / Cable Thread		
Standard		**Standard**
1	½ –14 NPT	★
2	M20 x 1.5 adaptor	★
3	M20 x 1.5 supplied with nylon cable glands (Plastic Housing only)	★
Wetted Material		
Standard		**Standard**
F	PVDF	★
Process Connection		
Standard		**Standard**
RC(1)	2-in. NPT thread	★
SC(2)	2-in. BSPT thread	★
Product Certificates		
Standard		**Standard**
NA	No certification	★
G5	FM Ordinary Location	★
G6	CSA Ordinary Location	★
GM(3)	Technical Regulation Customs Union (EAC) Ordinary Locations Mark	★
GP(3)	Korean Testing Laboratory (KTL), KCC Mark for Ordinary Location Use	★
OPTIONS		
Tag Plates		
Standard		**Standard**
ST(4)	Stainless Steel engraved tag plate	★
WT	Laminated paper tag plate	★
Typical Model Number: 3101 L A 1 F RC G5 ST		

(1) Choosing this option implies US (Imperial) units of measurement in feet are required for the default configuration. The configuration can be changed on-site.
(2) Choosing this option implies Metric units of measurement in meters are required for the default configuration. The configuration can be changed on-site.
(3) Contact an Emerson Process Management representative for additional information.
(4) The maximum number of characters that can be engraved is 16.

Rosemount 3102 Level Transmitter Ordering

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment.
See page 9 for more information on Material Selections.

Table 3. Rosemount 3102 ordering information

★The Standard offering represents the most common models and options. These options should be selected for best delivery.
The Expanded offering is manufactured after receipt of order and is subject to additional delivery lead time.

Model	Product Description	
3102	Ultrasonic Level Transmitter with 2 integral relays, 1 to 36 ft. (0,3 to 11 m) range	
Signal Output		
Standard		**Standard**
H	4–20 mA with HART communication	★
Housing Material		
Standard		**Standard**
A	Polyurethane-covered Aluminum	★
P	Glass Filled Nylon	★
Conduit / Cable Thread		
Standard		**Standard**
1	½ –14 NPT	★
2	M20 x 1.5 adaptor	★
3	M20 x 1.5 supplied with nylon glands (Plastic Housing only)	★
Wetted Material		
Standard		**Standard**
F	PVDF	★
Process Connection		
Standard		**Standard**
RC(1)	2-in. NPT thread	★
SC(2)	2-in. BSPT thread	★
Product Certificates		
Standard		**Standard**
NA	No certification	★
G5	FM Ordinary Location	★
G6	CSA Ordinary Location	★
GM(3)	Technical Regulation Customs Union (EAC) Ordinary Locations Mark	★
GP(3)	Korean Testing Laboratory (KTL), KCC mark for ordinary location use	★
OPTIONS		
Special Alarm Options(4)		
Standard		**Standard**
C4	Namur NE43 alarm and saturation levels, high alarm	★
C5	Namur NE43 alarm and saturation levels, low alarm	★
C8	Standard Rosemount alarm and saturation levels, low alarm	★
Special Certification Option		
Standard		**Standard**
Q4	Certificate of functional test	★
Tag Plates		
Standard		**Standard**
ST(5)	Stainless Steel engraved tag plate	★
WT	Laminated paper tag plate	★
Typical Model Number: 3102 H A 1 F RC G5 C4 ST		

(1) Choosing this option implies US (Imperial) units of measurement of feet are required for the default configuration. Configuration can be changed on-site.
(2) Choosing this option implies Metric units of measurement of meters are required for the default configuration. Configuration can be changed on-site.
(3) Contact an Emerson Process Management representative for additional information.
(4) When no Special Alarm option code is selected, the configuration is pre-set for a high-signal alarm indication, and standard Rosemount alarm and saturation levels (see "Electrical" on page 8 for details).
(5) The maximum number of characters that can be engraved is 16.

Rosemount 3105 Level Transmitter Ordering

Specification and selection of product materials, options, or components must be made by the purchaser of the equipment.
See page 9 for more information on Material Selections.

Table 4. Rosemount 3105 ordering information

★The Standard offering represents the most common models and options. These options should be selected for best delivery.
The Expanded offering is manufactured after receipt of order and is subject to additional delivery lead time.

Model	Product Description	
3105	Ultrasonic Level Transmitter for hazardous areas, 1 to 36 ft. (0,3 to 11 m) range	
Signal Output		
Standard		**Standard**
H	4–20 mA with HART communication	★
Housing Material		
Standard		**Standard**
A	Polyurethane-covered Aluminum	★
P	Glass Filled Nylon	★
Conduit / Cable Thread		
Standard		**Standard**
1	½ –14 NPT	★
2	M20 x 1.5 adaptor	★
3	M20 x 1.5 supplied with nylon glands (Plastic Housing only)	★
Wetted Material		
Standard		**Standard**
F	PVDF	★
Process Connection		
Standard		**Standard**
RC(1)	2-in. NPT thread	★
SC(2)	2-in. BSPT thread	★
Product Certificates		
Standard		**Standard**
I1	ATEX Intrinsically Safe	★
I3	NEPSI China Intrinsically Safe	★
I5	FM Intrinsically Safe and Non-Incendive	★
I6	CSA Intrinsically Safe and Non-Incendive	★
I7	IECEx Intrinsically Safe	★
IM(3)	Technical Regulation Customs Union (EAC) Intrinsically Safe	★
IP(3)	KTL/KOSHA Intrinsically Safe	★
OPTIONS		
Special Alarm Options(4)		
Standard		**Standard**
C4	Namur NE43 alarm and saturation levels, high alarm	★
C5	Namur NE43 alarm and saturation levels, low alarm	★
C8	Standard Rosemount alarm and saturation levels, low alarm	★
Special Certification Option		
Standard		**Standard**
Q4	Certificate of functional test	★
Tag Plates		
Standard		**Standard**
ST(5)	Stainless Steel engraved tag plate	★
WT	Laminated paper tag plate	★
Typical Model Number: 3105 H A 1 F RC I5 ST		

(1) Choosing this option implies US (Imperial) units of measurement in feet are required for the default configuration. The configuration can be changed on-site.
(2) Choosing this option implies Metric units of measurement in meters are required for the default configuration. The configuration can be changed on-site.

(3) Contact an Emerson Process Management representative for additional information.
(4) When no Special Alarm option code is selected, the configuration is pre-set for a high-signal alarm indication, and standard Rosemount alarm and saturation levels (see "Electrical" on page 8 for details).
(5) The maximum number of characters that can be engraved is 16.

Spare parts and accessories

Table 5. Spare parts and accessories

★The Standard offering represents the most common models and options. These options should be selected for best delivery.
The Expanded offering is manufactured after receipt of order and is subject to additional delivery lead time.

Spares and Accessories		
Standard		**Standard**
03100-1001-0001	Flange Mounting, 2-in. NPT to 2-in. ASME B16.5 Class 150, PVC	★
03100-1001-0002	Flange Mounting, 2-in. NPT to 3-in. ASME B16.5 Class 150, PVC	★
03100-1001-0003	Flange Mounting, 2-in. NPT to 4-in. ASME B16.5 Class 150, PVC	★
03100-1001-0004	Flange Mounting, 2-in. NPT to 6-in. ASME B16.5 Class 150, PVC	★
03100-1002-0001	Flange Mounting, 2-in. BSPT to PN16 DN50, PVC	★
03100-1002-0003	Flange Mounting, 2-in. BSPT to PN16 DN80, PVC	★
03100-1002-0004	Flange Mounting, 2-in. BSPT to PN16 DN100, PVC	★
03100-1002-0005	Flange Mounting, 2-in. BSPT to PN16 DN150, PVC	★
03100-1003-0001(1)	2-in. NPT Mounting Bracket	★
03100-1003-0002(1)	2-in. BSPT Mounting Bracket	★
03100-0001-0001	Remote Temperature Sensor (Rosemount 3102 and Rosemount 3105 only)	★
03100-0002-0002	1/2–14 NPT to M20 x 1.5 Conduit Adaptor (Pack of two)	★

(1) See "Dimensional Drawings" on page 13.

Specifications

General

Product
Rosemount 3100 Series level transmitters:
- The 3101: Level measurement
- The 3102: Level, Distance, Content (Volume), and Flow measurement, with two integral signal relays
- The 3105: Level, Distance, Content (Volume), and Flow measurement for hazardous locations

Measurement principle
Ultrasonic, time-of-flight

Measuring performance

Measurement range
- Rosemount 3101: 1 to 26 ft. (0,3 to 8 m)
- Rosemount 3102: 1 to 36 ft. (0,3 to 11 m)
- Rosemount 3105: 1 to 36 ft. (0,3 to 11 m)

Level resolution
Better than 0.04 in. (1 mm)

Accuracy under reference conditions[(1)]
- Rosemount 3101:
  ± 0.2 in. (5 mm) for < 3.3 ft. (1 m),
  ± 0.5% of measured distance for > 3.3 ft. (1 m)
- The 3102 and 3105[(2)]:
  ± 0.1 in. (2,5 mm) < 3.3 ft (1 m),
  ±0.25% of measured distance for > 3.3 ft. (1 m)

Blanking distance (dead zone)
12 in. (0,3 m)

Update interval
Display: 500 ms; Current Output: 200 ms

Display and configuration

Integral display
4/5 digit display for live measurement, and for configuration purposes

Output variables
- Rosemount 3101: Level
- Rosemount 3102:
  Level (or distance-to-surface), Content (Volume), and Flow
- Rosemount 3105:
  Level (or distance-to-surface), Content (Volume), and Flow

Output units
- For Level or distance-to-surface: m, ft, in, or none
- For Contents: l, m^3, gal, ft^3, or none
- For Flow: l/s, l/m, m^3/hr, gal/s, gal/m, ft^3/m (cfm), ft^3/hr, or none

Configuration tools
- Standard integral push-buttons with LCD
- Field communicator[(3)]
- Rosemount 3490 Series universal control unit[(3)]
- AMS Suite: Intelligent Device Manager[(3)]

Electrical

Power supply
- Loop-powered (two-wire)
- Rosemount 3101: 12 to 30 Vdc
- Rosemount 3102: 12 to 40 Vdc
- Rosemount 3105:
  12 to 40 Vdc (non-hazardous area), 12 to 30 Vdc (hazardous area)

Earthing
None required

Current output
- Rosemount 3101: Analog 4–20 mA
- Rosemount 3102: Analog 4–20 mA, HART
- Rosemount 3105: Analog 4–20 mA, HART

Signal on alarm
- 3101: Low = 3.6 mA. High = 21 mA
- 3102/3105:
  Standard: Low = 3.75 mA. High = 21.75 mA;
  Namur NE43: Low = 3.6 mA. High = 22.5 mA

Saturation levels
- 3101: Low = 3.8 mA. High = 20.5 mA
- 3102/3105:
  Standard: Low = 3.9 mA. High = 20.8 mA;
  Namur NE43: Low = 3.8 mA. High = 20.5 mA

Relay output (Rosemount 3102)
Two integral signal relays, SPST rated 1A @ 30 Vdc (inductive) and 2A @ 30 Vdc (resistive)

Electrical parameters (for Rosemount 3105 hazardous area approvals)
U_i = 30 V, I_i = 120 mA, P_i = 0,82 W, L_i = 108 µH, C_i = 0 nF

(1) Temperature: 68 °F (20 °C), Pressure: 1013 mbar (atmospheric pressure), and Relative Humidity: 50%.
(2) GOST/Belarus-approved 3102 and 3105: see the Russian product data sheet 00813-0107-4840 for revised accuracy of ±0.12 in. (±3 mm) for measured distances less than 3.5 ft. (1.2 m).
(3) This configuration tool uses HART which is not supported on the Rosemount 3101.

Cable entry

- Aluminum housing:
  Two ½" - 14 NPT conduit entries for cable glands
  Option: M20 x 1.5 conduit/cable adaptor
- Glass-filled nylon housing:
  Two M20 x 1.5 conduit entries for cable glands

Output cabling

Single twisted-pair and shielded, min. 0,22 mm^2 (24 AWG), max. 1,5 mm^2 (15 AWG)

Materials selection

Emerson provides a variety of Rosemount product with various product options and configurations including materials of construction that can be expected to perform well in a wide range of applications. The Rosemount product information presented is intended as a guide for the purchaser to make an appropriate selection for the application. It is the purchaser's sole responsibility to make a careful analysis of all process parameters (such as all chemical components, temperature, pressure, flow rate, abrasives, contaminants, etc.), when specifying product, materials, options and components for the particular application. Emerson Process Management is not in a position to evaluate or guarantee the compatibility of the process fluid or other process parameters with the product, options, configuration or materials of construction selected.

Materials of construction

Wet-side material

PVDF

Body and cover materials

- Body: Polyurethane-covered aluminum, or glass-filled nylon
- Cover Seal: Silicone rubber
- Cover Screws: 316 Stainless Steel
- Transducer Body Seal: EPDM

Mechanical

Mounting thread size

- 2-in. NPT, or 2-in. BSP.
- Optional flange accessories available

Weight of transmitter

- Rosemount 3101 with aluminum housing: 3.1 lb (1,4 kg)
- Rosemount 3102 with aluminum housing: 3.3 lb (1,5 kg)
- Rosemount 3105 with aluminum housing: 4.4 lb (2,0 kg)
- Rosemount 3101 with glass-filled nylon housing: 2.0 lb (0,9 kg)
- Rosemount 3102 with glass-filled nylon housing: 2.2 lb (1,0 kg)
- Rosemount 3105 with glass-filled nylon housing: 3.1 lb (1,4 kg)

Measuring

Temperature compensation(1)

- Rosemount 3101:
  Automatic Integral temperature compensation
- Rosemount 3102:
  Automatic Integral temperature compensation. Optional remote temperature sensor for dynamic temperature compensation
- Rosemount 3105:
  Automatic Integral temperature compensation. Optional remote temperature sensor for dynamic temperature compensation

Environment

Ambient temperature(2)

- Rosemount 3101:
  –4 to 158 °F (–20 to 70 °C)
- Rosemount 3102 and Rosemount 3105:
  –40 to 158 °F (–40 to 70 °C)

Process temperature

- Rosemount 3101:
  –4 to 158 °F (–20 to 70 °C)
- Rosemount 3102 and Rosemount 3105:
  –22 to 158 °F (–30 to 70 °C)

Process pressure

–4 to 44 psi (–0,25 to 3,0 bar)

Ingress protection

- NEMA 4X, IP 66 for aluminum housing
  (requires a suitably rated cable gland/blanking plug – not supplied)
- IP 66/67 for glass-filled nylon housing
  (when using the supplied cable gland/blanking plug)

Electromagnetic compatibility

- EN61326 (Class B)

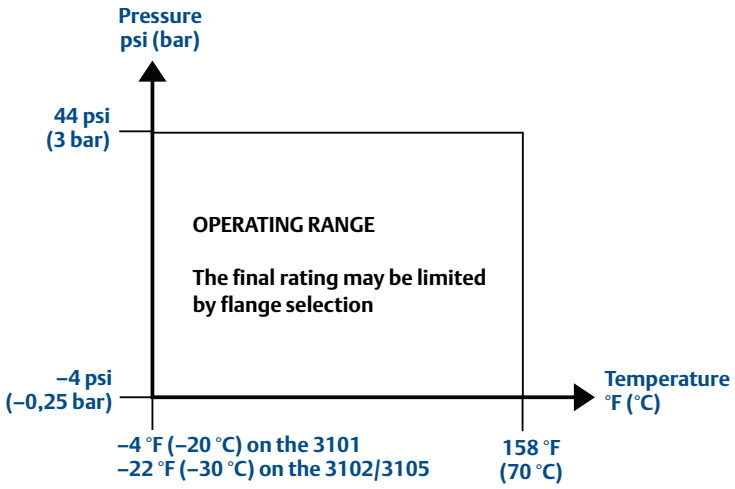
Certifications

- CE-mark, FM, CSA, EAC, KTL (KCC-mark), NEPSI, ATEX, or IECEx (dependent on order code)
- Technical Regulation Customs Union (EAC) approvals – *contact an Emerson Process Management representative for additional information*

(1) See page 7 for optional accessories.
(2) See page 11 onwards for approval temperature ranges.

Temperature and pressure ratings

The process temperature/pressure rating depends on the design of the transmitter in combination with the flange materials.

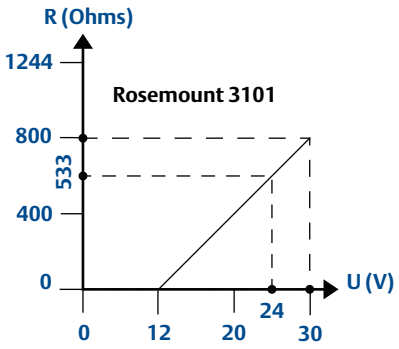


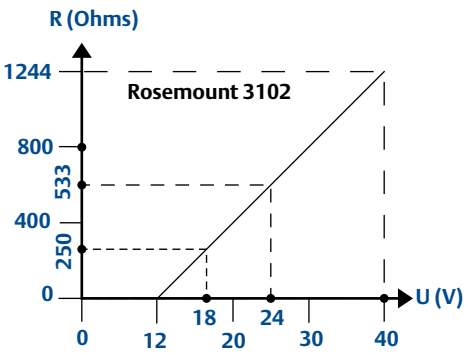
Process Temperature And Pressure Diagram For Rosemount 3101, 3102, and 3105

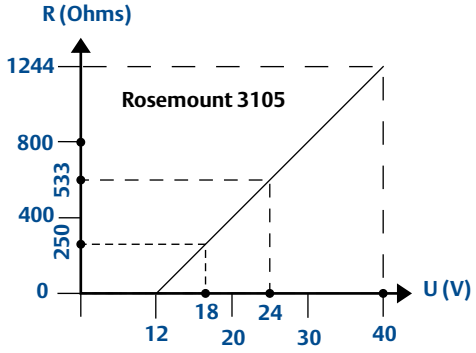
Load limitations

A Field Communicator requires a minimum load resistance of 250 Ohm within the loop in order to function properly. Communication with Rosemount 3490 Universal Controller does not require additional resistance. The maximum load resistance can be determined from these diagrams:

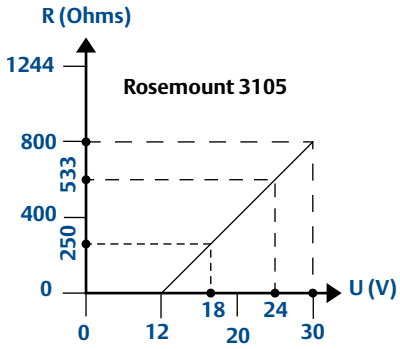
Non-Intrinsically Safe Installations







Intrinsically Safe Installations



Note
R = Maximum Load Resistance
U = External Power Supply Voltage

Product Certifications

Ordinary location certification for FM *(Rosemount 3101 and 3102 only)*

G5 Project ID: 3024095
The transmitter has been examined and tested to determine that the design meets basic electrical, mechanical, and fire protection requirements by FM, a nationally recognized testing laboratory (NRTL) as accredited by the Federal Occupational Safety and Health Administration (OSHA).

Ordinary location certification for CSA *(Rosemount 3101 and 3102 only)*

G6 Project ID: 02 CSA 1871624
The transmitter has been examined and tested to determine that the design meets basic electrical, mechanical, and fire protection requirements by CSA, a nationally recognized testing laboratory as accredited by the Standards Council of Canada (SCC).

Special condition for safe use:

For this CSA approval, the power for the Rosemount 3100 Series must be supplied from a Rosemount 3490 Series Control Unit, or from a class 2 or SELV source.

Technical Regulation Customs Union (EAC) ordinary location mark

GM Contact an Emerson Process Management representative for additional information.

Korean Testing Laboratory (KTL), KCC mark for ordinary location use

GP Contact an Emerson Process Management representative for additional information.

European directive information

The EC declaration of conformity for all applicable European directives for this product can be found on the Rosemount website at www.rosemount.com. A hard copy may be obtained by contacting your local sales office.

ATEX directive (94/9/EC)

The 3105 complies with the ATEX directive.

Pressure equipment directive (PED) (97/23/EC)

The 3100 Series is outside the scope of the PED directive.

Electro magnetic compatibility (EMC) Directive

EN 61326-1:2006, EN 61326-2.3:2006

CE-mark

Complies with applicable directives: Rosemount 3101 (EMC), Rosemount 3102 (EMC), and Rosemount 3105 (EMC, ATEX)

Hazardous locations certifications *(Rosemount 3105 only)*

Special conditions for intrinsically safe use (I1, I3, I5, I6, I7, and IM):

1. All transmitter models have external plastic parts, which could present a risk of ignition due to electrostatic charge build-up. They shall not be directly installed in any process where its enclosure might be charged by the rapid flow of non-conductive media.
2. All transmitter models shall only be cleaned with a damp cloth.
3. When the transmitter housing uses aluminum alloy in its construction, this presents a risk of ignition due to impact and shall be taken into consideration on installation and use.

American and Canadian approvals

Factory Mutual (FM) intrinsically safe approval

I5 FM Instrinsic Safety
Project ID: 3024095
Intrinsically Safe for Class I, Div. 1, Groups A, B, C, and D
Zone Marking: Class I, Zone 0, AEx ia IIC
Temperature Code: T6 (T_a = 55 °C)
Temperature Code: T4 (T_a = 60 °C)
Control Drawing: 71097/1216
Ui = 30 V, Ii = 120 mA, Pi = 0.82 W, Li = 108 µH, Ci = 0 µF

Factory Mutual (FM) non-incendive approval

I5 FM Non-Incendive
Project ID: 3024095
Non-Incendive for Class I, Div. 2, Groups A, B, C, and D
Zone Marking: Class I, Zone 2, AEx nA IIC
Temperature Code: T6 (T_a = 55 °C)
Temperature Code: T4 (T_a = 60 °C)
Control Drawing: 71097/1216
Ui = 30 V, Ii = 120 mA, Pi = 0.82 W, Li = 108 µH, Ci = 0 µF

Canadian Standards Association (CSA) intrinsically safe approval

I6 CSA Intrinsic Safety
Project ID: 02 CSA 1352094
Intrinsically Safe for Class I, Div. 1, Groups A, B, C, and D
Zone Marking: Class 1, Zone 0, Ex ia IIC
Temperature Code:
T4 (T_a –40 to 60 °C)
T6 (T_a –40 to 55 °C)
Control Drawing: 71097/1218
Ui = 30 V, Ii = 120 mA, Pi = 0.82 W, Li = 108 µH, Ci = 0 µF

Canadian Standards Association (CSA) non-incendive approval

I6 CSA Non-Incendive
Project ID: 02 CSA 1352094
Non-Incendive for Class I, Div. 2, Groups A, B, C, and D
Zone Marking: Class I, Zone 2, Ex nL IIC
Temperature Code:
T4 (T_a –40 to 60 °C)
T6 (T_a –40 to 55 °C)
Control Drawing: 71097/1218
Ui = 30 V, Ii = 120 mA, Pi = 0.82 W, Li = 108 µH, Ci = 0 µF

European approval

ATEX intrinsically safe approval

I1 Certificate Number: SIRA 06ATEX2260X
ATEX Intrinsic Safety
II 1 G
Ex ia IIC T6 Ga (T_a –40 to 55 °C)
Ex ia IIC T4 Ga (T_a –40 to 60 °C)
Ui = 30 V, Ii = 120 mA, Pi = 0.82 W, Li = 108 µH, Ci = 0 µF

Rest of the world approvals

NEPSI China intrinsically safe approval

I3 Certificate: GYJ11.1709X
Intrinsic Safety
Ex ia IIC T4 / T6
Ta (see table in the certificate)

IECEx intrinsically safe approval

I7 Certificate: IECEx SIR 06.0068X
Intrinsic Safety
Zone 0
Ex ia IIC T6 Ga (T_a –40 to 55 °C)
Ex ia IIC T4 Ga (T_a –40 to 60 °C)
Ui = 30 V, Ii = 120 mA, Pi = 0.82 W, Li = 108 µH, Ci = 0 µF

Technical Regulation Customs Union (EAC) intrinsically safe approval

IM Contact an Emerson Process Management representative for additional information.

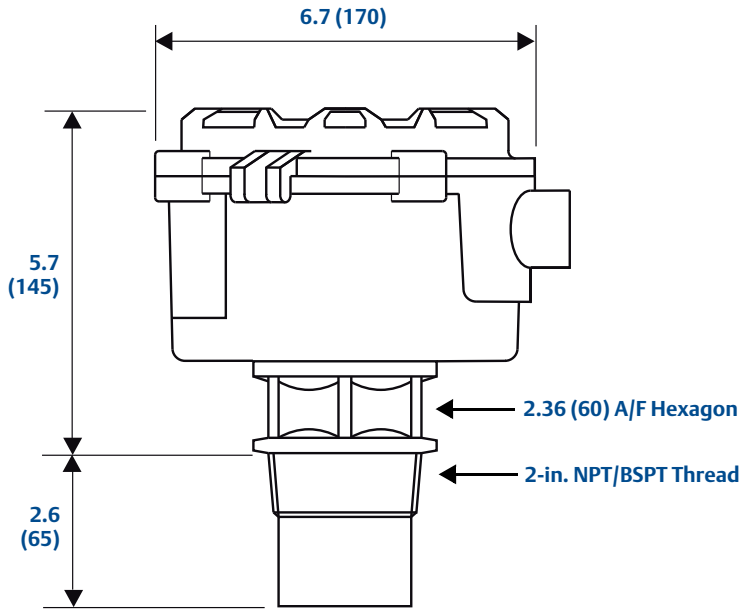
KTL/KOSHA intrinsically safe approval

IP Contact an Emerson Process Management representative for additional information.

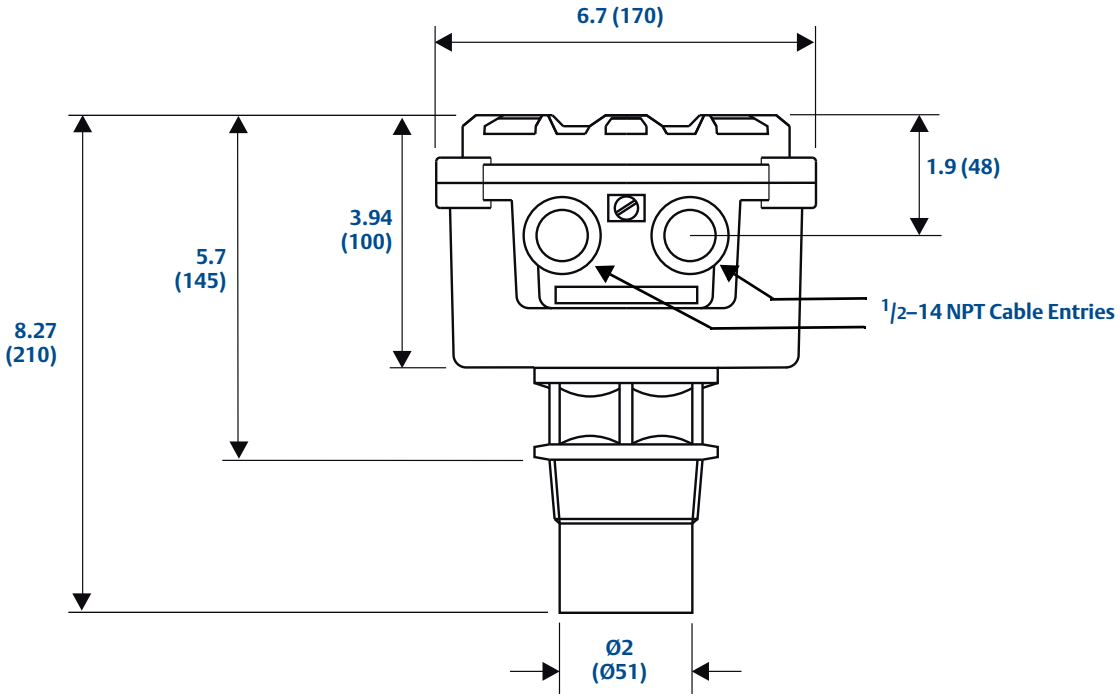
Dimensional Drawings

Aluminum housing

Note: Dimensions are in inches (mm).

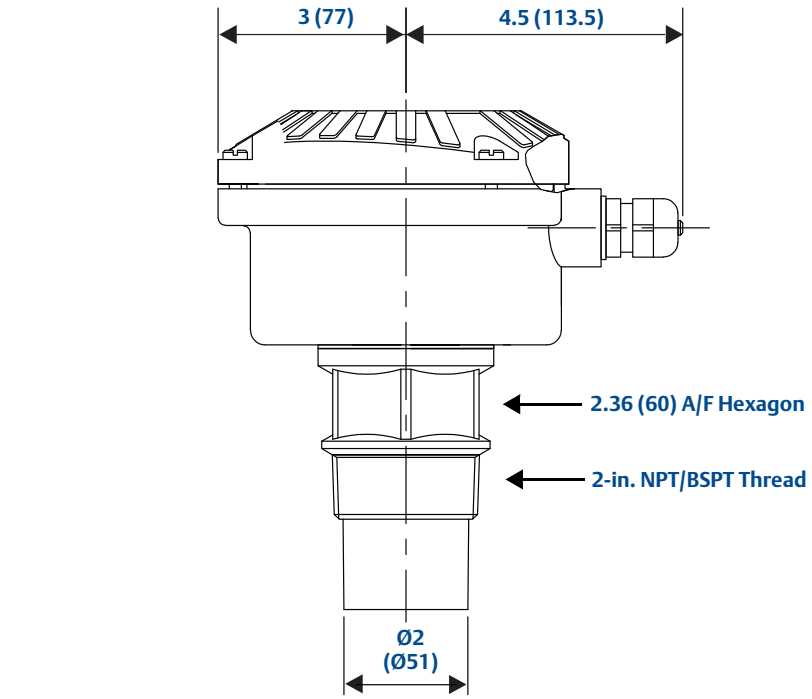


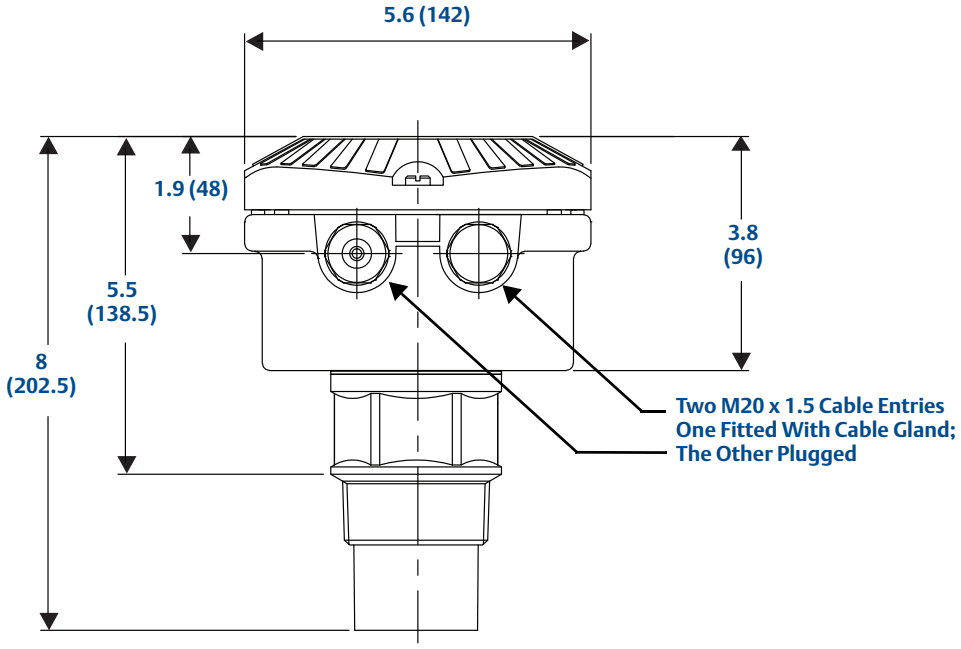
Note:
1/2–14 NPT to M20 x 1.5 Adaptors are available when ordering the transmitter (see pages 4 to 6)



Plastic housing

Note: Dimensions are in inches (mm).



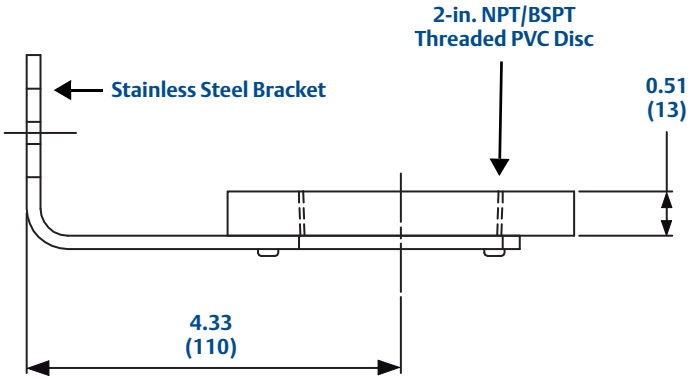


2-in. NPT/BSPT Bracket Kits

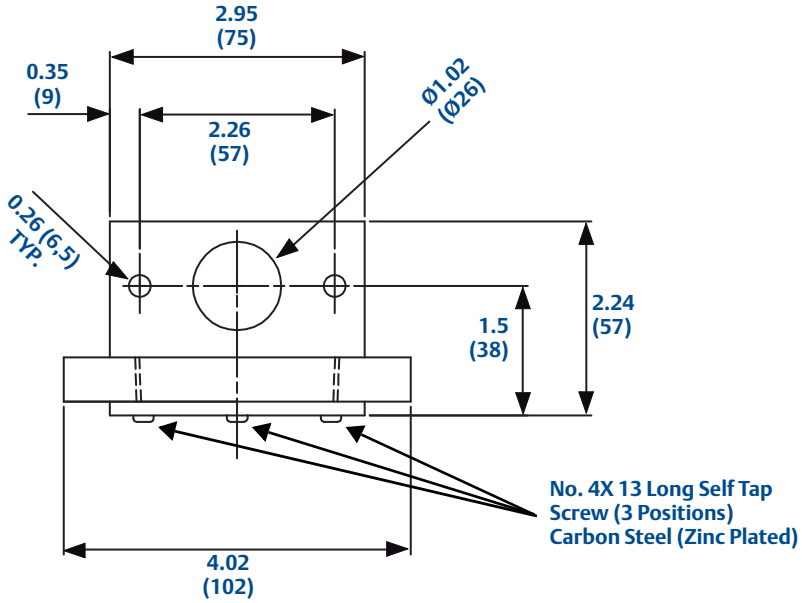
Note: Dimensions are in inches (mm).

Note: The combined weight of bracket and disc is 16 oz. (0,5 kg).

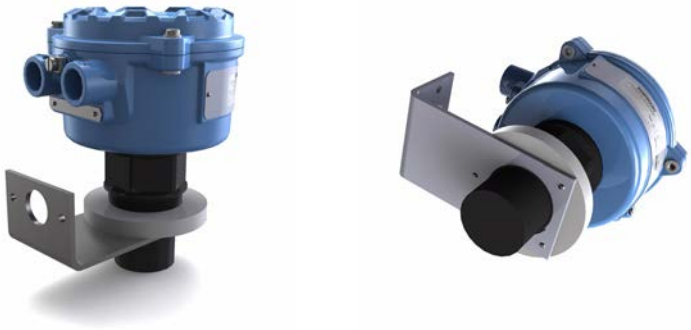
SIDE VIEW



END VIEW



ACTUAL VIEWS WITH MOUNTED TRANSMITTER



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GC802 NOVA-Sensor *ELITE*

Catalytic Combustible Gas Detector

Self-Contained and Explosion-Proof

The SST Model GC802 is a highly versatile and reliable industrial gas detector designed for the toughest job and able to be used in the harshest environments. This detector uses a catalytic poison resistant sensing element, and provides accurate measurements in atmospheres where traces of silicone or other poisoning agents may be present. Readings are unaffected by humidity or carbon dioxide.

The bright LCD screen on the detector continuously displays the operating status and the actual concentration of gas in percentage of the Lower Explosive Limit (%LEL). This reading is converted to a standard 4-20 mA signal, which may be connected to any remote device for remote display or logging. Relay contacts are provided which are activated when the gas concentration exceeds the LOW ALARM and HIGH ALARM set points. Typical set points are adjusted by the installer upon installation and may be reset later by authorized personnel. The relays are suitable for controlling local HVAC equipment, alarm signal devices or for equipment shutdown. Fault relay contacts are also available which operate upon loss of power or internal failure of the unit.

FEATURES & BENEFITS

- Catalytic sensor
- 4-20 mA output for connection to external equipment
- LOW alarm and HIGH alarm settings
- Voltage-free dry contact relays for local control
- Explosion-proof housing, FM, CSA, UL, and ATEX listed
- Available up to IP 66 rating
- Bright LCD screen displays target gas concentration in % LEL
- Pushbutton switch initiates test or calibration sequence (no magnet required)
- Provides on-screen calibration instructions to insure error-free results
- Shipped fully assembled and pre-calibrated
- 5 Year Warranty
- Made in USA

NRTL /C
Class I Division 1
Groups B,C,D
Class I Zone 1 Group IIB+H_2

II 2 G Ex d IIC T6
ATEX / IECEx

TYPICAL GASES

- Methane
- Hydrogen
- Propane
- Butane
- Ethane
- Pentane
- Hexane
- Heptane
- Octane
- Methanol
- Ethanol
- Acetone
- Toluene
- Isopropyl Alcohol
- Cyclohexane
- Methyl Ethyl Ketone
- Gasoline (Petrol)
- Ammonia

SST Safety Systems Technology
23282 MILL CREEK DRIVE | STE. 215 | LAGUNA HILLS | CA 92653 | USA
TEL: 1-949-583-1857 | FAX: 1-949-340-6643
EMAIL: SALES@SAFETYSYS.COM | WWW.SAFETYSYS.COM

TECHNICAL SPECIFICATIONS

Power Input:	24 volts DC nominal, 92 mA standby, 120 mA alarm | Will operate within specifications at any supply voltage between 16 and 32 volts.
Operating Temperature:	-40 to +131°F (-40 to +55°C)
Relative Humidity:	0 to 100% non-condensing
Ingress Protection:	IP40 to IP66 (Depends on installed protection accessories)
Sensitivity:	0.16 mA per % LEL (Automatically adjusted during calibration)
T90 Response Time:	Less than 15 seconds
Accuracy:	Linear response between 0 and 100% LEL (Zero/Span drift less than 2%/month)
Relay Outputs:	Low Alarm (latching or non-latching) High Alarm (latching) Malfunction (non-latching)
Relay Contact Ratings:	6 amps @ 28 VDC or 300 VAC resistive 1/8 HP @ 120/240 VAC
Analog Output:	0 to 20 mA into a load of 600 ohms or less
Warranty:	5 Years

DIMENSIONS

Size:	7 x7 inches, 4.75 inches deep (178 x 178 x 121 mm) Includes junction box and sensor. Conduit connection is 3/4 inch NPT thread.
Weight:	4.75 pounds (2.15 kg)

ORDERING INFORMATION

Part No.	Type of Gas	IP Rating
802	- 02 Methane	- Normal locations, no dust or moisture. (IP40)
	- 03 Propane	- 44 Dripping or splasing liquids. (IP44)
	- 04 Hydrogen	- 46 Water sprays, heavy seas. (IP46)
	- 05 Butane	- 52 Dusty locations. (IP52)
	- 07 Ethane	- 66 Dusty, water sprays & heavy seas. (IP66)
	- 08 Pentane	
	- 082 Ethanol	
	- 083 Ammonia	
	- 084 Hexane	
	- 011 Methanol	
	- X Other	

Available Accessories:

851-1	Rain shield, stainless steel
852-1	Dust cover, stainless steel (requires 851-1)
854-1	Duct mount, stainless steel
859-1	Gas sensor collection cone (for lighter than air gases), stainless steel
850-4	Sensor remote mounting junction box
867	Complete calibration kit, please specify gas when ordering

SST Safety Systems Technology
23282 Mill Creek Drive | Ste. 215 | Laguna Hills | CA 92653 | USA
Tel: 1-949-583-1857 | Fax: 1-949-340-6643
Email: sales@safetysys.com | www.safetysys.com

2015 NEW SPILL CONTAINMENT MODELS

BEST SELLING EAGLE SPILL CONTAINMENT

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Drum Products

Flexible Spill Containment

Horizontal Drum Stacking

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Metal Containment Pallets

Modular Spill Platform

Outdoor Drum Storage

Spill Containment Accessories

Spill Containment Pallets

Spill Containment Platforms

Spill Containment Sumps

Spill Kit Box with Lid

Spill Kit Carts

Tarps

Workstations

2 Drum Pallet - Yellow with Drain

View Gallery

Model Number:
1620

UPC Code:
048441601011

Description:
The Eagle 2 Drum Pallet is constructed of durable yellow high density polyethylene (HDPE) for excellent chemical resistance. This platform includes Eagle's patented removable HDPE grating and a drain for easy cleaning and has convenient fork lift pockets.

Capacity:
66 gal.

Color:
Yellow

Drain:
True

Fork Lift:
True

Load Capacity:
4,000 lbs.

Dimensions

Width:	Depth:	Height:
51"	26 1/4"	13 3/4"

Weight:
52 lbs.

Compliance:

✓ EPA 40 CFR 264.175

✓ SPCC COMPLIANT

« Print « Back To Products

Eagle Manufacturing Company is a prime manufacturer of Safety Cans, Safety Cabinets, Poly Drums and Spill Containment, Material Handling and Cigarette Disposal Products. With over 750 products, Eagle Manufacturing Company is the most respected brand name for quality craftsmanship and best value. An ISO-9001:2008 certified manufacturer, all of our products are made in the USA.

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How can we improve our **Product Images**?

Compare

Hazardous Location Wall Heater, 208V

DAYTON

Price
$1,616.40 / each

Deliver one time only

Auto-Reorder Every 1 Month

1 Add to Cart

+Add to list

Availability for Qty 1 Go

Shipping Pickup

Expected to arrive **Mon. Jul 27.**

Ship to: **11980** (Change)

Add **Repair & Replacement Coverage** for $199.00 each.

Repair Parts Available for this item

Be the first to write a review | **Ask & Answer**

Item # **2CJF2**
Mfr. Model # **2CJF2**
UNSPSC # **40101819**
Catalog Page # **4282**
Shipping Weight **55.0 lbs.**

Country of Origin **USA** | *Country of Origin is subject to change.*

Note: Product availability is real-time updated and adjusted continuously. The product will be reserved for you when you complete your order. More

Technical Specs

Item	**Hazardous Location Wall Heater**
Heater Type	**Convection**
kW	**3.6**
BtuH Output	**12286**
Voltage	**208**
Amps AC	**17.3**
Phase	**1**
Overall Height	**17-7/8"**
Overall Width	**39-1/2"**
Overall Depth	**8-1/4"**

Hz	**50/60**
Cabinet Width	**34"**
Cabinet Depth	**8-1/4"**
Cabinet Height	**17-7/8"**
Housing Material	**16 ga. Steel Cabinet**
Housing Finish	**Gray Epoxy Textured Powder Coated**
Manufacturers Warranty Length	**1 yr.**
Standards	**UL and C-UL for Class I Groups B, C, D and NEMA-4**
Includes	**Mounting Brackets, Pair (Rear Mounting)**

How can we improve our **Technical Specifications**?

Compliance and Restrictions

None

Repair Parts | Displaying repair parts for model: 2CJF2

4 Parts Available

+Add to List | Add to Cart

Mfr. Part#	Part Description	Brand	Item#	Availability	Price	Qty
43416001	Outlet Box,FEP	TPI CORP.	34VG63	Item ships within 10 business days from supplier	$194.40 / each	
63874003	Rear Cabinet,FEP-34 In.	TPI CORP.	34VG96	Item ships within 10 business days from supplier	$205.20 / each	
63875003	Front Cabinet,FEP-34 In.	TPI CORP.	34VG98	Item ships within 10 business days from supplier	$183.60 / each	
53165002	Element,208V,1.8KW,FEP	TPI CORP.	34VG78	Item ships within 10 business days from supplier	$583.20 / each	

4 Parts Available

+Add to List | Add to Cart

Need Help Finding Repair Parts? **1-800-GRAINGER (472-4643)**. 24/7 support.

Alternate Products

Compare

Item # **2CJE9**

Hazardous Location Wall Heater, 1.8kW

DAYTON

Price
$1,229.40 / each

Related Products

A.D.E. Systems, Inc.
19 Wilbur Street.
Lynbrook, NY 11563
Ph: (516) 568-6500

Inside Sales Direct Phone: (516) 256-7600
Fax: (516) 568-6573

********* FAX QUOTATION *********

TO:	FROM: ADE INSIDE SALES TEAM:
Dale K.	■ Tony Arote – Manager [X] Vinessa Ragone– Lead Assistant
COMPANY:	DATE:
Enviro Trac	July 23, 2015
PHONE NUMBER:	TOTAL NO. OF PAGES INCLUDING COVER:
631-924-3001	
FAX NUMBER/EMAIL:	SENDER'S E-MAIL ADDRESS:
dalek@envirotrac.com	TAROTE@ADEHVAC.COM

RE:

College Point

Please note the terms and conditions of sale attached to this quote on the following page:

To ship in total delivered price, FOB factory freight allowed.... $1,290.00 + TAX

Sidewall Direct Drive Fan
Model: SS1-12-432-A4
Quantity: 1

Volume:	**1,063 CFM**
Total SP:	**0.394 in. wg**
FRPM:	**1750 RPM**
Motor Power:	**1/4 hp**
Voltage:	**115**
Phase:	**1**
Cycles:	**60 Cycle**

Product Summary
Fan Model: SS1-12-432-A4
Base - SS Fan
Motor - 1/4 hp, EXP, 115/60/1, 1750 rpm - Factory Mounted
Motor and Drive Accessories
Motor with Thermal Overload
Accessories
UL/cUL 705 Listed - "Power Ventilators"
Damper Mounted, WD-430-PB-14X14, Gravity Operated, Not Coated
Long Wall Hsg, Flush Exterior, w/ OSHA Grd.
Motor Access: From Int. of Bldg.
Weatherhood, Galvanized 90 deg. with Bird Screen
Unit Warranty: 1 Yr (Standard)

CURRENT STANDARD LEAD TIME IS 6 WEEKS PLUS 3-4 BUSINESS DAYS FOR SHIPPING.

Notes:

- **Please refer to the attached submittals for equipment details and performance specifications.**

Best Regards
Tony Arote
Direct Ph: 516-568-6516

If you do not have the capability of generating a purchase order, this quote, when signed below and accompanied by a purchase order number, will be deemed to be a valid purchase order and the explicit authorization to release all equipment as specified in the quote and accompanying submittals if applicable

Approved To Order:
Company Name_____

Signature_____Date_____PO#_____

Ship To
Address:_____

Please note the following terms and conditions:

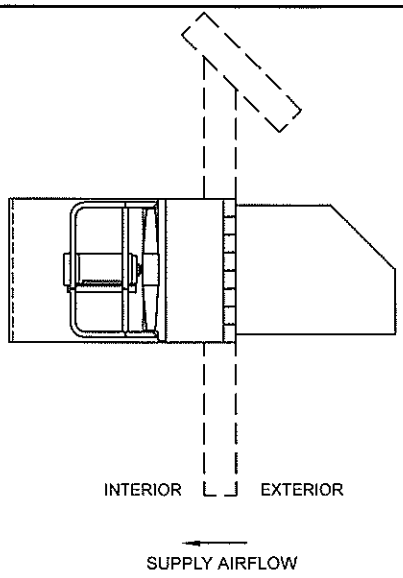
- Prices are firm for 60 days
- Payment Terms: Payment is due in advance or Net 30 Days if you have an open line of credit.
- Prices do not include sales tax.
- All material is FOB factory/standard freight allowed to NY.
- All Linear or Flowbar plenums excluded unless indicated.
- Air Out let prices include standard white finish unless otherwise noted.
- Fans include disconnect and motor starters only if noted below.
- All Fan factory warranties are 1 Year from ship date unless otherwise noted.
- Prices do not include vibration isolators unless specifically noted otherwise.
- Returns: Factory orders are custom built and as such are not returnable. Orders from stock are, in general, not returnable except when authorized by management. In these instances a 35% restocking fee will be imposed.
- The recipient of goods is ultimately responsible for unloading merchandise from the carrier vehicle
- Please refer to the attached submittals for equipment details and performance specifications.

GREENHECK
Building Value in Air.

Printed Date: 7/23/2015
Job: COLLEGE POINT
Mark: Mark 1

Model: SS1-12-432-A4

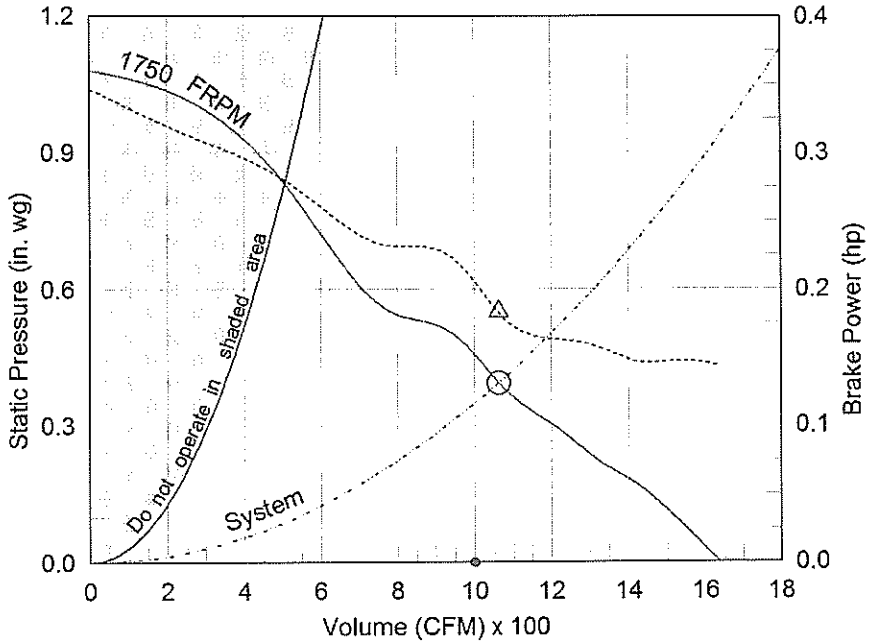
Sidewall Direct Drive Fan
Motor Access From Int. of Bldg.



Dimensional	
Quantity	1
Weight w/o Acc's (lb)	44
Weight w/ Acc's (lb)	116
Max T Motor Frame Size	0
Optional Damper (in.)	14 x 14
Wall Opening (in.)	19.25 x 19.25

Performance	
Requested Volume (CFM)	1,000
Actual Volume (CFM)	1,063
External SP (in. wg)	0
Total SP (in. wg)	0.394
Fan RPM	1750
Operating Power (hp)	0.18
Elevation (ft)	23
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.075
Tip Speed (ft/min)	5,498
Static Eff. (%)	36

Motor	
Motor Mounted	Yes
Size (hp)	1/4
Voltage/Cycle/Phase	115/60/1
Enclosure	EXP
Motor RPM	1750
Windings	1



△ Operating Bhp point
◯ Operating point at Total SP
⊙ Operating point at External SP
——— Fan curve
- - - - System curve
------- Brake horsepower curve

External SP	0 in. wg
Direct Drive RPM Adjustment	0.045 in. wg
Damper	0.034 in. wg
Wall Housing	0.176 in. wg
Weatherhood	0.139 in. wg
Total SP	0.394 in. wg

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	75	72	70	63	64	63	59	51	70	58	9.3

Notes:

All dimensions shown are in units of in.
*FLA - based on tables 150 or 148 of National Electrical Code 2002. Actual motor FLA may vary, for sizing thermal overload, consult factory.
LwA - A weighted sound power level, based on ANSI S1.4
dBA - A weighted sound pressure level, based on 11.5 dB attenuation per Octave band at 5 ft - dBA levels are not licensed by AMCA International
Sones - calculated using AMCA 301 at 5 ft

Model: SS1-12-432-A4

Sidewall Direct Drive Fan

Standard Construction Features:

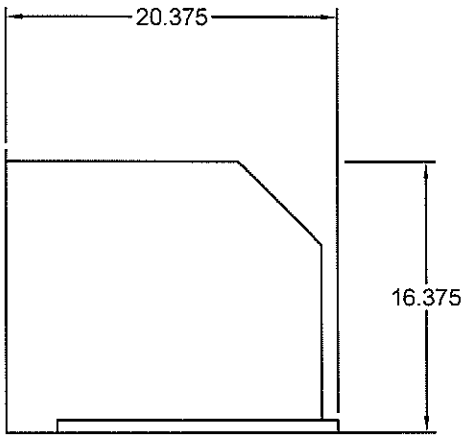
- Fan panels of galvanized steel - Aluminum blade propeller - Die formed, galvanized steel drive frame assembly - Corrosion resistant fasteners

Selected Options & Accessories:

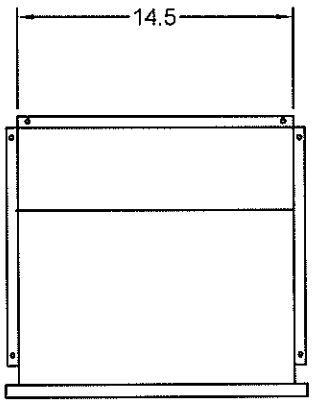
Motor with Thermal Overload
UL/cUL 705 Listed - "Power Ventilators"
Damper Mounted, WD-430-PB-14X14, Gravity Operated, Not Coated
Long Wall Hsg, Flush Exterior, w/ OSHA Grd.
Motor Access: From Int. of Bldg.
Weatherhood, Galvanized 90 deg. with Bird Screen
Unit Warranty: 1 Yr (Standard)

90 Degree Weatherhood

Standard Construction Features:
Galvanized Steel or aluminum construction. 0.5 welded wire birdscreen. Prepunched mounting holes. Field assembled.



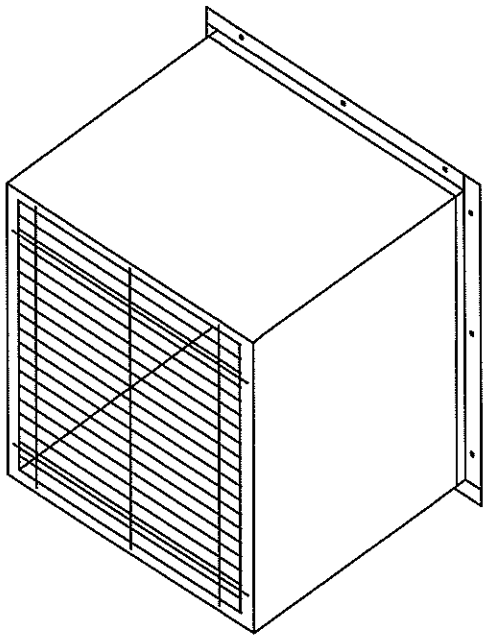
SIDE VIEW

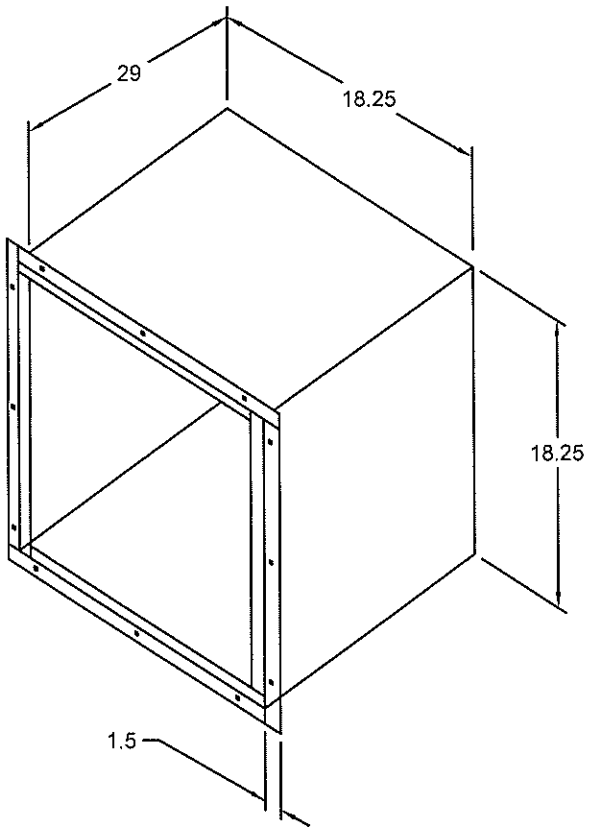


ELEVATION VIEW

Long Wall Housing

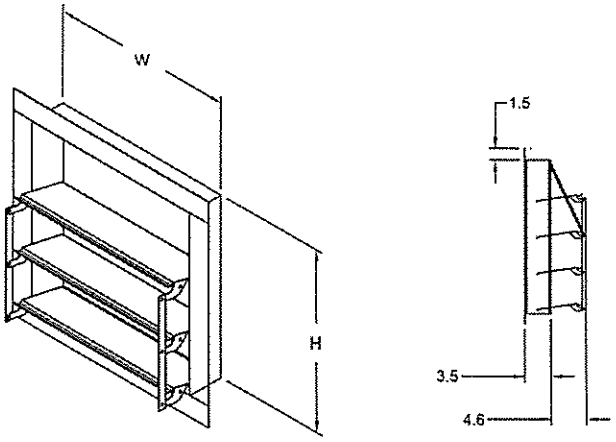
Standard Construction Features:
- Galvanized steel construction - Heavy gauge mounting flanges - Pre-punched mounting holes - Inside flanges allow damper to be mounted - Overlapping weatherhood flange keeps rain out - OSHA Protective guard of welded steel wire completely protects the drive side of the wall housing.





Notes: All dimensions shown are in units of in.

Vertical Mount Intake Damper
Model: WD-430



Standard Construction Features:

- Model WD-430 is a vertical mount gravity intake damper used vertically within ductwork or wall openings -- Maximum velocity of 2,500 ft/min and a maximum temperature of 180 F - Comes with an adjustable spring tension for opening and closing - Galvanized frame with a flush mounting flange on intake - Steel axle material - Synthetic axle bearings

Damper Configuration:

ID #:	Tag:	Quantity:	W (in.):	H (in.):	Act Qty:	Actuator Model:
2	Mark 1	1	14	14	0	

Notes: All dimensions shown are in units of in.
Width And height furnished approximately 0.125 in. undersize

How can we improve our **Product Images**?

Compare

Fixture, Ceiling Mount

APPLETON ELECTRIC

Price
$385.20 / each

Deliver one time only

Auto-Reorder Every 1 Month

1 Add to Cart

+Add to list

Typically in Stock

Be the first to write a review | Ask & Answer

Item # **7D772**
Mfr. Model # **AC1575**
UNSPSC # **39111902**
Catalog Page # **N/A**
Shipping Weight **13.65 lbs.**

Country of Origin **USA** | *Country of Origin is subject to change.*

Note: Product availability is real-time updated and adjusted continuously. The product will be reserved for you when you complete your order. More

Technical Specs

Item	**Hazardous Location Lighting Fixtures**
Fixture Type	**Explosion Proof Incandescent Fixture**
Lamp Type	**Incand.**
Lamp Quantity	**1**
Lamp Designation	**300M**
Lamp Watts	**300**
Suggested Lamp Item No.	**4V625**
Fixture Wattage	**300**
Fixture Item Number	**2V738**
Mounting Bracket Item Number	**2V740**

Voltage	**120**
Description/Special Features	**For Chemical, Petro-chemical Plants, Refineries**
Housing Finish	**Gray Epoxy Powder Coated**
Finish	**Gray Epoxy Powder Coated**
Mounting	**Ceiling, 3/4" Hub**
Length	**7"**
Height	**13-3/4"**
Width	**7"**
Standards	**Class 1, Div 1, 2, Groups C, D, Class 2, Div 1, 2, Groups E, F, G, Class 3, ULE10794, UL1598**
Match Code	**3**

How can we improve our **Technical Specifications**?

Compliance and Restrictions

None

Details

Corrosion-resistant, copper-free aluminum fixture provides general and task lighting where flammable gases/vapors or combustible dusts may be present. Can be used in wet locations, indoors or out. Glass globe. Mounts on 3/4" conduit hub. Lamps not included.

Alternate Products

Compare

Item # **7D774**

Fixture, Wall Mount

APPLETON ELECTRIC

Price
$445.28 / each

Compare

Item # **7D773**

Fixture, Pendant Mount

APPLETON ELECTRIC

Price
$352.13 / each

Related Products

1 of 2 Prev | Next ›

Item # **5V972**

Incandescent Light Bulb, PS25, 205W

GE LIGHTING

Clearance Price
$5.00 / each

~~Price $17.64 / each~~

Item # **5ZM30**

Rigid Conduit, 3/4 In., 10 ft. L, Steel

GRAINGER APPROVED

Price
$41.36 / each

Item # **2A225**

Electrical Tape, 3/4 x 66 ft, 7 mil, Black

SCOTCH

Your Price
$4.99 / each

Item # **6VG24**

Twist On Wire Connector, 22-14 AWG, PK100

BUCHANAN

Price
$6.78 / pkg. of 100

Customers Also Purchased

1 of 7 Prev | Next ›

How can we improve our **Product Images**?

Compare

Line Volt Mechanical Tstat, 120 to 277VAC

COLUMBUS ELECTRIC

Price
$289.80 / each

Deliver one time only

Auto-Reorder Every 1 Month

1 Add to Cart

+Add to list

Availability for Qty 1 Go

Shipping **Pickup**

Expected to arrive **Thu. Jul 23.**

Ship to: **11980** (Change)

Add Repair & Replacement Coverage for $75.95 each.

Be the first to write a review | **Ask & Answer**

Item # **4PU50**
Mfr. Model # **EPETD8DJ**
UNSPSC # **41112209**
Catalog Page # **4223**
Shipping Weight **5.45 lbs.**

Country of Origin **China** | *Country of Origin is subject to change.*

Note: Product availability is real-time updated and adjusted continuously. The product will be reserved for you when you complete your order. More

Technical Specs

Item	**Line Volt Mechanical Tstat**
Switch Type	**DPDT**
Switch Action	**Open/Close on Rise**
Number of Switches	**1**
Control Range	**50 Degrees to 90 Degrees F**
Differential	**+/- 3 Degrees F**
Height	**5-1/2"**
Width	**6-3/8"**
Depth	**5-5/8"**
Temp. Sensitivity	**+/-4 Degrees F**
Sensor Type	**Bi-Metal Actuator**
Features	**Fahrenheit/Celsius Temperature Scale**

Color	**Black and Gray**
Application	**Heating and Cooling**
Voltage Range	**120 to 277VAC**
Inductive Amps @ 120V	**4.5A**
Inductive Amps @ 208V	**4.5A**
Inductive Amps @ 240V	**4.5A**
Full Load Amps @ 120V	**15A**
Full Load Amps @ 240VAC	**4.5A**
Contact Rating Resistive @ 120V	**13.8**
Contact Rating Resistive @ 240V	**10**
Pilot Duty Contacts (VA)	**24 to 277VA**
Standards	**CSA/UL Class I Groups C and D, Class II Groups E, F and G, NEMA Class 7 Division 1 Approved**

How can we improve our **Technical Specifications**?

Compliance and Restrictions

None

Alternate Products

Compare

Item # **6GVX9**

Line Volt Mechanical Tstat, 120 to 277VAC

COLUMBUS ELECTRIC

Price
$398.93 / each

Customers Also Viewed

1 of 2 Prev | Next ›

Line Volt Mechanical Tstat, 120 to 277VAC

Item # **6GVX9**

COLUMBUS ELECTRIC

Price
$443.25

1 Add to Cart

Line Volt Mechanical Tstat, 24 to 277VAC

Item # **4MY92**

PECO

Price
$114.30

1 Add to Cart

Shutter, Wall, 12 In

Item # **4C556**

DAYTON

Price
$45.65

1 Add to Cart

Line Volt Mechanical Tstat, 24 to 277VAC

Item # **4E636**

PECO

Price
$66.00

1 Add to Cart

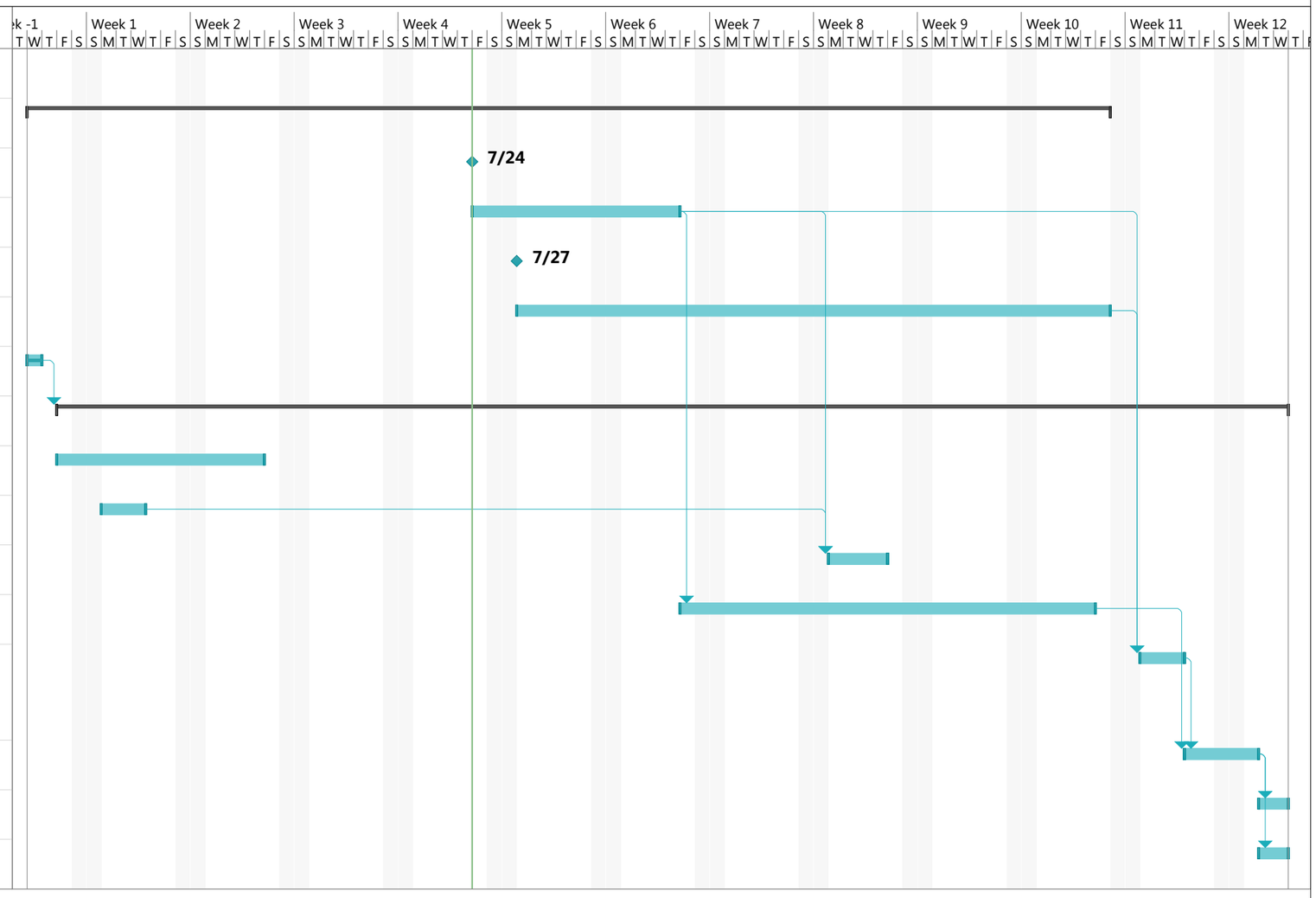
Customers Also Purchased

1 of 7 Prev | Next ›

APPENDIX B

NYSDEC COLLEGE POINT 3
LNAPL Recovery System
Preliminary Construction Schedule

ID	Task Mode	Task Name	Duration	Start	Finish
1					
2		**Pre Construction Tasks**	**53 days**	**Wed 6/24/15**	**Fri 9/4/15**
3		Work Plan	0 days	Fri 7/24/15	Fri 7/24/15
4		Work Plan Approval	10 days	Fri 7/24/15	Thu 8/6/15
5		Health and Safety Plan, HASP	0 days	Mon 7/27/15	Mon 7/27/15
6		NYC DOB Building Permit	30 days	Mon 7/27/15	Fri 9/4/15
7		811 Utility Markouts	1 day	Wed 6/24/15	Wed 6/24/15
8		**Construction Tasks**	**59 days**	**Fri 6/26/15**	**Wed 9/16/15**
9		Electrical Service Installation	10 days	Fri 6/26/15	Thu 7/9/15
10		Monitoring Well Installation	3 days	Mon 6/29/15	Wed 7/1/15
11		Recovery Well Installation	4 days	Mon 8/17/15	Thu 8/20/15
12		Recovery System Shop Fabrication	20 days	Fri 8/7/15	Thu 9/3/15
13		Recovery System Foundation Construction	3 days	Mon 9/7/15	Wed 9/9/15
14		System Enclosure Installation	3 days	Thu 9/10/15	Mon 9/14/15
15		System Testing	2 days	Tue 9/15/15	Wed 9/16/15
16		Site Restoration	2 days	Tue 9/15/15	Wed 9/16/15



Project: College Point 3 Construc

Task	Project Summary	Manual Task	Start-only	Deadline	
Split	Inactive Task	Duration-only	Finish-only	Progress	
Milestone	Inactive Milestone	Manual Summary Rollup	External Tasks	Manual Progress	
Summary	Inactive Summary	Manual Summary	External Milestone		

APPENDIX C

Startup Plan

College Point 3 Site

Site Number: 241122
Contract No.: C100902
Callout ID: 122995

College Point, Queens, New York

Prepared for:

New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau B
625 Broadway, 12th Floor
Albany, New York 12233-7017

Prepared by:

EnviroTrac Ltd.
5 Old Dock Road
Yaphank, NY 11980

July 2015

GENERAL DESCRIPTION:

The following text describes the start up, testing and operation for the Oil Skimmer system as constructed. The Oil Skimmer System was installed to operate at two (2) recovery wells located at the New York State Department of Environmental Conservation (NYSDEC), College Point 3 Site, located at 222 Capstan Court, College Point, New York, as per the scope of work provided by AECOM (Engineer).

The system consists of one (1) portable oil skimmer pump that will be rotated between two (2) separate recovery wells. The skimmer will continuously operate at each well and extract recoverable LNAPL which will be conveyed into a 55 gallon steel storage drum located adjacent to the skimmer. The drum will be equipped with a high level float switch which will shut down the skimmer in the event the drum reaches full level. The drum will also be equipped with a liquid level sensor that will relay fluid levels to a control panel that will remotely relay any preset fluid levels to the system operator. All equipment will be housed in a prefabricated enclosure that will encompass the two recovery wells and all associated equipment.

Section 1 – Visual Inspection

This visual inspection section is to verify that the equipment installed:

- has not been damaged during the shipping process,
- all the equipment required has been included,
- the equipment supplied is configured correctly as per the approved Process & Instrumentation Diagram and are properly identified.

Refer to Figures 3 and 4 of the Work Plan for equipment layout and Process & Instrumentation Diagrams (P&ID).

A. Environmental Equipment Enclosure

- ❑ Inspect exterior of equipment enclosure noting any questionable defects or blemishes that could be a result of negligence or damage incurred during construction or transport.
- ❑ Inspect interior of equipment enclosure noting any questionable defects or blemishes that could be a result of negligence or damage incurred during construction or transport.
- ❑ The enclosure is equipped with lights, heater, exhaust fan, and exhaust louvers, and that each is free of any damage or defects.
- ❑ Inspect all major remedial system components contained within the enclosure for any damage or defects, which includes:

  Oil Skimmer System

- Oil skimmer assembly and control panel
- Collection and storage drum
- Drum spill containment pallet
- Main control panel (MCP) and telemetry unit
- All associated sensors, gauges, and switches
- System piping and hoses

B. Oil Skimmer System - Equipment Checklist

Equipment	Present	Visual Inspection	Proper Process Configuration	Maintenance / Frequency
Oil Skimmer Assembly, Oil Skimmer, Inc. Model 6V (OS-1)				Biannual
Oil Skimmer Cart				Inspect annual
Oil Skimmer Control Panel				Inspect Monthly
Oil Skimmer High Level Float Switch (LSHH-101)				Inspect Monthly
55 Gallon, Steel Storage Drum (x2) (T-1 & T-2)				Inspect Monthly
Drum Spill Containment Pallet				Inspect Monthly
Storage Drum Level Sensor (LT-102)				Inspect Monthly
Lower Explosive Limit Sensor (LEL)				Biannual
Exhaust Fan (F-01)				Inspect Monthly
Exhaust Fan Thermostat				Inspect Monthly
Room Heater (H-1)				Inspect Monthly
Room Heater Thermostat				Inspect Monthly
Light Fixtures				Inspect Monthly

C. Master Control Panel & Electrical Distribution Panel - Equipment Checklist

Equipment	Present	Visual Inspection	Proper Process Configuration	Maintenance / Frequency
Master Control Panel (MCP)				Inspect Monthly
Telemetry Unit				Inspect Monthly
Electrical Distribution Panel				Inspect Monthly

Section 2 – Electrical Inspection

The following checklist is to visually inspect wiring connections noting any obvious wiring insulation flaws and other defects including loose or undesirable connections and to record certain information.

- ❑ Inspect conductor and ground connections at the service panel
- ❑ Inspect main and branch circuit breaker connections at service panel
- ❑ Inspect wiring connections at master control panel terminal strips
- ❑ Inspect wiring connections at master control panel I.S. relay(s)
- ❑ Inspect wiring connections at master control panel
- ❑ Inspect and record overload settings at control panel motor starters

  M1 _____amps (Oil Skimmer Motor)
- ❑ Inspect wiring connections at all accessible secondary system components (sensors, switches, lights, fans, heaters, etc.)
- ❑ Inspect the interior and exterior of the master control panel and service panel to ensure no dust, dirt or debris is contained within the enclosures. Also check to ensure that no water or condensation has accumulated inside the enclosure or on the components within the enclosure. When this inspection procedure is completed, ensure that all enclosure covers and doors are closed and secured before energizing system.

Notes:

_____

_____

_____

Section 3 – Live Electrical Inspection

Note: Live electrical inspection of the system requires power be supplied to the system while enclosures are open and equipment is energized. Individuals trained and experienced in recording information while high power is present must only perform the following procedures. Ensure that any enclosure that is not being inspected has its cover closed and secured.

- ❑ Check supply voltage at the service panel leg to leg and leg to ground and record:
  _____L1 to L2; _____L1 to L3; _____L2 to L3; _____L1 to ground; _____L2 to ground; _____L3 to ground

*Proceed only if site voltage is within proper operating parameters.

Override or alarm condition simulation checklist

- ❑ Manually actuate liquid high level switch for the following conditions– check for logic and alarm light:
  - ❑ Drum float switch, LSHH-101, high level switch activation

Amperage draw checklist

Note: amperage test on some equipment must be taken during operational testing.

- ❑ Oil Skimmer Motor – check for running amps
  _____L1 run amps; _____L2 run amps; _____L3 run amps

Notes:

_____

_____

_____

_____

Section 4 – INITIAL OPERATION TEST / SYSTEM TESTING

This initial operation test is provided to ensure that the various components operate properly as a system, that the system is free of leaks and operates at the designed performance.

Initial Operation Test Start-up Procedure:

1. Ensure all circuit breakers in the service panel are in the **OFF** positions.
2. Verify that all system components are installed correctly to meet the design requirement and to meet all component manufacturer recommendations.
3. Verify that the Oil Skimmer tubing is positioned correctly in the selected recovery well.
4. Ensure all power is locked out / tagged out per all applicable procedures.
5. Open door of master control panel and turn the control circuit breaker to the **ON** position. Close the door of the master control panel when done.
6. Ensure all enclosures are **closed** and secured.
7. Ensure all selector switches at the master control panel are in the **OFF** positions.
8. Ensure all selector switches at the oil skimmer control panel are in the **OFF** positions.

9. Remove any lock out / tag out devices in accordance with all applicable procedures.

10. Apply power to the system and components in the equipment enclosure by turning the applicable circuit breakers in the service panel to the **ON** positions.

11. Turn the selector switch for the Oil Skimmer Enable on the MCP to the **Auto** position.

12. Turn the selector switch for the Oil Skimmer on the Oil Skimmer Control Panel to the **Manual** position.

13. Verify that the oil skimmer is operating as specified by the manufacturer.

14. Turn the selector switch for the Oil Skimmer on the Oil Skimmer Control Panel to the **Auto** position.

Initial Operation Test - System Process:

The selector switch for the Oil Skimmer will actuate the green RUN indicator. While the skimmer is operating, the indicator light will illuminate. When the skimmer shuts off, the green indicator will go out. Once started the skimmer will operate until the one of the alarms interrupt operation or the selector switch is turned to the **OFF** position.

Forced Alarm Conditions:
During the initial testing, the system will be forced into alarm conditions that can occur along the process stream to ensure the controls are operating as designed.

1. OIL STORAGE DRUM LEVEL SWITCH, LS-101 - HIGH LEVEL ALARM
   While the entire system is operating manually lift the liquid level switch float. Once this occurs, the Oil Skimmer will shut down.

2. OIL STORAGE DRUM LEVEL SENSOR/TRANSMITTER, LT-102 – HIGH LEVEL ALARM
   While the entire system is operating, manually block the sensor to trigger a high level condition. This will create a false high level alarm, interrupting power to the Oil Skimmer. An alarm condition will also be generated at the MCP illuminating the associated red alarm light and initiating a remote alert via the system telemetry unit.

3. SYSTEM ENCLOSURE LEL SENSOR, LEL – HIGH LEVEL ALARM
   While the entire system is operating, use the supplied calibration gas to trigger a high level condition as per the LEL sensor's manufacturer's recommendations. This will result in a high LEL alarm at the MCP, illuminating the associated red alarm light. This alarm condition will also trigger the enclosure exhaust fan to activate, overriding the room thermostat. The fan will stay operational until the alarm condition is cleared. The alarm condition will also trigger a remote alert via the system telemetry unit.

*To clear alarm conditions correct the alarm cause and then hit the Alarm Reset button on the MCP. All indicator lights should turn off, and the system should then be operable in auto mode.

Visual Mechanical Inspection During Initial Operation Phase

- Inspect piping, valves, and connections for leaks.
- Ensure all pressure and vacuum indicators are operational.
- Ensure proper set points of level switches and sensors
- Ensure all storage drums are properly closed, secured, and positioned on the designated spill containment pallets.

Notes:_____
_____
_____

Initial Operation Test Shutdown Procedure:

The following procedure will represent a normal, non-emergency shutdown of the process equipment in preparation any maintenance procedures that may need to be performed.

1. Turn the selector switch for the Oil Skimmer Run on the Oil Skimmer Control Panel to the **OFF** position. The Oil Skimmer will stop operating.

2. Turn the selector switch for the Oil Skimmer Enable on the MCP to the **OFF** position.

3. At the electrical distribution panel, turn the circuit breakers for the Oil Skimmer and the master control panel to the **OFF** positions.

SECTION 5 – SYSTEM START-UP – LONG TERM OPERATION

Preparation:
System start-up for long term operation will occur after the initial operation system testing has been completed. All permanent piping configurations should be completed and all electrical wiring should also have been completed. All work performed must conform to any applicable local, state, and national codes. The environmental enclosure and associated treatment equipment within are assembled according to the latest National Electric Code regulations.

These procedures are written assuming that all power is disconnected, locked out and tagged out per all applicable standards at the start of Step 1.

1. Verify that all Main Control Panel and Oil Skimmer Panel switches are set to the **OFF** position and that all system components are installed correctly and are in good working condition.

2. Open the electrical distribution panel and ensure all circuit breakers are in the **OFF** position. Close the cover of the service panel when finished.

3. Open the master control panel and turn the control circuit breaker, oil skimmer breaker, and the exhaust fan breaker to the **ON** position. Close and secure the MCP door.

4. Apply power to the treatment system from the main power source, located outside the system enclosure adjacent to the electrical service meter.

5. Open the electrical distribution panel door and turn the circuit breakers for the following to the **ON** positions:

   - Equipment room heater
   - MCP
   - Interior Lighting
   - Exterior Lighting
   - GFI Outlet No. 1
   - GFI Outlet No. 2

5. The system having operated in the initial system startup test, must have the following maintenance items checked prior to restarting:

   - The Oil Skimmer is install and operating correctly in accordance with the manufacturer's specifications. The Oil Skimmer tubing is properly installed and positioned down the selected recovery well. Adjust as necessary.

   - Verify the piping/hoses that run between the Oil Skimmer and the active storage drum is free of any leaks and is positioned correctly. Check for leaks within the piping system. Tighten/adjust as required.

6. Valve configuration for system start-up:

   - All valves along the oil conveyance piping between the Oil Skimmer and the storage drum should be completely **OPEN**.

7. Selector switches at Main Control Panel configuration:

   - Oil Skimmer Enable – Place selector switch in the **ON** position

8. Selector switches at Oil Skimmer Panel configuration:

   - Oil Skimmer Run – Place selector switch in the **AUTO** position

The system will run automatically in response to sensors located along the process stream. Minor adjustments will be necessary during normal operating conditions as site conditions change and after maintenance procedures are performed.

<u>Normal Shutdown Procedure</u>:
The following procedure will represent a normal shut down procedure. The same shutdown procedure of the process equipment will be performed in preparation for such items as maintenance procedures.

1. Turn the selector switch for the Oil Skimmer Run on the Oil Skimmer Control Panel to the **OFF** position. The Oil Skimmer will stop operating.

2. Turn the selector switch for the Oil Skimmer Enable on the MCP to the **OFF** position.

3. At the electrical distribution panel, turn the circuit breakers for the Oil Skimmer and the master control panel to the **OFF** positions.
4. .
5. Perform all applicable lock out and tag out procedures.

Emergency Shutdown Procedure:
The following procedure will represent a normal shut down procedure. The same shutdown procedure of the process equipment will be performed in preparation for such items as maintenance procedures.

1. Turn the Main Circuit Breaker located in the Electrical Distribution Panel, located on the exterior of the System Enclosure, to the **OFF** position. All System components will stop operating.

2. Perform all applicable lock out and tag out procedures.

HEALTH & SAFETY PLAN

College Point 3
Site Number 241122
Contract Number C100902
Location: College Point
Queens County, New York

Prepared for:

New York State Department of Environmental Conservation Division of Environmental Remediation Bureau B
625 Broadway
Albany, New York 12233-7017

Prepared by:

EnviroTrac Ltd. 5
Old Dock Road
Yaphank, NY 11980

Version 2.0 – 08/10/15

HEALTH & SAFETY PLAN

College Point 3
Site Number 241122
Contract Number C100902
Location: College Point
Queens County, New York

Document Preparation, Reviews, Approvals

Prepared by: _____ 8/10/15

Michael Clark, CHMM — **Date**

(Health and Safety Coordinator)

Reviewed By: _____ 8-10-2015

John A. Martin, MPH CIH CHMM — **Date**

(Certified Industrial Hygienist)

EnviroTrac
Environmental Services

TABLE OF CONTENTS

APPENDICES

I. INTRODUCTION

This Health and Safety Plan (HASP) has been prepared to identify and address potential health and safety concerns that may be encountered as a result of the construction activities that will be conducted at the College Point 3 Site located at College Point, Queens, New York (Site). Specifically this plan applies to the activities detailed in: College Point 3 (Site Number 241122, Work Assignment D007622-10.1), 2-22 Capstan Ct, College Point, Queens, NY

The Work Plan is to implement an LNAPL Recovery Pilot Test for Site Number 241122 including drilling of six wells, two of the wells will have recovery systems with piping and power installed through trenching approx. 25 feet long and four feet in depth to a remediation shed where the LNAPL will be stored in 55-gallon drums for transport and disposal. The primary contaminant of concern during site activities is Polychlorinated Biphenyls (PCBs). Other contaminants of concern are Volatile Organic Compounds (VOCs) / Semi-Volatile Organic Compounds (SVOCs), metals, and pesticides.

The procedures were developed in accordance with Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response (HAZWOPER) Standard 29 CFR 1910.120.

II. OBJECTIVES

The objective of this HASP is to protect on-site worker health and safety during field activities at the Site, as well as mitigate any potential off-site community impacts. General guidelines in the HASP are provided to assure that safe working conditions exist at the Site. This HASP outlines minimum health and safety requirements; and any discrepancies between this HASP and any federal, state, OSHA, or other applicable governing body's requirements shall be resolved in favor of the more stringent requirements. The health and safety procedures set forth in this plan have been established based on analysis of potential hazards and protection measures have been selected in response to these potential risks. The HASP will be modified if unforeseen changes occur while work is in progress. This plan includes health and safety procedures required for field activities performed at the Site. It has been designed to meet the following objectives:

- Evaluate the risk associated with each operation;
- Provide for identification, recognition, evaluation, and control of health, safety, and environmental hazards (if any);
- Provide the requirements for an optimum, safe, and healthful work environment, in which personnel are not exposed to avoidable risks, accidents, or injuries in the performance of their duties;
- Identify the roles and responsibilities of on-Site personnel; and
- Establish personnel protection standards and mandatory safety practices and procedures for all on-Site personnel.
- This document will be periodically reviewed to ensure that it is current and appropriate.

1.0 HEALTH AND SAFETY ORGANIZATION

A. Health and Safety Coordinator: Mr. Michael Clark, MS, CHMM, will serve as the Health and Safety Coordinator. Mr. Clark is Director of Safety and Health for EnviroTrac and has twenty seven years of experience in the environmental, health, and safety field including managing hazardous waste site remediation. He has a working knowledge of federal and state occupational health and safety regulations and is familiar with air monitoring techniques and the development of health and safety programs for personnel working in potentially toxic atmosphere. In addition to developing this site specific Health and Safety Plan (HASP) Mr. Clark's responsibilities will include the following:

1. Implementation of the HASP.

2. Modification of the HASP as necessary to address new tasks and changing site conditions

3. Initial training of on-site workers with respect to the contents of the HASP.

4. Be available during normal business hours for consultation by the Safety Officer.

5. Be available to assist the Safety Officer in follow-up training if either new tasks are to be performed or changes in site conditions occur.

B. Safety Officer: Mr. Dave Lorthioir, PE will be the designated Safety Officer. Mr. Lorthioir has over twenty years of experience in the remediation of hazardous waste sites or related field experience. He has formal training in health and safety and is conversant with federal and state regulations governing occupational health and safety. He is certified in CPR and first aid and has experience and training in the implementation of personal protection and air monitoring programs. Mr. Lorthioir has "hands-on" experience with the operation and maintenance of real-time air monitoring equipment and is thoroughly knowledgeable of the operation and maintenance of air-purifying respirators (APR) and supplied-air respirators (SAR) including SCBA and airline respirators.

In addition to meeting the above qualifications, Mr. Lorthioir will be responsible for the following minimum requirements:

1. Implementation, enforcement, and monitoring of the HASP.
2. Pre-construction indoctrination and periodic training of all on-site personnel with regard to this safety plan and other safety requirements to be observed during construction, including:
    i. Potential hazards.
    ii. Personal hygiene principles.
    iii. PPE.
    iv. Respiratory protection equipment usage and fit testing.
    v. Emergency procedures dealing with fire and medical situations.
    vi. Conduct daily update meetings in regard to health and safety.
3. Alerting the **ENGINEER's** on-site representative prior to the starting any particular hazardous work.
4. Informing project personnel of the New York State Labor Law Section 876 (Right-to-Know Law)
5. The maintenance of separation of Exclusion Zone (Dirty) from the Support Zone (Clean) areas as

described hereafter.

C. Health and Safety Technicians: Mr. Mike Alliegro will be designated the lead Health and Safety Technician (HST). Mr. Alliegro has fifteen years of hazardous waste site or related experience and is knowledgeable of applicable occupational health and safety regulations. He is certified in CPR and first aid. He will be under direct supervision of the SO during on-site work. Mr. Alliegro is familiar with the operations, maintenance and calibration of monitoring equipment that will be used in this remediation.

D. Medical Consultant: A Medical Consultant (MC) who is a physician, certified in occupational medicine will be retained for the project. The physician will have experience in the occupational health area and will be familiar with potential site hazards of remedial action projects. The MC will also be available to provide annual physicals and to provide additional medical evaluations of personnel when necessary.

The MC for this project will be: Dr. Arnold Panzer, of Land, Sea & Air Medical, 910 Rt 109, North Lindenhurst, NY 11757; Phone: 631-225-3060.

Qualifications of the HSC, SO, and HST are presented in Appendix C.

2.0 SITE DESCRIPTION AND HAZARD ASSESSMENT

A. Site Description

The Site is a New York State inactive hazardous waste Site and is located at College Point, Queens, New York. Historical use of the Site, subsurface investigations and air monitoring events determined Polychlorinated Biphenyls (PCBs) as the primary contaminant of concern. Secondary contaminants of concern are Volatile Organic Compounds (VOCs), Semi-volatile Organic Compounds (SVOCs), metals, and pesticides. A site map and general site plan are presented in Appendix A. The Safety Data Sheet for PCBs is presented in Appendix D.

The College Point 3 site is located at 2-22 Capstan Court College Point, Queens County, New York. The site is a relatively flat parcel that consists of a residential condominium development and is approximately 16 acres in size. The northern portion of the site is bordered by the East River. The site lies within a predominately residential area and is currently zoned for residential use. Residential properties are located to the south, east, and west of the property. No wetlands or surface expressions of groundwater are located on the property.

The scope of work consists of the installation and development of four monitoring wells to a depth of 20 feet below ground surface (bgs). The installation and development of two LNAPL recovery wells to a depth of 20 feet bgs. Erect an enclosure for the recovery system; the system will consist of an (one) oil skimmer to be located and switched between recovery wells having the greater amount of contaminants to extract from the recovery wells. Recover contaminants and store in (up to) three 55-gallon drums.

An electrical service line will be installed through a trench (approx. 25 feet long and four feet deep) from the existing electrical vault to the recovery system enclosure to power the remediation system. Until service is connected, a portable generator will be used to power the remediation system.

B. Hazard Assessment – Chemical Exposure

The primary contaminant of concern during site activities is Polychlorinated Biphenyls (PCBs). The Safety Data Sheet for PCBs is presented in Appendix D of this HASP. Other contaminants of concern are Volatile Organic Compounds (VOCs) / Semi-Volatile Organic Compounds (SVOCs), metals, and pesticides.

The characteristics of compounds that can potentially be encountered at the Site are discussed below for information purposes. Adherence to the safety and health guidelines in this HASP should reduce the potential for exposure to the compounds discussed below.

Polychlorinated Biphenyls (PCBs)
PCBs have historically been used from a number of sources including, but not limited to: electrical systems, hydraulic oils, lubricants, cutting oils, printer's ink, and asphalt. Exposure to PCBs can occur through many routes, including inhalation, and through unbroken skin without immediate pain or irritation. Acute effects of PCB exposure can include eye, skin, nose, and throat irritation. Chronic effects of PCB exposure can include skin swelling and redness, gastro-intestinal disturbances, and neurological effects such as headache, dizziness, nervousness, and numbness of extremities. PCBs are suspected human carcinogens that can cause liver cancer. PCBs can accumulate in fatty tissues and result in health effects after the initial exposure has occurred. The primary route of exposure for PCBs is inhalation, dermal contact, and ingestion. Exposure through direct contact is possible and will be minimized through the use of PPE as prescribed in Section 7.0

Volatile Organic Compounds (VOCs) and Semi-Volatile Organic Compounds (SVOCs)
Volatile organic compounds (VOCs), such as benzene, toluene, ethyl benzene, and xylene (BTEX) are present at low concentrations as a Light Non-aqueous Phase Liquids (LNAPL) in ground water. These compounds generally have a depressant effect on the central nervous system (CNS), may cause chronic liver and kidney damage, and some are suspected human carcinogens. Benzene is a known human carcinogen. Acute exposure may include headache, dizziness, nausea, and skin and eye irritation. The primary route of exposure to VOCs is through inhalation and therefore air monitoring and respiratory protection is the primary control against exposure to VOCs.

Semi-Volatile Organic Compounds (SVOCs) have been linked to serious adverse health effects. Many SVOCs are endocrine-disrupting chemicals (EDCs), which mean they interfere with, mimic or block endogenous hormones. EDCs are suspected to contribute to the occurrence of neurodevelopmental and behavioral problems (e.g., mental retardation or attention deficit disorder), reproductive abnormalities (e.g., decreased fertility or hypospadias), metabolic disorders (e.g., obesity, diabetes), and cancer (e.g., breast, prostate, and testicular cancers). Routes of exposure for SVOCs include inhalation, dermal contact, and ingestion.

Air monitoring will be completed as specified in Section 11.0 to minimize airborne exposures. Exposure through direct contact is possible and will be minimized through the use of PPE as prescribed in Section 7.0.

Potential routes by which workers could be exposed generally include: inhalation, ingestion, dermal contact, and injection. The following control measures will be used alleviate exposure by routes of entry:

Metals
The target organs primarily affected by prolonged exposure to metals are the respiratory tract, gastrointestinal tract, central nervous system, kidneys, and liver. Many metals are toxic to the kidneys, even at very low doses. Each heavy metal has its own characteristic symptom cluster. For example, lead causes decreased mental ability, weakness (especially hands), headache, abdominal cramps, diarrhea, and anemia. Lead can also affect the blood forming mechanism, kidneys, and the peripheral nervous system. Long-term effects also vary. Lead toxicity can cause permanent kidney and brain damage; cadmium can cause kidney or lung disease. Chromium, beryllium, arsenic, and cadmium have been implicated as human carcinogens.

The primary exposure routes for metals during site activities are inhalation or ingestion of dust particles. Metals may also be indirectly ingested as a result of inhalation and ingested as the body attempts to expel the material through mucus from the lungs that is then swallowed and ingested.

Pesticides
All cause acute symptoms of apprehension, irritability, dizziness, disturbed equilibrium, tremor, and convulsions. Cyclodienes may cause convulsions without any other initial symptoms. Chlorocyclohexanes can cause anemia. Cyclodienes and chlorocyclohexanes cause liver toxicity and can cause permanent kidney damage.

The following controls shall be implemented to control potential exposures per route of entry:

Control of Potential Exposure by Route of Entry

Route of Entry	Control of Potential Exposure
INHALATION	Tasks associated with this project have a risk of exposure to inhalation hazards at or near published exposure limits. To control exposure, the following precautions will be followed by all site workers and visitors: Area air monitoring for the presence of VOCs and Particulates will be conducted per the Air Monitoring Program (AMP), Section 11 of this HASP. Control measures to protect workers and the public will be implemented according to the AMP. If there is a change in the scope of work, the SO will stop work and the new conditions will be evaluated for potential inhalation hazards. Work will not proceed until the new conditions are assessed and workers health is addressed.

INGESTION	Tasks associated with this project have a risk of exposure to chemicals or hazardous substances that pose mild to moderate toxicity if ingested. To control exposure, the following precautions will be followed by all site workers and visitors: • Follow good hygiene practices - wash hands, face, and exposed skin with soap and water after work and prior to eating, drinking, smoking, or applying cosmetics or lip balm or immediately after contact with chemicals or hazardous substances. Do not touch mouth, nose, or eyes with unwashed hands or with used gloves. • Chemical-resistant gloves (e.g. nitrile, neoprene, or butyl rubber gloves) are to be worn during hands-on inspections, removing liquid or cleaning, handling chemicals or hazardous substances, or during other tasks that involve direct contact with chemicals or hazardous substances.
DERMAL CONTACT	Tasks associated with this project have a risk of exposure to chemicals or hazardous substances that pose mild to moderate toxicity through dermal contact, including contact with eyes. To control exposure, the following precautions will be followed by all site workers and visitors: • Follow good hygiene practices - wash hands, face, and exposed skin with soap and water after work and prior to eating, drinking, smoking, or applying cosmetics or lip balm or immediately after contact with chemicals or hazardous substances. Do not touch mouth, nose, or eyes with unwashed hands or with used gloves. • Safety glasses with side shields that comply with ANSI Z87.1 requirements are to be worn at all times in the work zone. When working with liquids under pressure, goggles or a faceshield attached to the hardhat, in addition to the safety glasses is required. • Chemical-resistant gloves (e.g. nitrile, neoprene, or butyl rubber gloves) are to be worn during hands-on inspections, removing liquid or cleaning, handling chemicals or hazardous substances, or during other tasks that involve direct contact with chemicals or hazardous substances. • Safety shoes/boots that comply with ANSI Z41, ASTM F-2412, or ASTM F-2413 are to be worn while performing tasks in the work zone. Long pants and sleeved shirts are required to be worn at all times in the work zone. When working with liquid permanganate, a splash-resistant chemical suit (i.e., Saranex suit) will be worn by workers.

INJECTION	Tasks associated with this project have a risk of exposure to chemicals, hazardous substances, and biological hazards that pose mild to moderate toxicity through injection. Injection is the puncturing or abrasion of the skin allowing toxins to enter the body. To control exposure, the following precautions will be followed by all site workers and visitors: • Abrasive-resistant or cut-resistant gloves (i.e., leather, Mechanix®, Kevlar-type, etc.) are to be worn while working with tools or manipulating objects that can cause cuts or abrasions to the hands. • Chemical-resistant gloves (e.g. nitrile/neoprene/butyl rubber gloves) are to be worn during hands-on inspections, removing liquid or cleaning, handling chemicals or hazardous substances, or during other tasks that could result in direct contact with chemicals or hazardous substances. • Safety glasses with side shields that comply with ANSI Z87.1 requirements are to be worn at all times in the work zone. When working with liquids under pressure, goggles or a faceshield attached to the hardhat, in addition to the safety glasses is required. • Long pants and sleeved shirts are required to be worn at all times in the work zone. • Safety shoes/boots that comply with ANSI Z41, ASTM F-2412, or ASTM F-2413 are to be worn in the work zone. • Be aware of biting/stinging/poisonous insects, poisonous or thorny plants, and any animal in the work zone and take precautions to avoid contact or exposure with these hazards. • Injection of hydraulic fluid can occur from contact with pressurized hydraulic lines on hydraulic powered equipment. Do not come in close proximity to pressurized lines. Depressurize lines prior to inspection, repair, or maintenance of equipment.

C. Hazard Assessment – Physical Hazards

Ground disturbance projects, such as remediation system installation and well installation will follow the procedures outlined in the ET Ground Disturbance Practice are presented in Appendix E.

Risk Characterization

Precautions will be taken to prevent injuries and exposures to the following potential hazards and implement control measure to reduce any potential risks identified on the next table.

Potential Site Hazards and Risk Characterization		
Hazards	**Risk Characterizations**	**Control Measures**
SLIP/TRIP/FALL	Potential wet, or slippery conditions due to weather, on-site spills, on-site water, and drainage/runoff.	**Inspect/be aware of ground conditions and wet or slippery conditions.** **Use sand or other material to alleviate slippery conditions and/or to melt snow/ice.**

	Potential slips, trips, and falls may result due to the proposed equipment and activities at the site which will include but not limited to the following: drilling/excavation, well installation, system installation, loading / unloading, traffic control, etc.	**Clear trip hazards, when possible.** **Use good housekeeping practices and maintain the work zone free of debris and have equipment, supplies, and tools organized and out of main travel paths.** **Focus on path and travel and keep solid footing.**
INJURY TO BACK	Lifting of equipment, supplies, and materials. Performing manual equipment operations like shoveling, raking, sweeping, etc. Removal of well covers, manway covers, or manholes. Moving / lifting / carrying supplies, equipment, and materials around the work zone. Lifting and maneuvering cones and barriers to establish Work Zone Protection.	**Use proper lifting: keep load as close to the body as possible, do not twist torso, and turn by moving your feet.** **Use proper bending techniques: bend at the knees, straighten back, lift and pull using legs, and do not use back or shoulders to lift up or pull.** **Use proper manual equipment techniques for shoveling, raking, sweeping: turn by moving your feet and do not twist torso.** **Get help or use mechanical lifting equipment as needed.**
INJURY TO FOOT/FEET	Potential movement/dropping of equipment, drums, tanks, and buckets onto foot/feet.	**Wear ANSI/ASTM compliant safety boots with steel, composite, or aluminum toes while performing any tasks on site.** **Properly secure equipment and objects. Anticipate and recognize any potential conditions which may cause the dropping of equipment (i.e., ground conditions and wet, icy, or slippery conditions).** **Ensure proper clearance when lowering outriggers on equipment.**
INJURY TO HANDS	Potential pinch points/sharp edges during equipment handling, dropping of equipment on hands. Exposure to hazardous substances from the material stored in the tanks or possible contamination in soil/ground water.	**Abrasive-resistant or cut-resistant gloves (e.g., leather, Kevlar, etc.) are to be worn while working with tools, equipment, or manipulating objects that can cause cuts or abrasions to the hands.** **Chemical-resistant gloves (Ansell TNT Nitrile) will be worn during hands-on inspections, handling contaminated soils or ground water, or handling equipment or materials that have been in contact with contaminated soil or ground water. A hazard assessment indicates that Ansell TNT Nitrile gloves will protect workers from levels of contamination in the soil and ground water found at the site.** **If site conditions change or new contaminants are identified, a hazard assessment needs to be conducted for the selection of hand protection.**

<table>
<tr>
<td>INJURY TO HEAD AND EYES</td>
<td>Potential of being struck by overhead equipment such as drill rigs, or other equipment, material, and supplies around work site.

Potential projectiles from equipment or surrounding environmental and remediation chemical spills during the proposed monitoring/sampling/injection activities.

Potential of being sprayed or splashed in eyes or face while using liquid chemicals under pressure, such as the permanganate injection.

Potential of projectiles impacting face and eyes during preclearing of boreholes.</td>
<td>Wear a hard hat in compliance with ET's Hard Hat Policy while in the Work Zone (certified ANSI Z89.1, Type 1,Class E)

Safety glasses with side shields that comply with ANSI Z87.1 requirements are to be worn at all times in the work zone.

Full faceshield attached to the hard hat in addition to safety glasses with side shields that comply with ANSI Z87.1 requirements are to be worn while using airknife for preclearing and working with liquid chemicals.</td>
</tr>
<tr>
<td>INJURY TO HEARING</td>
<td>Potential noise due to operating equipment during the proposed activities will not exceed the following levels at the designated durations:

<table>
<tr><th>Duration (dB) (hrs)</th><th>Decibel Levels.</th></tr>
<tr><td>8</td><td>90</td></tr>
<tr><td>6</td><td>92</td></tr>
<tr><td>4</td><td>95</td></tr>
<tr><td>3</td><td>97</td></tr>
<tr><td>2</td><td>100</td></tr>
<tr><td>1.5</td><td>102</td></tr>
<tr><td>1</td><td>105</td></tr>
<tr><td>0.5</td><td>110</td></tr>
<tr><td>≤0.25</td><td>115</td></tr>
</table>
</td>
<td>Wear appropriate ear protection (i.e., MAX- plugs (NRR 33dB) - Howard Leight Industrial, or equivalent or Ear muffs (NRR 20dB to 25dB)) for environment per ET's Hearing Conservation Program.</td>
</tr>
<tr>
<td>WORK IN COLD WEATHER CONDITIONS</td>
<td>Potential cold stress due to the cooler late Fall/early Winter weather conditions and outdoor working environment.

NOTE: Wet conditions will exacerbate cold.</td>
<td>Review weather forecast prior to going to site and plan accordingly.

Use appropriate protection from cold weather conditions including insulated gloves, neck and head covering, socks, and layering of clothing.

Protect from water and other wet conditions that can exacerbate cold conditions. Employees will not work in wet clothing.

Follow requirements or EnviroTrac's Heat/Cold Stress Program.</td>
</tr>
</table>

WORK IN HOT WEATHER CONDITIONS	Potential heat stress due to the warmer weather conditions or late Spring through the Summer and into later Fall. Indoor environments can produce heat stress related to temperature and lack of ventilation.	**Review weather forecast prior to going to site and plan accordingly.** **Use appropriate hot weather work apparel.** **Have fluids available on-site and ensure employees are hydrated, take frequent breaks in shade or air conditioned space, accordingly.** **Follow requirements or EnviroTrac's Heat/Cold Stress Program.**
INJURY DURING PRIVATE UTILITY MARK OUTS	Potential injury from electrocution while marking out underground utilities. Potential injury from being struck by vehicle while marking out utilities.	**Verify with a tester that there is no stray voltage on facilities connections.** **Provide for Work Zone Protection (cones and barriers), if necessary. Otherwise, observe traffic patterns and conduct work away from traffic.** **Wear Class 2 Safety Vests with retro-reflective materials.**
TRAFFIC	Potential vehicle traffic around work area	**Establish Work Zone Protection per site Maintenance and Protection of Traffic Plan** **Wear proper PPE for work zones including high visibility apparel (i.e., safety vest), safety boot, safety glasses, hard hat, and long pants.** **Be aware of on-site traffic patterns and any other activities/work being conducted at the site, including the movement of heavy equipment.** **Use buddy system, if more than one person on-site.** **A spotter is required whenever moving heavy equipment around the site or when backing any vehicle.**

AIR COMPRESSOR	Potential to be struck-by disconnected air hoses, Potential to be struck-by air stream or debris from air stream Noise from equipment may damage hearing	**All hose line connections are to be secured with whip checks or cotter pins.** **Do not point air stream at body or another person for any reason, do not use air stream to clean up or move debris.** **Follow INJURY TO HEARING requirements.**
PRE-CLEARING BOREHOLE	Potential to be struck-by debris from air stream Body part can be injured if contacts vacuum from vacuum extractor.	**Use face shield attached to hardhat along with safety glasses when preclearing.** **Place a debris catcher, such as a traffic cone, over borehole while pre-clearing to alleviate amount of debris from hole** **Do not let intake hose of vacuum extractor come in contact with body part. Shut off equipment when not actively clearing hole**
EXCAVATION/HEAVY EQUIPMENT	Potential struck-by, struck against, crushed, pinch points, and other hazard from working around heavy equipment such as the drill rig.	**Inform employees of the pinch points associated with the equipment and how to avoid injury.** **Be aware of and delineate swing radius of excavators.** **Make sure that equipment operators are aware of personnel (EYE CONTACT AND ACKNOWLEDGEMENT)** **Be aware of the potential of hydraulic fluid injection from equipment using high pressure hydraulic systems. Seek medical attention for hydraulic fluid injection injuries.**

DRILLING	Potential of injury rotating augers or being struck-by or crushed by drill rig; potential of entanglement or struck by drill rig cables; being struck by materials and supplies falling off the drill rig.	**Only trained employees are to be operating and in close proximity to drill rig when operating.** **Equipment is to be inspected on a daily basis. Equipment found deficient will not be operated until repaired.** **Equipment is to be shut off and locked out prior to approaching augers to remove cutting or for any reason.**
ELECTRICAL HAZARDS	Potential electrocution or electrical shock. Secondary hazards are potential falls from involuntary reactions from being shocked.	**Ensure all power sources are deenergized, tested, and Locked Out / Tagged Out prior to working on the system.** **Only qualified individuals are work on electrical sources and connect power and electrical equipment.**
EXPOSURE TO HAZARDOUS SUBSTANCES	Potential exposure to hazardous substances due to chemical remediation solution spills and chemical reactions due to injection of chemical remediation solution into the contaminated groundwater or activation of the chemical (i.e., vapors).	**Read the SDS sheets in Appendix B for hazardous substances which may be encountered during the proposed activities.** **Wear proper PPE for handling the chemical including faceshield / safety glasses, neoprene/butyl rubber gloves with gauntlets, sleeved shirts, full-length pants, and safety shoes with chemical resistant soles (neoprene).** **Properly decontaminate equipment, materials, and supplies in accordance with ET's Decontamination practice.** **Properly dispose of all waste and contaminated materials and properly store remediation chemicals when not being utilized.** **Properly store chemicals in sealed container or vessel within a cool, dry storage area to avoid moisture, heat sources, contaminants, and/or incompatible materials (i.e., water, acids, bases, slats of heavy metals, reducing agents, organic materials, flammable or combustible materials) that can initiate a chemical reaction or decomposition. Never**

		discard spilled or otherwise contaminated materials into trash bins or back into the original container.

3.0 TRAINING

A. OSHA Training

1. All project personnel that will be performing tasks in exclusion zone(s) and/or potentially exposed to hazardous materials will be trained in accordance with OSHA 1910.120, HAZWOPER regulations.

As part of the initial training and in conformance with the OSHA 1910.1200, Hazard Communication Standard, all project employees that will be working at the site and authorized visitors will be informed of the potential hazards of the toxic chemicals that may be encountered and of the risks associated with working at the project site.

2. Personnel that have not successfully completed the required training will not be permitted to enter the project site to perform work.

B. Safety Meetings

1. The SO will conduct daily safety meetings for each working shift that will be mandatory for all project personnel. The meetings will provide refresher courses for existing equipment and protocols, and will examine new site conditions as they are encountered.

2. Additional safety meetings will be held on an as-required basis.

C. Safety Program Triggers, Protocol and Review

If either unforeseen or potentially detrimental site-specific safety-related factor, hazard, or condition become evident during the performance of the work at this site, it will be immediately brought to the attention of the SO who will take appropriate action to stabilize and address the situation. The HSC as well as the Engineer's representative will be notified verbally and then in writing as quickly as possible for resolution. In the interim, EnviroTrac and/or its subcontractor(s) will take prudent action to establish and maintain safe working conditions and to safeguard employees, the public, and the environment.

Following resolution, the safety protocols will be reviewed for effectiveness and updated/revised as appropriate.

4.0 MEDICAL SURVEILLANCE

A. Medical surveillance and medical evaluation will be conducted in accordance with 29CFR 1910.120(f) Medical Surveillance (HAZWOPER standard) and 29CFR 1910.134(e) Medical Evaluation (respiratory protection standard). EnviroTrac and its Subcontractor(s) project positions requiring medical surveillance and medical evaluation are listed in paragraph C. below.

B. EnviroTrac has contracted the services of a Medical Consultant to provide the minimum medical examinations and surveillance specified herein. The Medical Consultant for this project will be: Dr. Arnold Panzer, of Land, Sea & Air Medical, 910 Rt 109, North Lindenhurst, NY 11757; Phone: 631-225-3060.

C. Medical Surveillance and Medical Evaluation will be required for:

1. Any and all personnel either performing work in either the hazardous or transition zones or performing work that requires respiratory protection.

2. All personnel on site who are dedicated for either emergency response or extraction purposes in the Exclusion Zone.

3. Project supervisors entering hazardous or transition zones for more than 16 hours during the length of the contract.

4. Physical examinations will not be required for people making periodic deliveries provided they do not enter hazardous or transition zones.

5.0 WORK AREAS

A. EnviroTrac will clearly lay-out and identify work areas in the field and will limit equipment, operations and personnel in the areas as defined below:

1. Exclusion Zone (EZ) – The size of exclusion zones will vary from task to task and from day-to-day. The level of PPE required in this area will be determined by the HSC and the SO after air monitoring, review of the tasks to be performed, and an on-site inspection has been conducted. The area will be clearly delineated from the Transition and Support areas. As work within the Exclusion zone proceeds, the delineating boundary will be relocated as necessary to prevent the accidental exposure of nearby people and equipment to either chemical or physical hazards. Additional exclusion zones may include injection well locations. The Exclusion Zones will be delineated by barricading (e.g., chain link, snow fencing, orange plastic fencing, cones caution tape etc.).

2. Transition Zones (TZ) - These areas occur at the interface of exclusion and support areas and will provide for the transfer of equipment and materials from the Support Zone to the Exclusion Zone, the decontamination of personnel and equipment prior to entering the Support area, and for the physical segregation of the Support and Exclusion areas. These areas will contain all required emergency equipment, and will provide areas for construction equipment storage and decontamination. If necessary, these areas will be clearly delineated by fencing (e.g., chain link, snow fencing, orange plastic fencing, cones caution tape etc.). These areas also delineate areas that although not contaminated at a particular time may become so at a later date.

3. Support Zone (SZ) - This area is the remainder of the work site and project site. The Support Zone will be clearly delineated and procedures implemented to prevent active or passive transfer of contamination from the work site. The function of the Support Zone includes:

B. An entry area for personnel, material and equipment to the Exclusion Zone of site operations through the Transition Zone;

C. An exit for decontamination personnel, materials and equipment from the "Decontamination" area of site operations;

1. The housing of site special services; and

2. A storage area for clean, safety, and work equipment.

6.0 STANDARD OPERATING SAFETY PROCEDURES (SOSP), ENGINEERING CONTROLS

A. General SOSP

1. EnviroTrac will ensure that all safety equipment and protective clothing is kept clean and well maintained.

2. All prescription eyeglasses in use on this project will be safety glasses and will be compatible with respirators or safety over glasses will be provided and required to be worn. No contact lenses will be allowed on site.

3. All disposable or reusable gloves worn on the site will be approved by the SO.

4. During periods of prolonged respirator usage in contaminated areas, respirator filters will be changed according to the change out schedule developed by the Health and Safety Coordinator; or respirator filters will always be changed either daily or after each work shift, whichever occurs first.

5. Footwear used on site will be covered by rubber boots or booties when entering or working in the Exclusion Zone area or Transition Zone. Boots or booties will be washed with water and detergents to remove dirt and contaminated sediment before leaving the Exclusion Zone or Transition Zone.

6. All PPE used on site will be decontaminated or disposed of at the end of the work day. The SO will be responsible for ensuring decontamination of PPE before reuse.

7. All respirators will be individually assigned and not interchanged between workers without cleaning and sanitizing.

8. EnviroTrac, subcontractor, and service personnel unable to pass a fit test as a result of facial hair or facial configuration will not enter or work in an area that requires respiratory protection.

9. EnviroTrac will ensure that all project personnel will have vision or corrected vision to at least 20/40 in one eye.

10. On-site personnel found to be disregarding any provision of this plan will, at the request of the SO, be barred from the project.

11. Used disposable outerwear such as coveralls, gloves, and boots will not be reused. Used disposable outerwear will be removed upon leaving the hazardous work zone and will be placed inside disposable containers provided for that purpose. These containers will be stored at the site at the designated staging area and the properly disposed at the completion of the project.

12. Protective coveralls that become torn or badly soiled will be replaced immediately.

13. Eating, drinking, chewing gum or tobacco, smoking, etc., will be prohibited in the exclusion and transition zones.

14. All personnel will thoroughly wash their hands, face, and forearms and other exposed areas with soap and water prior to eating, drinking, smoking, or applying cosmetics or lip balm.

15. Workers who have worked in a hazardous work zone will shower at the completion of the work day.

16. All personnel will wash their hands, face, and forearms before using toilet facilities.

17. No alcohol, firearms, or drugs (without a prescription) will be allowed on site at any time.

18. All personnel who are on medication will report it to the SO who will make a determination as to whether or not the individual will be allowed to work and in what capacity. The SO may require a letter from the individual's personal physician stating what limitations (if any) the medication may impose on the individual.

B. Engineering Controls - Air Emissions

When intrusive activities involving impacted soils are conducted, EnviroTrac will monitor and record control air emissions. If recorded levels are above established action levels as set forth in the Air Monitoring Plan (AMP), work will be halted and the cause(s) of the exceedance(s) will be determined and appropriate engineering controls will be instituted.

7.0 PERSONAL PROTECTIVE EQUIPMENT

A. Levels of Protection

It is anticipated that Level D protection will be required in this remediation. Although Levels A, B, and C are not planned, site conditions may be encountered that require their use. The following sections described the requirements of each level of protection.

1. Level A Protection

PPE:

a. Supplied-air respirator approved by the Mine Safety and Health Administration (MSHA) and NIOSH. Respirators may be:

- Positive-pressure SCBA; or

- Positive-pressure airline respirator (with escape bottle for Immediately Dangerous to Life and Health [IDLH] or potential for IDLH atmosphere).

b. Fully encapsulating chemical-resistant suit.

c. Coveralls.

d. Cotton long underwear.*

e. Gloves (inner), chemical-resistant.

f. Boots, chemical-resistant, steel toe and shank. (Depending on suit construction, worn over or under suit boot.)

g. Hard hat (under suit).*

h. Disposal gloves and boot covers (worn over fully encapsulating suit).

i. Cooling unit.*

j. Two-way radio communications (intrinsically safe).*

* Optional

2. Criteria for Selection:

Meeting any of these criteria warrants use of Level A protection:

a. The chemical substance has been identified and requires the highest level of protection for skin, eyes, and the respiratory system based on:

- Measures (or potential for) high concentration of atmospheric vapors, gases, or particulates, or

- Site operations and work functions involve a high potential for splash, immersion, or exposure to unexpected vapors, gases, or particulates of materials highly toxic to the skin.

b. Substances with a high degree of hazard to the skin are known or suspected to be present, and skin contact is possible.

c. Operations will be conducted in confined, poorly ventilated areas until the absence of substances requiring Level A protection is determined.

d. Direct readings on field Flame Ionization Detectors (FID) or Photoionization Detectors (PID) and similar instruments indicate high levels of unidentified vapors and gases in the air.

2. Level B Protection

1. PPE:

a. Positive-pressure SCBA (MSHA/NIOSH approved); or

b. Positive-pressure airline respirator (with escape bottle for IDLH or potential for IDLH atmosphere) MSHA/NIOSH approved;

c. Chemical-resistant clothing (overalls and long-sleeved jacket; coveralls or hooded, one- or two-piece chemical-splash suit; disposable chemical-resistant, one-piece suits);

d. Cotton long underwear;*

e. Coveralls;

f. Gloves (outer), chemical-resistant;

g. Gloves (inner), chemical-resistant;

h. Boots (inner), leather work shoe with steel toe and shank;

I. Boots (outer), chemical-resistant, (disposable);

j. Hard hat (face shield*);

k. 2-way radio communication;* and

l. Taping between suit and gloves, and suit and boots.

*Optional

2. Criteria for Selection:

Any one of the following conditions warrants use of Level B Protection:

a. The type and atmospheric concentration of toxic substances have been identified and require a high level of respiratory protection, but less skin protection than Level A. These atmospheres would:

- Have IDLH concentrations; or
- Exceed limits of protection afforded by an air-purifying mask; or
- Contain substances for which air-purifying canisters do not exist or have a low removal efficiency; or
- Contain substances requiring air-supplied equipment, but substances and/or concentrations do not represent a serious skin hazard.

b. The atmosphere contains less than 19.5% oxygen.

c. Site operations make it highly unlikely that the work being done will generate high concentrations of vapors, gases or particulates, or splashes of material that will affect the skin of personal wearing Level B protection.

d. Working in confined spaces.

e. Total atmospheric concentrations, sustained in the breathing zone, of unidentified vapors or gases range from 5 ppm above background to 500 ppm above background as measured by direct reading instruments such as the FID or PID or similar instruments, but vapors and gases are not suspected of containing high levels of chemicals toxic to skin.

3. Level C Protection

1. PPE

a. Full-face, air-purifying, cartridge- or canister-equipped respirator (MSHA/NIOSH approved) with cartridges appropriate for the respiratory hazards;

b. Chemical-resistant clothing (coveralls, hooded, one-piece or two-piece chemical splash suit; chemical-resistant hood and apron; disposable chemical-resistant coveralls);

c. Coveralls;

d. Cotton long underwear;*

e. Gloves (outer), chemical-resistant;

f. Gloves (inner), chemical-resistant;

g. Boots (inner), leather work shoes with steel toe and shank;

h. Boots (outer), chemical-resistant (disposable);*

i. Hard hat (face shield);*

j. Escape SCBA of at least 5-minute duration;

k. 2-way radio communications (inherently safe);* and

l. Taping between suit and boots, and suit and gloves.

* Optional

2. Criteria for Selection

Meeting all of these criteria permits use of Level C protection:

a. Measured air concentrations of identified substances will be reduced by the respirator to, at or below, the substance's Threshold Limit Value (TLV) or appropriate occupational exposure limit and the concentration is within the service limit of the canister.

b. Atmospheric contaminant concentrations do not exceed IDLH levels.

c. Atmospheric contaminants, liquid splashes, or other direct contact will not adversely affect the small area of the skin left unprotected by chemical-resistant clothing.

d. Job functions do not require SCBA.

e. Total readings register between background and 5 ppm above background as measured by instruments such as the FID or PID.

f. Oxygen concentrations are not less than 19.5% by volume.

g. Air will be monitored continuously.

4. Level D Protection

1. PPE:

a. Coveralls, chemical resistant;

b. Gloves (outer), chemical resistant;

c. Gloves (inner), chemical resistant;*

d. Boots (inner), safety shoes with steel toe and shank;

e. Boots (outer), chemical resistant (disposable);*

f. Hard hat;

g. Face shield;*

h. Safety glasses with side shields or chemical splash goggles;* and

i. Taping between suit and boots, and suit and gloves.*

* Optional

2. Criteria for Selection:

a. No atmospheric contaminant is present.

b. Direct reading instruments do not indicate any readings above background.

c. Job functions have been determined not to require respirator protection.

d. Anticipated Levels of Protection

1. It is anticipated that the work will be performed in Level D. A respirator will be immediately available in the event that air monitoring indicates an upgrade to Level C is required. The determination of the proper level of protection for each task will be the responsibility of the HSC and SO. These task specific levels of protection are provided below:

PERSONAL PROTECTIVE EQUIPMENT BY TASK

Task	PPE
All site Tasks	• **Hard hats** are to be worn, if required by the location or activity per to ET's Hardhat Policy. • **Safety glasses with side shields** (ANSI Z-87 + certified), or to protect against a splash hazard, safety goggles or full-face safety shields are to be worn at all times while on-site. • **Proper gloves** will be provided and used, as required. Abrasion resistant gloves (i.e., leather or similar) and chemical resistant, gauntlet style gloves (i.e., nitrile/neoprene/butyl rubber) will be used as tasks require. • **Safety boots** (ANSI Z-41, ASTM F-249, or ASTM F-2413 compliant) are to be worn, as required by the activity. Boots are to be laced and tied at all times. • **High-visibility attire**, i.e., Class 2, Safety Vests, are to be worn when employees are exposed to vehicular traffic. • **Long pants and sleeved shirts** will be worn while on site.

Drilling Operations and pre-clearing boreholes	• **Same as above, and to include:** • **Hearing Protection** NRR to protect against noise levels generated by drilling operations. • **Faceshield attached to hardhat, in addition to safety glasses**
Elevated Air Monitoring Results	• **Respirators equipped with HEPA and Organic Vapor cartridges**

D. Safety Equipment Specifications

Prior to purchasing any equipment or supplies required by this HASP, the ENGINEER will be notified of the type, model and manufacturer/supplier of that particular safety equipment that is proposed to be used or purchased for use on this project. The specifications for PPE that, if deemed necessary due to site/project conditions, will be supplied to the ENGINEER and which differ from the minimum requirements are shown below.

PERSONAL PROTECTIVE EQUIPMENT SPECIFICATIONS

Description	Manufacturer	Model Number	Size	Comments
Tyvek coveralls	Kappler/Abanda	1427/1428	xl/lg	NA
Saranex coveralls	Kappler/Abanda	77427/77428/77434	xl/lg	NA
Sijal acid suit	Chemtex Bata	91522-G	xl/lg	NA
Surgical gloves	Best	7005	xl/lg	NA
Neoprene gloves	Edmont	8-354	xl/lg	NA
Nitrile gloves	Granet	1711	10	NA
Butyl gloves	North	B-161	10	NA
Viton gloves	North	F-124	10/11	NA
Long gauntlet neoprene	Edmont	19-938	xl	NA
Cotton work gloves	North	Grip-N/K511M	men's	or equal
Latex booties	Rainfair	1250-Y	xl	NA
PAPR pesticide cartridges	Racal	AP-3	NA	NA
PAPR asbestos cartridges	Racal	SP-3	NA	NA
APR organic cartridges	MSA	GMC-H	NA	NA
APR asbestos cartridges	MSA	Type H	NA	NA
APR pesticide cartridges	MSA	GMP	NA	NA

8.0 PERSONNEL HYGIENE AND DECONTAMINATION

a. Personnel Decontamination

Full decontamination facilities will be provided at all hazardous zones. The facilities will consist of an entrance from the exclusion zone followed by a series of stations as described below.

1. Gross contamination will be removed in the Exclusion Zone to the extent practical. Care will be taken not to compromise personal protective equipment or encapsulating materials while removing gross contamination.

2. Specific points to enter and exit the Transition Zone will be established. Securing the flow through the decontamination area will reduce the likelihood of contamination leaving the area, as well as facilitate the use of decontamination supplies and materials, and the collection of waste and rinsate. An emergency exit will be established to allow for immediate evacuation of the area, will the need arise.

3. Primary Decontamination: A compatible detergent solution will be used to remove as much of the contamination as possible. The effectiveness of the decontamination will be visually verified and, if required by the nature of the contaminants, samples will be collected and analyzed to ensure sufficient decontamination.

4. Encapsulating material and outer protective clothing will be removed and isolated: For equipment, machinery, tools, supplies, and materials that have been encapsulated (e.g., wrapped in plastic), the encapsulating material will be removed with care to contain the contaminated side of the material. The material will be collected in a compatible storage container and disposed of accordingly. For personnel: the outer layer of protective clothing will be removed in the reverse order it was put on; outer gloves, over boots, outer layer of protective clothing, etc. Special care will be taken to reduce the risk of contaminating the worker. Required levels of protection until the worker is decontaminated, such as respiratory protection and safety eye wear will be maintained.

5. Under clothing, if necessary will be removed, and either cleaned or disposed of accordingly.

6. Personnel hygiene: To ensure decontamination, workers will shower/wash with special attention to given to hair, fingernails, and areas such as underarms and groin. Liquid soap will be used for personnel showers to prevent the potential of cross contamination from bar soap. Shower/wash water is to be collected and disposed of accordingly.

b. Disposal of Spent Clothing and Material

1. Contaminated clothing, used respirator cartridges and other disposable items will be put into drums/containers for transport and proper disposal in accordance with TSCA and RCRA requirements.

2. Containers/55-gallon capacity drums will conform to the requirements of the Department of Transportation 49 CFR Part 178 for Transportation of Hazardous Materials. The containers/drums containing excavated and other hazardous material will be transported to the staging area.

c. Posting Regulations

a. Signs will be posted at the perimeter of the Exclusion Zone that state "Warning, Hazardous Work Area, Do Not Enter Unless Authorized." In addition, a notice directing visitors to sign in will be posted at the project site. Also, a sign will be posted stating that any questions about the site will be directed to the New York State Department of Environmental Conservation.

b. Safety regulations and safety reminders will be posted at conspicuous locations throughout the project area. The following safety regulations and safety reminders are at a minimum to be posted around the job site:

9.0 SAFETY REQUIREMENTS

(To be posted for Project Personnel)

The main safety emphasis is on preventing personal contact with gases, soils, sludge and water. Towards that end, the following rules have been established.

i. Eating, drinking and smoking in the work zone is PROHIBITED.

ii. All project personnel on the site must wear clean or new gloves daily.

iii. If the worker becomes wet to the skin, they must wash the affected area with soap and water immediately. If clothes in touch with the skin are wet, these must be changed.

iv. Workers must wash your hands and face before eating, drinking, smoking, or applying cosmetics or lip balm.

v. Observe regulations on washing and removing boots before entering the dressing room or a clean area and showering before going home.

vi. Check that any regularly worn clothing is clean. Examples include dirty watchbands, neck chains and a dirty liner on your safety helmet.

SAFETY REMINDER FOR TOXIC CHEMICALS

(Post for Project Personnel)

Chemicals can't cause problems unless you breathe them, eat them, or put them on your skin.

Don't let them go into your mouth, nose, or stay on your skin. Use common personal hygiene.

A. Don't eat or drink on the site.

B. No smoking in the area of work.

C. Wear protective clothing.

D. Glove liners will be clean.

E. Wash your hands whenever practical. Wash before eating, drinking, or smoking.

F. Don't carry chemicals home to your family. (For example, on clothing, mud in the car, dirty hands.)

G. Follow strictly the HASP.

10.0 EQUIPMENT DECONTAMINATION

A. General

1. All drilling equipment and augers will be cleaned prior to mobilization to the site. A decontamination area will be established in the Transition Zone (TZ). The decontamination area will be constructed by laying out a 20 foot by 20 foot 10 mil plastic sheet and creating a berm around the perimeter of the sheet. A metal tub, approximately eight feet long by four feet wide by three feet wide will then be situated in the middle of the plastic sheet. The tub will then be partly filled with water and an Alconox solution added. All augers will be washed in the Alconox solution between the two boreholes and prior to removal from the site. The Alconox solution will be changed on an as-needed basis. All used wash and rinse water will be drummed, temporarily stored on site, and removed by a licensed waste hauler.

2. Personnel engaged in vehicle decontamination shall wear protective clothing and equipment as determined in the HASP.

11.0 AIR MONITORING PROGRAM (AMP)

As part of this HASP, an air monitoring program (AMP) has been developed to determine that the proper level of personnel protective equipment will be used, to document that the level of worker protection is adequate, and to assess the migration of contaminants to off-site receptors as a result of site work. The AMP includes both real-time meters and laboratory analyzed samples (personal and area sampling, as needed). The purpose of real-time monitoring will be to determine if an upgrade of PPE is required while performing on-site work and to implement engineering controls, protocols, or emergency procedures if established action levels are encountered. As part of the AMP, documentation monitoring will be conducted to ensure that adequate PPE is being used and to determine if engineering controls are mitigating the migration of contamination to off-site receptors. Documentation monitoring will include the collection and analysis of samples for total nuisance dust.

To protect the public in the neighboring residential neighborhood, the AMP includes provisions for suspending work and implementing engineering controls based upon detectable odors and instrument monitoring results.

During the progress of active remedial work, the quality of the air in and around each active hazardous operation will be monitored with real-time instrumentation prior to personnel entering these areas.

Sampling at the hazardous work site will be conducted on a continuous basis. Any departures from general background will be reported to the SO prior to entering the area. The SO will determine when and if operations will be shut down.

Air monitoring (both real time and documentation monitoring) will be conducted by a minimum of one person with communication to the foreman whenever intrusive activities (such as excavation, tank removal, and soil treatment) are performed in an exclusion zone. After completion of intrusive activities involving contaminated materials and removal of the exclusion zone, air monitoring will be discontinued.

Air monitoring equipment will be operated by personnel trained in the use of the specific equipment provided and will be under the control of the SO. A log of the location, time, type, and value of each reading and/or sampling will be maintained. Copies of log sheets will be provided on a daily basis to the **ENGINEER's** on-site representative.

a. Action Levels

1. VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) will be monitored at the upwind and downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. The monitoring work will be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment will be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment will be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

a. If the ambient air concentration of total organic vapors exceeds 5 parts per million (ppm) above background for the 15-minute average at either monitoring point, 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 will resume with continued monitoring.

b. If total organic vapor levels persist at in excess of 5 ppm over background at either monitoring point, 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 will 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.

c. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities will be shutdown.

d. All 15-minute readings will be recorded and be available for State (DEPARTMENT and New York State Department of Health (NYSDOH)) personnel to review. Instantaneous readings, if any, used for decision purposes will also be recorded.

2. Particulate Monitoring, Response Levels, and Actions

Particulate concentrations will be monitored continuously during drilling and excavation activities at

the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. 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. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration will be visually assessed during all work activities.

a. 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, then dust suppression techniques will be employed. Work will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m3 above the upwind level and provided that no visible dust is migrating from the work area.

b. 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 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 µg/m3 of the upwind level and in preventing visible dust migration. All readings will be recorded and be available for State (DEPARTMENT and NYSDOH) and County Health personnel to review.

b. Real-Time Monitoring

1. EnviroTrac will submit a copy of the real time air monitoring results to the NYC DEP for each Workday, by 10:00 a.m. the following Workday, which will include an appropriately scaled map of the Work area depicting sample locations, wind direction and other pertinent meteorological data: date; time; analytical results; applicable standards and engineering controls implemented (if necessary).

2. Real-time monitoring will be conducted using the following equipment:

- Organic vapor will be measured using the ppbRAE with an 11.6 eV gas-discharge lamp, compact instrument is designed as a broadband VOC gas monitor and data logger for work in hazardous environments. It monitors Volatile Organic Compounds (VOC) using a photoionization detector (PID). The ppbRAE is manufactured by: RAE Systems by Honeywell, San Jose, CA.

- Particulate monitoring will be conducted at the perimeter of ground disturbance operations (drilling or excavation) using the DataRAM 4 – Model DR-4000, real-time particulate monitors and will monitor particulate matter in the range of 0-10 microns diameter (PM_{10}). Particulate monitoring will be performed with one monitor upwind and two monitors downwind. The DataRAM is manufactured by: Thermo Fisher Scientific, Air Quality Instruments, 27 Forge Parkway, Franklin, MA.

c. Community Air Monitoring

1. 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 may 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 DEPARTMENT/NYSDOH staff.

2. **Continuous monitoring** will be conducted 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 and trenching.

3. **Periodic monitoring** for VOCs will be conducted 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 Final DER-10 Page 205 of 226 Technical Guidance for Site Investigation and Remediation May 2010 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.

12.0 EMERGENCY EQUIPMENT AND FIRST AID REQUIREMENTS

A. Communications

1. Telephone communication will be provided at the site field office. Emergency numbers, such as police, sheriff, fire, ambulance, hospital, poison control, DEPARTMENT, EPA, NYSDOH, and utilities, applicable to this site will be prominently posted near the telephone.

2. A signaling system will be established for emergency purposes. The work site is small enough to allow for verbal warning in the event of an emergency. If noise levels or the proximity of workers do not allow for verbal communications, an aerosol air horn will be used to signal an emergency.

B. Emergency Shower and Emergency Eye Wash

One portable eyewash/body wash facility will be provided and maintained per active hazardous work zone. The facility will have a minimum water capacity of 10 gallons and will conform to OSHA regulations 29 CFR 1910.151. The portable eyewash/body wash facility will be manufactured/ supplied by Direct Safety Company, Lab Safety Supply Company, or other appropriate suppliers.

C. Fire Extinguishers

At least one fire extinguisher will be provided and maintained in the project office and one at each active hazardous work zone. The fire extinguishers will be a 20-pound Class ABC dry fire extinguisher with UL-approval per OSHA Safety and Health Training Standards 29 CFR 1910.157. The fire extinguisher will be manufactured/supplied by Direct Safety Company, Lab Safety Supply Company, or other appropriate

suppliers.

D. First Aid Kit

One 24-unit (minimum size) "industrial" or "Contractor" first aid kit, will be provided and located in the project office and at each and every hazardous work zone as required by OSHA requirements 29 CFR 1910.151. The first aid kit will be manufactured/supplied by Norton, Scott, or other appropriate suppliers.

E. Emergency Inventory

In addition to those items specified elsewhere, the SO will maintain the following inventory of equipment and protective clothing for use at the site in the event of emergencies.

a. Washable coveralls;

b. Gloves (outer);

c. Gloves (inner);

d. SCBA;

e. Escape SCBA (authorized visitor use);

f. Face shields;

g. Safety glasses;

h. Respirators and appropriate cartridges;

i. Disposable coveralls;

j. Chemical-resistant boots and latex boot covers;

k. Hard hats;

l. Bottled breathing air; and

m. Rain suits.

13.0 EMERGENCY RESPONSE AND CONTINGENCY PLAN

A. Daily Work

During ground disturbance operations, the air quality in the work areas in will be monitored using the ppbREA for volatile organic compounds (VOCs) and particulates using the DataRAM 4 – Model DR-4000, real-time particulate monitors and will monitor particulate matter in the range of 0-10 microns diameter (PM10). Monitoring will be conducted on a continuous basis. Based on the air monitoring data, the proper level of protection will be selected by the SO.

B. Emergency Vehicle Access

In the event that emergency services vehicles (police, fire, ambulance) need access to a location which is blocked by the working crew operations, those operations (equipment, materials, etc.) will be immediately moved to allow those vehicles access. Emergency crews will be briefed as to site conditions and hazards by the SO. All vehicles and personnel will be decontaminated prior to leaving the site.

A site briefing will be scheduled with the local Fire Department at the completion of mobilization to familiarize emergency response personnel with his operations and site layout.

C. Personal Injury Response Plan

1. In cases of personal injuries, the injured person or the crew personnel in charge will notify the SO. The SO will assess the seriousness of the injury, give first aid treatment if advisable, consult by telephone with a physician if necessary, and arrange for an ambulance, if required.

2. If soiled clothing cannot be removed, the injured person will be wrapped in blankets for transportation to the hospital.

3. Personnel, including unauthorized personnel, having skin contact with chemically contaminated liquids or soils will have the contacted area immediately flush with cold water for at least 15 minutes and wash by using a mild detergent or soap and water, after any wet or soiled clothing has been removed.

4. These personnel will be observed by the SO to ascertain whether there are any symptoms resulting from the exposure. If there is any visible manifestation of exposure such as skin irritation, the project personnel will refer to a consulting physician to determine whether the symptoms were the result of a delayed or acute exposure, a secondary response to exposure such as skin infection, or occupational dermatitis. All episodes of obvious chemical contamination will be reviewed by the SO in order to determine whether changes are needed in work procedures.

D. Route to the Hospital

The nearest hospital is: New York Hospital Queens, 56-45 Main Street, Flushing, N.Y. 11355 (phone: 718-670-2000). A map with written directions to the nearest hospital or emergency medical treatment facility is located in Appendix F and will be posted in conspicuous places in the Support Zone.

E. Fire Service

Fire-fighting and fire protection measures will be discussed with the local Fire Chief. If there is a fire, the

crewmen or their person in charge will immediately call the SO. The SO will immediately call the fire personnel. The air downwind from any fire or explosion will be monitored immediately in order to protect workers and the nearby community. If personal injuries result from any fire or explosion, the procedures outlined in the Personal Injury Response Plan will be followed.

F. Master Telephone List

The attached master telephone list will be completed and prominently posted at the field office. The list will have telephone numbers of all project personnel, emergency services including hospital, fire, police, and utilities. In addition, two copies with telephone numbers are to be given to the **DEPARTMENT** for emergency reference purposes.

Emergency Service		Telephone Number
Fire Department		911
Police Department		911
Ambulance		911
Hospital/Emergency Care Facility New York Hospital Queens, 56-45 Main Street, Flushing, N.Y. 11355		718-670-2000
Poison Control Center		(800) 336-6997
Chemical Emergency Advice		(800) 424-9300 (CHEMTREC)
NYSDEC Albany Office	Work Hours After Hours	Michael Haggerty, (518) 402-9767 (518) 402-9814
NYSDEC Regional Office		NYSDEC Region 2 – (718) 482-4900
County Dept. of Health		Within NYC – 311 or (212) 639-9675
New York State Dept. of Health - Albany		(866) 881-2809
New York State Dept. of Health – Regional		Within NYC – 311 or (212) 639-9675

14.0 CONFINED-SPACE ENTRY PROCEDURES

Confined Space Entry is not part of this project and no workers will not be exposed to a confined space. If the scope of work changes or confined space is identified, the SO will STOP WORK and a Confined Space Entry program will be implemented, as stated below.

A. Administration and General Information

It is the policy of EnviroTrac that confined spaces are to be eliminated as soon as practically possible

from any work site where they are encountered. This program defines and outlines the conditions and methods under which employees may enter confined spaces for sampling and equipment installation and removal. The Confined Space Entry Program described herein is based upon the following government regulations and publication:

CFR Title 29 Part 1910.146, Permit Required Confined Spaces
CFR Title 29 Part 1910.147, The Control of Hazardous Energy (Lockout/Tagout)
A Guide to Safety in Confined Spaces - DHHS (NIOSH) Publication No. 87-113.

The following definitions, taken directly from 29 CER 1910.146, are pertinent to this program:

I. CONFINED SPACE: A confined space is "a space that:
   a) Is large enough and so configured that an employee can bodily enter and perform assigned work
   b) Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry)
   c) Is not designed for continuous employee occupancy.

Since confined spaces usually have more than one of the above characteristics, the potential for the presence of hazardous atmospheres (oxygen deficiency, combustible and toxic gas concentrations) is great. The presence of materials, which can engulf the entrant, and internal configurations, which could entrap the entrant, must also be considered.

This program shall be administered by the Director of Health and Safety and the designated corporate and regional advisers, who together shall be responsible for the generation and execution of all portions of the program, and who will have the necessary authority to assure that all requirements of this program are properly fulfilled.

B. Atmosphere Sampling

It shall be the policy of EnviroTrac not to allow any of its employees to enter confined spaces for any reason until a confined space permit has been completed. The permit requires that the atmosphere have been sampled at the top, center, and bottom of the confined space. In addition to monitoring, confined spaces must be checked for sludge and liquids, and these substances must be identified prior to proceeding. The following monitoring must be conducted, in this order:

I. OXYGEN CONTENT: Using an Oxygen Meter, the concentration of oxygen inside of the confined space shall not be less than *19.5%,* nor greater than 23.5*%.* The oxygen shall be sampled according to EnviroTrac Air Sampling Protocol. If the confined space atmosphere cannot be ventilated to achieve an oxygen concentration of at least 19.5%, entry shall only be made using a Supplied Air Respirator with an escape bottle, or an SCBA. If the oxygen concentration cannot be lowered below *23.5%,* the confined space shall not be entered.

II. COMBUSTIBLE GAS CONCENTRATION: Using a Combustible Gas Meter, the concentration of combustible gas in the confined space shall not exceed 10% of the lower explosive limit (LEL) of the gas present in the confined space. The combustible gas concentration shall be sampled according to EnviroTrac Air Sampling Protocol. Should the combustible gas concentration exceed 10% of the LEL, employees shall not enter the confined space unless ventilation can successfully lower the concentration below 10% of the LEL.

III. TOXIC VAPOR CONCENTRATION: Using either a Photoionization Detector (PID) or Flame Ionization Detector (FID), the confined space shall be sampled for the presence of toxic vapors. The

sampling shall be performed according to EnviroTrac Air Sampling Protocol. If the substance in the confined space is known, and the concentration of that substance is measured at levels above published permissible exposure limits (PELs), and the confined space cannot be ventilated to lower the concentration to below published PELs, appropriate air purifying or supplied air respirators must be used to enter the space. The specific respiratory protection required must be determined on a site-by-site basis for each confined space.

C. Emergency Response Protocol

Unless the work location containing the confined space retains emergency response personnel, employees shall determine the location of the nearest Emergency Response Teams, Emergency Medical Teams, ambulance and hospital. The telephone numbers shall be in the possession of the standby employee during confined space entry, and a telephone or radio shall be at the site to provide communications with the emergency response teams required.

D. Confined Space Entry Procedures

Whenever employees of EnviroTrac are required to enter confined spaces for any reason, a permit shall be developed prior to site entry, to address the following procedures:

Air sampling shall have been completed and the atmosphere inside the confined space determined acceptable for entry.

- At least two employees shall be present. One, the entrant, shall be equipped with a body harness and lifeline, and the appropriate Personal Protective Equipment dictated by the atmosphere and other hazards present inside the confined space. The second employee shall remain outside the confined space, in control of the lifeline, in constant communication with the entrant, and alert for signs that the entrant is experiencing adverse problems associated with the conditions inside the confined space.

- Should the entrant be overcome by conditions within the confined space, the standby employee shall either remove the entrant with the lifeline or shall summon assistance from professional emergency response personnel. The stand by employee shall not enter the confined space or leave the space unattended.

When EnviroTrac is employed as a sub-contractor at a facility where the client has the responsibility for determining the hazards at the site or location associated with confined space entry, employees shall enter such confined spaces only if they are satisfied that the provisions of this program are fulfilled. When EnviroTrac is employed as the prime contractor at a facility where confined spaces are or will be present, the Project Manager, in conjunction with the Corporate Health and Safety Director or Regional Health and Safety Adviser, shall have the responsibility to ascertain that all the requirements of this program are fulfilled prior to any employee entering into such confined spaces.

Should contractors, clients or others request an employee to enter confined spaces which the employee does not feel meet the above entry program requirements, they should inform those requesting them to enter that they do not consider the confined space safe for entry, inform their supervisor and await further instructions.

E. Confined Space Isolation

As regulated under 29 CFR 1910.147, the control of hazardous energy within confined spaces shall be accomplished prior to entry into the space. Hazardous energy must be controlled as follows:

- Electrical energy devices must be deenergized, and the switching either locked out and/or tagged

out.
- Hydraulic energy devices must be deenergized as above, lines capped or blanked, and the stored energy in the systems released of the devices blocked.
- Hydrostatic or pneumatic energy devices must be de-energized, and lines either capped or blanked.

It shall be the policy of EnviroTrac not to permit employees to enter confined spaces that contain the potential for hazardous energy devices without engineering controls. Confined spaces containing well heads with electrically operated pumps may be entered providing the pumps have intrinsically safe or explosion proof motors and the electrical circuits are protected with ground fault circuit interrupters (GFCI).

F. Employee Training

All employees who are required to enter confined spaces for any reason shall successfully complete a Confined Space Entry Training Program, which shall include, but not be limited to the following topics:

- The contents of this CONFINED SPACE ENTRY PROGRAM
- The hazards of confined space entry
- Duties of the entrant and standby person
- Isolation of confined space
- Temperature extremes in confined space
- Rescue methods for confined space entry

The Corporate Health and Safety Director shall maintain records of all employees successfully completing the above program. The Regional Health and Safety Adviser shall conduct periodic inspection of random work sites to ascertain that this Confined Space Entry Program is conscientiously being followed.

Program Evaluation

The Corporate Health and Safety staff shall review all aspects of this Confined Space Entry Program at least annually to assure its effectiveness. Whenever modifications in work scope, equipment changes or modification, revision of federal regulations or standards, or any action that would necessitate a change in any of the contents of this Confined Space Entry Program occur, such changes shall be made, and everyone affected by those changes notified and retrained, if necessary. All such modifications shall be made in writing, and the nature of the modification noted and dated.

Enforcement

The following disciplinary actions shall be administered to employees found to be willfully negligent or not complying with the provisions of this policy:

- First Offense: If the violation is correctable, the employee shall receive a written warning detailing the nature of the offense, which shall be documented in the employee's personnel file. In addition, if the violation is not correctable, the employee will be dismissed from the site and sent home for the day without pay.
- Second Offense: The employee shall receive a written warning detailing the nature of the offense, documented to their personnel file, and one day off without pay, regardless of whether the violation is correctable.
- Third Offense: The employee shall receive a written warning detailing the nature of the offense, documented to their personnel file, and one week off without pay, regardless of whether the violation is correctable.

- Fourth Offense: The employee shall be terminated with cause.

Should the willful noncompliance or negligence to the provisions of this policy by an employee result in injury or increased risk to another individual, disciplinary actions more severe than the normal sequence of the above procedures may be administered. All of the above disciplinary steps shall be administered within the scope and intent of the written company personnel policies.

15.0 SPILL CONTAINMENT PLAN

To mitigate the potential for spills, all hazardous liquids should have secondary containment. In the case of any spills, employees should follow standard Contractor protocols: alerting the safety officer, and stopping work until all potential hazards have been appropriately assessed.

16.0 HEAT AND COLD STRESS

A. Heat Stress Monitoring

Symptoms and First Aid of Heat Stress

Heat Cramps
Painful muscle cramps primarily in the legs and abdomen and excessive sweating. This is usually caused by losing too much water and salt through sweating, usually this is related to excessive physical activity in hot weather. They are not serious and can be reversed with some basic first aid.

First Aid
Ensure the person is put at rest in a cool place and given as much water as possible in small amounts so as not to cause nausea. If the cramps do subside seek medical help.

Heat Exhaustion
More serious than heat cramps, the symptoms include: excessive sweating, dilated pupils, complaints of dizziness, blurred vision, headaches, and cramps. The casualty may also have cool, clammy skin, a weak rapid pulse, rapid shallow breathing, vomiting and may go unconscious.

First Aid
Give the casualty water to drink, as much as they will take. If they vomit, do not give them anything by mouth and seek medical attention right away. Place them at rest in the shock position in a cool place and remove any excessive clothing and loosen clothing around the neck and waist. If they go unconscious put them in the recovery position and get medical help, continue monitoring their condition.

Heatstroke (Sunstroke)
This is a life-threatening condition, without immediate action heatstroke can result in permanent brain damage or death. If heatstroke is suspected, seek medical attention immediately or call 911. Symptoms include, a rapid and full pulse that gets weaker and harder to feel in later stages, noisy breathing, flushed skin, hot and dry skin or hot and sweaty skin (when heatstroke is related to exertion), restlessness, headache, fatigue, dizziness, nausea, vomiting, convulsions and eventually unconsciousness.

First Aid
Call for medical assistance. It is critical that the body temperature is lowered as quickly as possible; cover them with a wet sheet and fan them, immerse them in cool not cold water (watch them closely for any changes) or sponge them with cool water particularly in the armpits neck and groin.

1. Site personnel who wear protective clothing allow body heat to be accumulated with an elevation of the body temperature. Heat stress can be experienced, which, if not remedied, can threaten life or health. For work in a hot environment where heat levels are high enough to produce heat stress, an acclimatization program will be implemented where workers will work for progressively longer periods. For workers who have had previous experience in jobs, the regimen will be 50% exposure on day one, 60% on day two, 80% on day three, and 100% on day four. For new workers who will be similarly exposed, the regimen will be 20% on day one, with a 20% increase in exposure each additional day.

2. When protective clothing is worn, especially Levels A and B, the suggested guidelines for ambient temperature and maximum wearing time per excursion are:

Maximum Wearing Time Per Excursion

Temperature (°F)	**(Minutes)**
Above 90	15
85 to 90	30
80 to 85	60
70 to 80	90
60 to 70	120
50 to 60	180

3. One method of measuring the effectiveness of employees' rest-recovery regime is by monitoring the heart rate. The "Brouha guideline" is one such method:

1. During a 3-minute period, count the pulse rate for the last 30 seconds of the first minute, the last 30 seconds of the second minute, and the last 30 seconds of the third minute.

2. Double the count.

3. If the recovery pulse rate during the last 30 seconds of the first minute is at 110 beats/minute or less and the deceleration between the first, second, and third minutes is at least 10 beats/minute, the work-recovery regime is acceptable. If the employee's rate is above that specified, a longer rest period is required, accompanied by an increased intake of fluids.

4. In the case of heat cramps or heat exhaustion, "Gatorade" or its equivalent is suggested as part of the treatment regime. The reason for this type of liquid refreshment is that such beverages will return much-needed electrolytes to the system. Without these electrolytes, body systems cannot function properly, thereby increasing the represented health hazard.

5. This liquid refreshment will be stored in a cooler at the edge of the decontamination zone in plastic squeeze bottles. The plastic bottles will be marked with individual's names. Disposable cups with lids and straws may be used in place of the squeeze bottles. Prior to drinking within the decontamination zone, the project personnel will follow the following decontamination procedures:

a. Personnel will wash and rinse their outer gloves and remove them.

b. Personnel will remove their hard hats and respirators and place on table.

c. Personnel will remove their inner gloves and place them on table.

d. Personnel will wash and rinse their face and hands.

e. Personnel will carefully remove their personal bottle or cup from the cooler to ensure that their outer clothes do not touch any bottles, cups, etc.

f. The used bottle or cups will not be returned to the cooler, but will be placed in a receptacle or container to be cleaned or disposed of.

g. Personnel will replace their respirators, hard hats, gloves and tape gloves prior to re-entering the hazardous zone.

When personnel are working in situations where the ambient temperatures and humidity are high and especially in situations where protection Levels A, B, and C are required--the SO will:

- Assure that all employees drink plenty of fluids ("Gatorade" or its equivalent);
- Assure that frequent breaks are scheduled so overheating does not occur; and
- Revise work schedules, when necessary, to take advantage of the cooler parts of the day (i.e., 5:00 a.m. to 1:00 p.m., and 6:00 p.m. to nightfall).

B. Cold Stress Monitoring

- Whole-body protection will be provided to all site personnel that have prolonged exposure to cold air. The right kind of protective clothing will be provided to site personnel to prevent cold stress. The following dry clothing will be provided as deemed necessary by the SO: Appropriate underclothing (wool or other);
- Outer coats that repel wind and moisture;
- Face, head, and ear coverings;
- Extra pair of socks;
- Insulated safety boots; and

- Glove liners (wool) or wind- and water-repellant gloves.

A. The SO will use the equivalent chill temperature when determining the combined cooling effect of wind and low temperatures on exposed skin or when determining clothing insulation requirements.

B. Site personnel working continuously in the cold are required to warm themselves on a regular basis in the on-site hygiene facility. Warm, sweet drinks will also be provided to site personnel to prevent dehydration. The SO will follow the work practices and recommendations for cold stress threshold limit values as stated by the 1991-1992 Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices by the American Conference of Governmental Industrial Hygienists or equivalent cold stress prevention methods.

17.0 RECORD KEEPING

A. Safety Log

The SO will maintain a bound safety logbook. The log will include all health and safety matters on site and include, but not be limited to, the following information:

- Date and weather conditions on site;
- A description of the proposed work for the day;
- Times when site personnel arrive and depart;
- Air monitoring data;
- Heat and/or cold stress monitoring;
- Decontamination procedures;
- Type and calibration of air sampling/monitoring equipment used;
- Safety meeting summaries; and
- Accidents.

B. Emergency or Accident Report

Any emergency or accident will be reported immediately to the SO and HSC. The **ENGINEER** will also be notified. A written report will be submitted, but no later than 24 hours of its concurrence. The report will include, but not be limited to, the nature of the problem, time, location, areas affected, manner and methods used to control the emergency, sampling and/or monitoring data, impact, if any, to the

surrounding community, and corrective actions the that will be instituted to minimize future occurrences. All spills will be treated as emergencies.

C. Daily Work Report

EnviroTrac will maintain a daily work report that summarizes the following:

- Work performed,
- Level of protection,
- Air monitoring results,
- Safety-related problems, and
- Corrective actions implemented.

18.0 COMMUNITY PROTECTION PLAN

A. General

As part of this HASP, the Community Protection Plan (CPP) outlined below was developed to protect the health and safety of surrounding human population and the environment.

B. Air Monitoring

1. As part of the Air Monitoring Program, real-time monitoring will be used and laboratory analyzed samples as described in the Subpart "Air Monitoring Program" of this section to determine if off-site emission, as a result of site work, poses a threat to the surrounding community.

2. Real-time air monitoring for volatile compounds and particulate levels at the perimeter of the work area will be conducted as necessary. Include the following:

a. Volatile organic compounds will be monitored at the downwind perimeter of the work area on a continuous basis. If total organic vapor levels exceed 5 ppm above background, work activities will be halted and monitoring continued under the provisions of a Vapor Emission Response Plan. All readings will be recorded and be available for State (DEC & DOH) personnel to review.

b. Particulates will be continuously monitored at the 2 sampling stations, one upwind and one downwind. If the downwind particulate level is 150 ug/m3 greater than the upwind particulate level, dust suppression techniques will be employed. All readings will be recorded and be available for State (DEC & DOH) personnel to review.

C. Vapor Emission Response Plan

1. If the ambient air concentration of organic vapors exceed 5 ppm above background at the perimeter of the of the ground disturbance work area, activities will be halted and monitoring continued. If the organic vapor level decreases below 5 ppm above background, work activities will resume. If the organic vapor levels are greater than 5 ppm over background but less than 225 ppm over background at the perimeter of the work area, activities will resume provided the organic vapor level 200 feet downwind of the work area or half the distance to the nearest residential or commercial structure, whichever is less, is below 5 ppm over background.

2. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities will be shutdown. When work shutdown occurs, downwind air monitoring as directed by the SO will be implemented to ensure that vapor emission does not impact the nearest residential or commercial structure at levels exceeding those specified in the Major Vapor Emission section.

D. Major Vapor Emission

1. If any organic levels greater than 5 ppm over background are identified 200 feet downwind from the work area or half the distance to the nearest residential or commercial property, whichever is less, all work activities will be halted.

2. If, following the cessation of the work activities, or as the result of an emergency, organic levels persist above 5 ppm above background 200 feet downwind or half the distance to the nearest residential or commercial property from the work area, the air quality will be monitored within 20 feet of the perimeter of the nearest residential or commercial structure (20 Foot Zone).

3. If efforts to abate the emission source are unsuccessful and if organic vapor levels are approaching 5 ppm above background and persist for more than 30 minutes in the 20 Foot Zone, the Major Vapor Emission Response Plan will automatically be placed into effect.

4. However, the Major Vapor Emission Response Plan will be immediately placed into effect if organic vapor levels are greater than 10 ppm above background levels.

5. Upon activation, the following will be undertaken:

a. The appropriate Emergency Response Contacts as listed in the Subpart titled “Emergency Response and Contingency Plan” paragraph titled “Telephone List” will be contacted.

b. The local police authorities will immediately be contacted by the SO and advised of the situation. Coordinate with local officials to arrange for notification and evacuation of the surrounding community.

c. Frequent air monitoring will be conducted at 30 minutes intervals within the 20 Foot Zone. If two successive readings below action levels are measured, air monitoring say be halted or modified by the SO.

6. The Air Monitoring Program will include real-time air monitoring and will be conducted at the perimeter of the site. Particulates will be continuously monitored upwind, downwind and within the

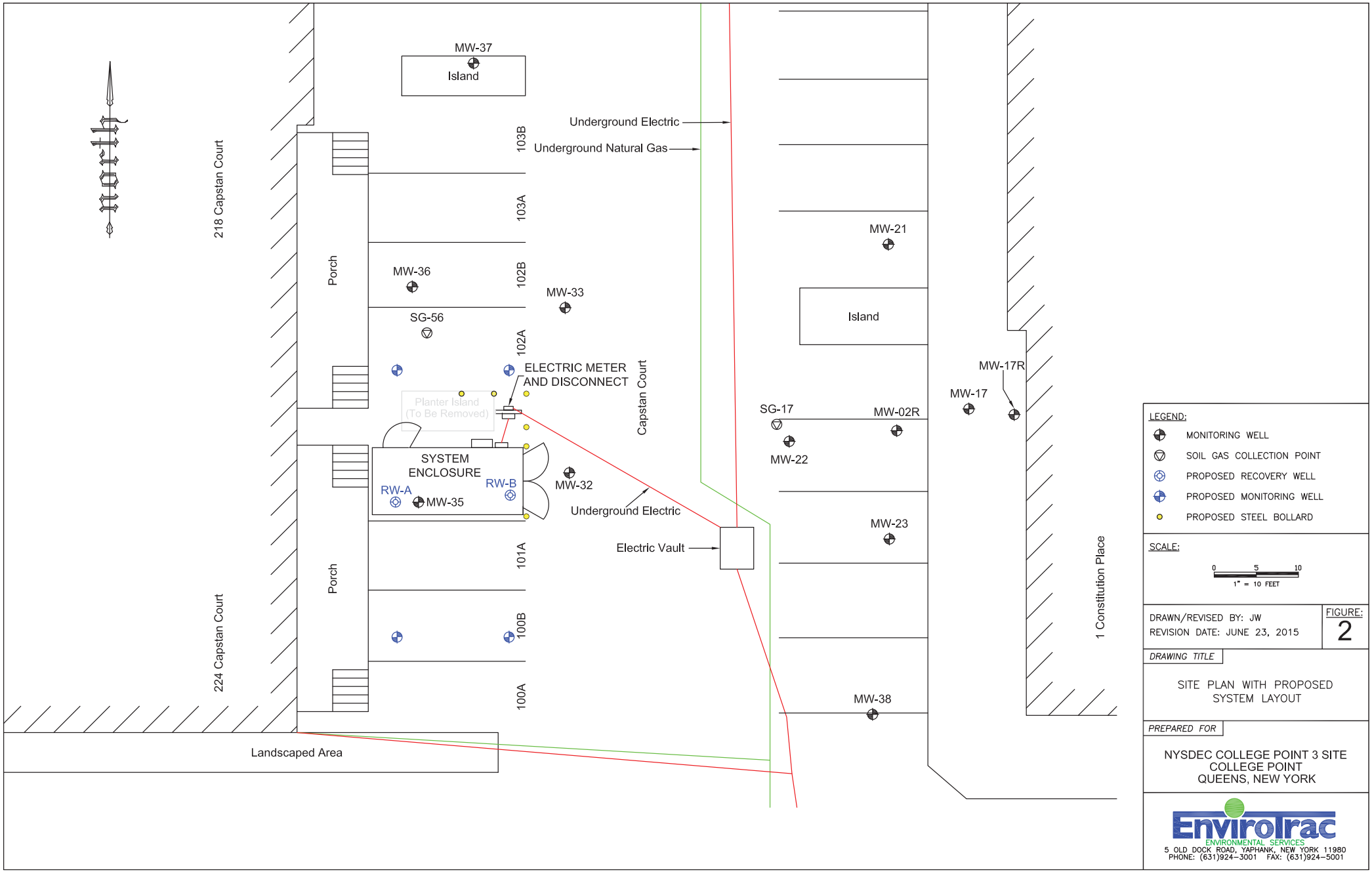
Exclusion Zone at temporary particulate monitoring stations. If the downwind particulate level is more than 2.5 times greater than the upwind particulate level and greater than 150 ug/m^3, then dust suppression techniques will be employed. This is a general action level. A site-specific action level will be developed based on available analytical data. All readings will be recorded and be available for ENGINEER, DEPARTMENT, and NYSDOH personnel to review.

7. Coordinate with local fire and police department to arrange for notification and evacuation of the surrounding community in the event that off-site emissions pose a threat.

D. Odor

If odor complaints are received from nearby residences during site activities, the odor complaint will be investigated and the source identified. An odor control plan will be developed subject to ENGINEER's review.

Appendix A
Site Map


MW-37
Island
Underground Electric
Underground Natural Gas
103B
103A
102B
102A
101A
100B
100A
218 Capstan Court
224 Capstan Court
Porch
Porch
MW-36
MW-33
SG-56
ELECTRIC METER
AND DISCONNECT
Planter Island
(To Be Removed)
SYSTEM
ENCLOSURE
RW-A
RW-B
MW-35
MW-32
Capstan Court
Underground Electric
Electric Vault
MW-21
Island
MW-17R
MW-17
SG-17
MW-02R
MW-22
MW-23
MW-38
1 Constitution Place
Landscaped Area
LEGEND:
MONITORING WELL
SOIL GAS COLLECTION POINT
PROPOSED RECOVERY WELL
PROPOSED MONITORING WELL
PROPOSED STEEL BOLLARD
SCALE:
0 5 10
1" = 10 FEET
DRAWN/REVISED BY: JW
REVISION DATE: JUNE 23, 2015
FIGURE:
2
DRAWING TITLE
SITE PLAN WITH PROPOSED
SYSTEM LAYOUT
PREPARED FOR
NYSDEC COLLEGE POINT 3 SITE
COLLEGE POINT
QUEENS, NEW YORK
EnviroTrac
ENVIRONMENTAL SERVICES
5 OLD DOCK ROAD, YAPHANK, NEW YORK 11980
PHONE: (631)924-3001 FAX: (631)924-5001

Appendix B
List of Potential Site Contaminants

TABLE 6-1
CONTAMINANTS OF POTENTIAL CONCERN
COLLEGE POINT 3 REMEDIAL INVESTIGATION
COLLEGE POINT, QUEENS COUNTY, NY

Parameter	Surface Soil	Subsurface Soil	Groundwater	Sediment	Surface Water	Seep Water	Soil Vapor	Sub-Slab	Indoor Air	Outdoor Air
Volatile Organic Compounds										
1,1,1-Trichloroethane		--					--	--	--	
1,1,2-Trichloro-1,2,2-trifluoroethane		--					--	--		--
1,1,2-Trichloroethane							--			
1,1-Dichloroethane		x	--				--			
1,1-Dichloroethene							--			
1,2,3-Trichlorobenzene		--	--							
1,2,4-Trichlorobenzene		--	--							
1,2,4-Trimethylbenzene		x	--				--	--	--	
1,2-Dibromoethane		--	x							
1,2-Dichlorobenzene		x	x							
1,2-Dichloroethane		x					--	--		
1,2-Dichloroethene (cis)		--	x				--	--		
1,2-Dichloroethene (trans)							--			
1,2-Dichloropropane		--					--			
1,3,5-Trimethylbenzene		--	--				--	--		
1,3-Dichlorobenzene		--	--				--			
1,4-Dichlorobenzene		--	x				--		--	--
1,4-Dioxane			--					--	--	--
2-Chlorotoluene			--							
2-Hexanone							--			--
4-Ethyltoluene							--	--	--	
4-Isopropyltoluene (p-Cymene)		--	--							
4-Methyl-2-pentanone							--	--		--
Acetone	--	x	x	--	--		--	--	--	--
Benzene		x	x				--	--	--	--
Bromodichloromethane							--			
Bromomethane							--			
Carbon disulfide		--	--		--		--	--		--
Carbon tetrachloride							--		--	--

TABLE 6-1
CONTAMINANTS OF POTENTIAL CONCERN
COLLEGE POINT 3 REMEDIAL INVESTIGATION
COLLEGE POINT, QUEENS COUNTY, NY

Parameter	Surface Soil	Subsurface Soil	Groundwater	Sediment	Surface Water	Seep Water	Soil Vapor	Sub-Slab	Indoor Air	Outdoor Air
Chlorobenzene		--	x				--			
Chloroethane		--	x				--			
Chloroform		--	--				--	--	--	--
Chloromethane							--		--	--
Cyclohexane		--	--				--	--		--
Dibromochloromethane							--			
Dichlorodifluoromethane							--	--	--	--
Ethylbenzene	--	x	x				--	--	--	--
Heptane							--	--	--	--
Hexane							--		--	--
Iodomethane (Methyl iodide)		--								
Isopropylbenzene (Cumene)		x	x				--			
Methyl acetate		--					--			
Methyl ethyl ketone (2-Butanone)		x	--				--	--	--	--
Methyl tert-butyl ether			--							--
Methylcyclohexane		--	--				--			--
Methylene chloride	--	x		--	--		--	--	--	--
Naphthalene		x	x							
n-Butylbenzene		x	--							
n-Propylbenzene		x	--				--			
sec-Butylbenzene		--	--							
Styrene		--	x				--	--		--
tert-Butylbenzene		--								
Tetrachloroethene	--	x	--				--	--	--	--
Toluene		x	x				--	--	--	--
Trichloroethene		x	--				--	--		
Trichlorofluoromethane							--	--	--	--
Vinyl chloride			--				--			
Xylene (total)		x	x				--	--	--	--

TABLE 6-1
CONTAMINANTS OF POTENTIAL CONCERN
COLLEGE POINT 3 REMEDIAL INVESTIGATION
COLLEGE POINT, QUEENS COUNTY, NY

Parameter	Surface Soil	Subsurface Soil	Groundwater	Sediment	Surface Water	Seep Water	Soil Vapor	Sub-Slab	Indoor Air	Outdoor Air
Semivolatile Organic Compounds										
1,1'-Biphenyl	--	--	x	--						
1,2,4-Trichlorobenzene		--								
1,4-Dichlorobenzene		--	--							
2,4-Dimethylphenol			--							
2-Chloronaphthalene	--	--								
2-Methylnaphthalene	x	x	--	x						
2-Methylphenol (o-cresol)			x							
2-Nitroaniline		--								
3&4-Methylphenol (m&p-cresol)	x	--	x							
4-Nitroaniline		--								
Acenaphthene	--	x	x	x		--				
Acenaphthylene	--	--	--	x						
Acetophenone			--							
Anthracene	--	x	--	x						
Atrazine			x							
Benzaldehyde		--	--							
Benzo(a)anthracene	x	x	x	x		--				
Benzo(a)pyrene	x	x	x	x		x				
Benzo(b)fluoranthene	x	x	x	--		--				
Benzo(g,h,i)perylene	--	--	--	--		--				

TABLE 6-1
CONTAMINANTS OF POTENTIAL CONCERN
COLLEGE POINT 3 REMEDIAL INVESTIGATION
COLLEGE POINT, QUEENS COUNTY, NY

Parameter	Surface Soil	Subsurface Soil	Groundwater	Sediment	Surface Water	Seep Water	Soil Vapor	Sub-Slab	Indoor Air	Outdoor Air
Benzo(k)fluoranthene	x	x	x	--						
bis(2-Ethylhexyl)phthalate	--	x	x	--	--	--				
Butylbenzylphthalate	--	x	--	--						
Caprolactam		--								
Carbazole	--	--	--	--						
Chrysene	x	x	x	x		--				
Dibenz(a,h)anthracene	x	x		x						
Dibenzofuran	x	x	--	--						
Diethylphthalate	--	--	--	--	--	--				
Dimethylphthalate			--							
Di-n-butylphthalate	x	x	--	--	--	--				
Di-n-octylphthalate		--								
Fluoranthene	x	x	--	x		--				
Fluorene	--	x	--	x						
Indeno(1,2,3-cd)pyrene	x	x	x	--		--				
Isophorone		--								
Naphthalene	--	x	x	x	--					
Nitrobenzene										
Phenanthrene	x	x	x	x	--					
Phenol		x	x							
Pyrene	x	x	--	x		--				

TABLE 6-1
CONTAMINANTS OF POTENTIAL CONCERN
COLLEGE POINT 3 REMEDIAL INVESTIGATION
COLLEGE POINT, QUEENS COUNTY, NY

Parameter	Surface Soil	Subsurface Soil	Groundwater	Sediment	Surface Water	Seep Water	Soil Vapor	Sub-Slab	Indoor Air	Outdoor Air
Pesticide Organic Compounds										
4,4'-DDD		x								
4,4'-DDE	x	x								
4,4'-DDT	x	x		x						
alpha-Chlordane		x								
Endosulfan I	--									
Endosulfan II		--								
Endosulfan sulfate		--								
Endrin		x								
Endrin aldehyde	--	--		--						
gamma-Chlordane		x								
Polychlorinated Biphenyls		--								
Total PCBs	x	x	x	x						

TABLE 6-1
CONTAMINANTS OF POTENTIAL CONCERN
COLLEGE POINT 3 REMEDIAL INVESTIGATION
COLLEGE POINT, QUEENS COUNTY, NY

Parameter	Surface Soil	Subsurface Soil	Groundwater	Sediment	Surface Water	Seep Water	Soil Vapor	Sub-Slab	Indoor Air	Outdoor Air
Metals		--								
Aluminum	x	x	--	--	--	--				
Antimony		x		--						
Arsenic	x	x	x	x	x	x				
Barium	--	x	x	--						
Beryllium	x	--	--	--	--					
Cadmium	--	x	x	x						
Calcium	x	x	--	--	--	--				
Chromium	x	x	x	x	--	--				
Cobalt	--	x		--	--	--				
Copper	x	x	--	x	x	x				
Iron	x	x	x	--	--	--				
Lead	x	x	x	x	x	x				
Magnesium	--	--	x	--	--	--				
Manganese	--	--	x	--	--	--				
Mercury	x	x	--	x	x	x				
Nickel	x	x	x	x	x	x				
Potassium	--	--	--	--	--	--				
Selenium	x	x	x	--		--				
Silver		x		x						
Sodium	--	--	x	--	--	--				
Thallium	--	--	x	--						
Vanadium	x	x	--	--	--	--				
Zinc	x	x	x	x	x	x				
Cyanide			--							

Key:
X = Detected in at least one sample, above the applicable SCG.
-- = Detected in at least one sample, below the applicable SCG or no SCG for that compound and/or matrix.
Blank cell = Not detected or not analyzed.
Parameter is listed if detected in at least one sample, irregardless of matrix.

TABLE 4-6A
STATISTICAL SUMMARY OF DETECTED COMPOUNDS IN SUBSURFACE SOIL SAMPLES – UNRESTRICTED USE
COLLEGE POINT 3 REMEDIAL INVESTIGATION

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections			No. Exceed	Location of Max Value	Depth Of Max
					Min	Max	Avg			
Volatile Organic Compounds										
1,1,1-Trichloroethane	MG/KG	0.68	109	2	0.054	1.20	0.627	1	DEC-43	21-22
1,1,2-Trichloro-1,2,2-trifluoroethane	MG/KG	6	109	10	0.002	0.045	0.010	0	SB-09	15-17
1,1-Dichloroethane	MG/KG	0.27	109	4	0.001	0.290	0.078	1	SB-02/MW-02	9-11
1,2,3-Trichlorobenzene	MG/KG	20	85	1	0.002	0.002	0.002	0	DEC-36	19-21
1,2,4-Trichlorobenzene	MG/KG	3.4	109	2	0.002	0.190	0.096	0	DEC-43	21-22
1,2,4-Trimethylbenzene	MG/KG	3.6	62	39	0.002	57.00	6.87	14	DEC-32	10-12
1,2-Dibromoethane	MG/KG	-	109	1	2.30	2.30	2.30	0	DEC-43	21-22
1,2-Dichlorobenzene	MG/KG	1.1	109	33	0.001	10.00	0.914	6	DEC-43	21-22
1,2-Dichloroethane	MG/KG	0.02	109	1	1.20	1.20	1.20	1	DEC-43	21-22
1,2-Dichloroethene (cis)	MG/KG	0.25	109	2	0.001	0.011	0.006	0	SB-04	9-11
1,2-Dichloropropane	MG/KG	700	109	1	2.60	2.60	2.60	0	SB-02/MW-02	9-11
1,3,5-Trimethylbenzene	MG/KG	-	62	30	0.001	25.00	2.84	0	DEC-43	21-22
1,3-Dichlorobenzene	MG/KG	2.4	109	3	0.002	0.470	0.164	0	DEC-29	21-22.5
1,4-Dichlorobenzene	MG/KG	1.8	109	9	0.002	0.740	0.159	0	DEC-29	21-22.5
4-Isopropyltoluene (p-Cymene)	MG/KG	10	16	9	0.001	2.90	1.04	0	DEC-35	13-15
Acetone	MG/KG	0.05	109	49	0.008	58.00	1.71	32	DEC-21	8-9
Benzene	MG/KG	0.06	109	40	0.001	280.0	9.28	20	SB-02/MW-02	9-11

*Criteria- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use, including CP-51 Table 1, Effective 12/2/10.

Concentration Exceeds Criteria

Only Detected Results Reported.

TABLE 4-6A
STATISTICAL SUMMARY OF DETECTED COMPOUNDS IN SUBSURFACE SOIL SAMPLES – UNRESTRICTED USE
COLLEGE POINT 3 REMEDIAL INVESTIGATION

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections			No. Exceed	Location of Max Value	Depth Of Max
					Min	Max	Avg			
Volatile Organic Compounds										
Carbon disulfide	MG/KG	2.7	109	32	0.001	0.034	0.008	0	SB-14/MW-14	19-21
Chlorobenzene	MG/KG	1.1	109	13	0.002	1.00	0.169	0	DEC-30	21-23
Chloroethane	MG/KG	1.9	109	1	0.021	0.021	0.021	0	SB-04	9-11
Chloroform	MG/KG	0.37	109	4	0.001	0.360	0.138	0	DEC-43	21-22
Cyclohexane	MG/KG	-	109	15	0.008	6.00	0.818	0	DEC-43	21-22
Ethylbenzene	MG/KG	1	109	54	0.001	270.0	10.98	28	SB-02/MW-02	9-11
Iodomethane (Methyl iodide)	MG/KG	-	16	4	0.160	0.200	0.178	0	DEC-35	17-19
Isopropylbenzene (Cumene)	MG/KG	2.3	109	62	0.001	5.70	0.931	10	SB-02/MW-02	9-11
Methyl acetate	MG/KG	-	109	5	1.70	490.0	113.0	0	SB-02/MW-02	9-11
Methyl ethyl ketone (2-Butanone)	MG/KG	0.12	109	12	0.004	5.00	0.436	1	SB-02/MW-02	9-11
Methylcyclohexane	MG/KG	-	109	33	0.004	8.60	1.06	0	SB-07/MW-07	10.5-11.5
Methylene chloride	MG/KG	0.05	109	9	0.002	0.270	0.043	2	DEC-43	21-22
Naphthalene	MG/KG	12	16	14	0.006	450.0	62.67	6	DEC-35	13-15
n-Butylbenzene	MG/KG	12	62	28	0.004	43.00	4.74	4	DEC-22	16-18
n-Propylbenzene	MG/KG	3.9	62	34	0.001	12.00	1.66	5	DEC-43	21-22
sec-Butylbenzene	MG/KG	11	62	30	0.002	2.60	0.541	0	DEC-43	21-22
Styrene	MG/KG	300	109	7	0.003	18.00	3.37	0	SB-02/MW-02	9-11

*Criteria- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use, including CP-51 Table 1, Effective 12/2/10.

Concentration Exceeds Criteria

Only Detected Results Reported.

TABLE 4-6A
STATISTICAL SUMMARY OF DETECTED COMPOUNDS IN SUBSURFACE SOIL SAMPLES – UNRESTRICTED USE
COLLEGE POINT 3 REMEDIAL INVESTIGATION

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections			No. Exceed	Location of Max Value	Depth Of Max
					Min	Max	Avg			
Volatile Organic Compounds										
tert-Butylbenzene	MG/KG	5.9	62	1	0.008	0.008	0.008	0	DEC-26	17-19
Tetrachloroethene	MG/KG	1.3	109	13	0.003	10.00	1.12	2	DEC-43	21-22
Toluene	MG/KG	0.7	109	46	0.001	250.0	8.05	11	SB-02/MW-02	9-11
Trichloroethene	MG/KG	0.47	109	8	0.001	4.20	0.945	3	DEC-43	21-22
Xylene (total)	MG/KG	0.26	109	58	0.001	129.0	8.88	31	SB-02/MW-02	9-11
Semivolatile Organic Compounds										
1,1'-Biphenyl	MG/KG	-	63	22	0.120	68.00	6.47	0	DEC-35	17-19
1,2,4-Trichlorobenzene	MG/KG	-	46	1	0.420	0.420	0.420	0	EB-38	9-11
1,4-Dichlorobenzene	MG/KG	1.8	46	1	0.330	0.330	0.330	0	EB-38	9-11
2-Chloronaphthalene	MG/KG	-	109	10	0.160	69.00	10.25	0	DEC-43	21-22
2-Methylnaphthalene	MG/KG	0.41	109	80	0.048	410.0	39.36	66	SB-02/MW-02	9-11
2-Nitroaniline	MG/KG	0.4	109	1	0.180	0.180	0.180	0	EB-38	20-22
3&4-Methylphenol (m&p-cresol)	MG/KG	0.33	109	2	0.061	0.130	0.096	0	DEC-47	24-25
4-Nitroaniline	MG/KG	-	109	1	1.10	1.10	1.10	0	DEC-36	7-9
Acenaphthene	MG/KG	20	109	83	0.052	350.0	18.66	16	SB-02/MW-02	9-11
Acenaphthylene	MG/KG	100	109	59	0.059	90.00	7.95	0	SB-02/MW-02	9-11
Anthracene	MG/KG	100	109	89	0.075	200.0	13.15	3	SB-02/MW-02	9-11

*Criteria- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use, including CP-51 Table 1, Effective 12/2/10.

Concentration Exceeds Criteria

Only Detected Results Reported.

TABLE 4-6A
STATISTICAL SUMMARY OF DETECTED COMPOUNDS IN SUBSURFACE SOIL SAMPLES – UNRESTRICTED USE
COLLEGE POINT 3 REMEDIAL INVESTIGATION

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections			No. Exceed	Location of Max Value	Depth Of Max
					Min	Max	Avg			
Semivolatile Organic Compounds										
Benzaldehyde	MG/KG	-	63	1	0.091	0.091	0.091	0	DEC-47	13-17
Benzo(a)anthracene	MG/KG	1	109	95	0.210	110.0	13.08	82	SB-02/MW-02	9-11
Benzo(a)pyrene	MG/KG	1	109	95	0.180	110.0	11.68	78	SB-11	11-13
Benzo(b)fluoranthene	MG/KG	1	109	93	0.220	59.00	7.48	76	SB-11	11-13
Benzo(g,h,i)perylene	MG/KG	100	109	81	0.160	53.00	5.39	0	SB-11	11-13
Benzo(k)fluoranthene	MG/KG	0.8	109	93	0.220	68.00	7.50	78	SB-02/MW-02	9-11
bis(2-Ethylhexyl)phthalate	MG/KG	50	109	46	0.160	77.00	8.50	3	DEC-27	10-12
Butylbenzylphthalate	MG/KG	100	109	26	0.051	620.0	30.53	1	DEC-30	7-9
Caprolactam	MG/KG	-	63	5	0.120	3.00	1.15	0	SB-02/MW-02	19-20
Carbazole	MG/KG	-	109	50	0.048	11.00	2.12	0	SB-11	11-13
Chrysene	MG/KG	1	109	96	0.210	110.0	13.03	83	SB-11	11-13
Dibenz(a,h)anthracene	MG/KG	0.33	109	50	0.067	13.00	1.37	32	SB-11	11-13
Dibenzofuran	MG/KG	7	109	69	0.080	100.0	4.78	11	DEC-35	17-19
Diethylphthalate	MG/KG	7.1	109	3	0.077	4.40	1.55	0	DEC-22	16-18
Di-n-butylphthalate	MG/KG	0.014	109	14	0.045	5.20	0.697	14	SB-01	19-21
Di-n-octylphthalate	MG/KG	100	109	4	0.200	0.990	0.743	0	SB-14/MW-14	19-21
Fluoranthene	MG/KG	100	109	104	0.330	190.0	24.13	9	SB-02/MW-02	9-11

*Criteria- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use, including CP-51 Table 1, Effective 12/2/10.

Concentration Exceeds Criteria

Only Detected Results Reported.

TABLE 4-6A
STATISTICAL SUMMARY OF DETECTED COMPOUNDS IN SUBSURFACE SOIL SAMPLES – UNRESTRICTED USE
COLLEGE POINT 3 REMEDIAL INVESTIGATION

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections			No. Exceed	Location of Max Value	Depth Of Max
					Min	Max	Avg			
Semivolatile Organic Compounds										
Fluorene	MG/KG	30	109	85	0.050	210.0	16.10	11	SB-02/MW-02	9-11
Indeno(1,2,3-cd)pyrene	MG/KG	0.5	109	78	0.120	100.0	5.90	59	DEC-35	17-19
Isophorone	MG/KG	4.4	109	3	0.047	0.130	0.092	0	DEC-20	3-5
Naphthalene	MG/KG	12	109	86	0.048	1,100	88.46	28	SB-02/MW-02	9-11
Phenanthrene	MG/KG	100	109	103	0.100	710.0	52.45	12	SB-02/MW-02	9-11
Phenol	MG/KG	0.33	109	6	0.051	8.50	3.74	3	SB-02/MW-02	19-20
Pyrene	MG/KG	100	109	103	0.042	410.0	30.80	8	SB-02/MW-02	9-11
Pesticide Organic Compounds										
4,4'-DDD	MG/KG	0.0033	46	1	0.280	0.280	0.280	1	EB-43	9-11
4,4'-DDE	MG/KG	0.0033	46	1	0.480	0.480	0.480	1	EB-43	9-11
4,4'-DDT	MG/KG	0.0033	46	5	0.120	0.900	0.378	5	EB-43	9-11
alpha-Chlordane	MG/KG	0.094	46	2	0.120	1.30	0.710	2	DEC-29	21-22.5
Endosulfan II	MG/KG	2.4	46	2	0.190	0.190	0.190	0	DEC-23	21-23
Endosulfan sulfate	MG/KG	2.4	46	1	0.230	0.230	0.230	0	DEC-24	15-16
Endrin	MG/KG	0.014	46	3	0.110	0.210	0.150	3	DEC-30	21-23
Endrin aldehyde	MG/KG	-	46	1	0.190	0.190	0.190	0	DEC-23	15-17
gamma-Chlordane	MG/KG	0.54	46	2	0.460	1.60	1.03	1	DEC-29	21-22.5

*Criteria- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use, including CP-51 Table 1, Effective 12/2/10.

Concentration Exceeds Criteria

Only Detected Results Reported.

TABLE 4-6A
STATISTICAL SUMMARY OF DETECTED COMPOUNDS IN SUBSURFACE SOIL SAMPLES – UNRESTRICTED USE
COLLEGE POINT 3 REMEDIAL INVESTIGATION

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections			No. Exceed	Location of Max Value	Depth Of Max
					Min	Max	Avg			
Polychlorinated Biphenyls										
Aroclor 1016	MG/KG	-	110	6	0.360	5.10	2.03	0	EB-43	2-3
Aroclor 1242	MG/KG	-	110	33	0.140	12.00	2.13	0	SB-06	9-11
Aroclor 1248	MG/KG	-	110	19	0.027	16.00	2.30	0	DEC-18	9-11
Aroclor 1254	MG/KG	-	110	32	0.070	5.30	1.06	0	DEC-20	3-5
Aroclor 1260	MG/KG	-	110	34	0.060	5.90	1.48	0	DEC-20	3-5
Aroclor 1262	MG/KG	-	110	1	30.00	30.00	30.00	0	SB-14/MW-14	19-21
Metals										
Aluminum	MG/KG	10000	85	85	1,120	1.13E+04	6,314	3	DEC-23	9.5-10.5
Antimony	MG/KG	12	85	5	1.10	14.00	7.52	2	DEC-48	20-22
Arsenic	MG/KG	13	85	26	2.90	104.0	15.44	9	DEC-35	13-15
Barium	MG/KG	350	85	85	13.80	4,790	231.9	6	DEC-32	10-12
Beryllium	MG/KG	7.2	85	32	0.170	6.30	0.678	0	EB-40	21-23
Cadmium	MG/KG	2.5	85	45	0.075	17.20	2.92	14	EB-43	2-3
Calcium	MG/KG	10000	85	85	1,200	1.54E+05	2.75E+04	74	DEC-39	7-9
Chromium	MG/KG	30	85	85	3.90	168.0	26.36	16	EB-38	20-22
Cobalt	MG/KG	20	85	65	1.70	37.00	7.11	1	DEC-48	12-14
Copper	MG/KG	50	85	76	14.10	4,300	219.2	45	DEC-48	20-22

*Criteria- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use, including CP-51 Table 1, Effective 12/2/10.

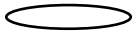
Concentration Exceeds Criteria

Only Detected Results Reported.

TABLE 4-6A
STATISTICAL SUMMARY OF DETECTED COMPOUNDS IN SUBSURFACE SOIL SAMPLES – UNRESTRICTED USE
COLLEGE POINT 3 REMEDIAL INVESTIGATION

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections			No. Exceed	Location of Max Value	Depth Of Max
					Min	Max	Avg			
Metals										
Iron	MG/KG	2000	85	80	4,090	1.02E+05	2.07E+04	80	EB-43	2-3
Lead	MG/KG	63	85	85	8.70	1.44E+04	530.2	75	DEC-43	21-22
Magnesium	MG/KG	-	85	85	1,660	7.99E+04	7,567	0	DEC-39	7-9
Manganese	MG/KG	1600	85	85	110.0	1,440	274.6	0	DEC-34	5-7
Mercury	MG/KG	0.18	85	77	0.008	2.90	0.380	52	DEC-47	13-17
Nickel	MG/KG	30	85	84	6.40	1,100	51.53	22	EB-48	9-11
Potassium	MG/KG	-	85	80	451.0	2,700	1,004	0	DEC-50	29-30
Selenium	MG/KG	3.9	85	7	1.80	74.00	26.30	5	DEC-48	20-22
Silver	MG/KG	2	85	8	0.068	21.00	3.37	3	DEC-48	20-22
Sodium	MG/KG	-	85	42	129.0	1,450	469.1	0	SA-02	2.5-3
Thallium	MG/KG	5	85	10	0.310	1.30	0.647	0	DEC-39	7-9
Vanadium	MG/KG	39	85	85	9.60	4,320	91.87	20	EB-40	21-23
Zinc	MG/KG	109	85	85	15.70	1.73E+04	833.0	67	EB-48	9-11

*Criteria- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use, including CP-51 Table 1, Effective 12/2/10.


Concentration Exceeds Criteria

Only Detected Results Reported.

Appendix C
HSC, SO, and HST Qualifications

Corporate Resume

EnviroTrac

Please Contact:

6 Terri LN, STE 350

Burlington, NJ 08016

609-387-5553

Or visit our website:

envirotrac.com

Michael A. Clark
MS, CHMM

Director Health & Safety

Solutions in Action

Experience Summary

- Directed Company Safety & Health Operations for Construction, Manufacturing, Transportation, Facility & Emergency Response Operations
- Directed EHS Program for Materials & Metals Recovery/Recycling Operations, Successfully Obtained ISO 14001 Certification
- Managed Hazardous Material & Waste & Petroleum Storage Operations, Including Emergency Response Programs & Remedial Activities for 300+ sites
- Experience Trainer for Safety Programs

Education

- MS Environmental Science, NJ Institute of Technology, 1994
- BS Biology & Chemistry, Rowan University, NJ, 1987

Mr. Clark has over 25 years experience in the environmental, health and safety field managing and directing programs for Fortune 100 corporations, manufacturing and construction companies and consulting firms. He currently is the Corporate Director of EnviroTrac's Health and Safety program.

Safety is a strategic part of EnviroTrac's operations and as Director of Health and Safety, Michael ensures that our safety program focuses on our employees to ensure that they have the training, knowledge and the tools to perform their jobs safely.

Using a behavior-based safety model, EnviroTrac employees are taught to take responsibility and accountability for their own safe work practices. Task-specific hazards are identified and employees are trained, updated and refreshed on how to recognize hazards and mitigate risks.

As Director of Health and Safety Mr. Clark has developed and implemented: accident reporting, investigating, & root cause analysis procedures; ground disturbance procedures for subsurface investigation, drilling, and trenching & excavation; safe driving and behind-the-wheel training; in-house OSHA HazWOPER training; traffic control and work area protection; respiratory protection; confined space entry; personal protection equipment requirements and various other safety programs.

EnviroTrac uses a network of Safety Coordinators to oversee the safety program in each of the EnviroTrac regional offices. Mr. Clark personally manages this network and continuously reviews and updates the Health & Safety program so that the practices, policies and procedures meet or exceed laws, regulations, client-specific requirements and maintain our own standards for the health and safety of our employees.

Think before you act, remember - Safety First!!!

Experience highlight 2015

Corporate Resume

Michael A. Clark
MS, CHMM

Director Health & Safety

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Professional Certifications

Certified Hazardous Materials Manager (CHMM), Institute of Hazardous Materials Management - Master's Level

Advanced Safety Certification, National Safety Council

40-hour HazWOPER certificate and subsequent 8-hr refresher training

Fundamentals of Industrial Hygiene - Harvard School of Public Health

Industrial Ventilation Workshop - AIHA

Advanced IAQ/HVAC Diagnostics Training Course - HL Turner Group

Implementing the ISO 14001:2004 Program workshop

Professional Highlights and Selected Projects

- Mr. Clark has directed the health and safety program for construction projects and facility operations throughout all five boroughs of New York City. He developed and implemented programs that addressed heavy equipment/construction operations, traffic control and work area protection, confined space entry, working at heights, exposure to heat/cold, hazardous materials, hazardous and regulated waste, personal safety and other factors unique an extreme urban environment.

- Mr. Clark has prepared heath and safety worksite from a wide range of hazardous material impacted projects, including PCB exposure monitoring for both airborne and surface contact; industrial processing exposure to mercury vapor and surface contamination; benzene exposure assessments for environmental remediation workers; and asbestos and lead management plans to control worker exposure while managing these materials in place.
-
- In addition to his focus on safe work environments, Mr. Clark implemented a safe driving program for operations in New York City. The program addressed the re-

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quirements of operating vehicles in the most congested urban area of the country and used both classroom training and behind-the-wheel instruction to educate drivers on techniques to safely operate in this unique environment. Following the training, motor vehicle accidents for the company in that market decreased by 30%, resulting in overall cost savings estimated at over $100,000 per year.

- Developed and administered Respiratory Protection Programs for multiple companies encompassing hundreds of employees. These programs have included hazard identification, employee medical monitoring, baseline and periodic biological monitoring, respirator selection and change schedules, and annual review and update of the program as required by OSHA. Mr. Clark is a “Competent Person” as defined by OSHA to administer respirator fit tests and manage a respiratory protection program.

- Conducted over 200 indoor air quality and industrial ventilation investigations and implemented exposure control and remediation actions for worker exposure to: heavy metals, VOC’s and other hazardous materials, confined spaces contaminated with hazardous materials, sick building syndrome and mold contamination and industrial ventilation controls during manufacturing processes.

- Developed the in-house EnviroTrac 40-hour OSHA Hazardous Waste Operations and Emergency Response (HazWOPER) certification and 8-hour annual refresher training programs that complies with the requirements of 29CFR 1910.120, Appendix A recommendations. Mr. Clark personally delivers both the 40-hour and 8-hour training to EnviroTrac employees.

- In addition to his work in safety, Mr. Clark also has extensive experience in the environmental field managing petroleum storage operations, air and water environmental discharge permitting and emergency response operations for hazmat spills and releases.

- His experience includes the installation, upgrade and removal of under and above ground storage systems, developing and updating SPCC plans and inspection plans

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and monitoring systems. Mr. Clark has managed multiple remediation activities from full site excavation of contaminated soils, to pump and treat systems, underground injection and extraction systems and passive remediation and monitoring.

- Mr. Clark has obtained over 500 air and water discharge permits from environmental state agencies, implemented and audited programs for compliance to permit requirements and prepared discharge reports to the appropriate agencies. Type of permits include: Federal Title V Air Discharge Permit, NPDES water discharge permits, and minor source permits in Washington DC, MA, MD, NH, NJ, PA, and RI.

- During the restoration efforts at *Ground Zero* in NYC after the attacks of 9/11/01, Mr. Clark managed the decontamination of the Verizon telecommunications hub at the World Trade Center Complex that facilitated the restoration of 2M data and 1.5 M voice lines to re-establish communications for lower Manhattan and Wall St.

- While directing the environmental operations for a materials and metals recovery/ recycling firm, Mr. Clark developed and implemented the company's environmental program under the strict requirements of ISO 14001:2004. The program applied for and successfully passed the ISO audit with no "non-compliance" issues identified by the Accreditation body and was issued an ISO 14001 certification.

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Corporate Resume

EnviroTrac

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www.envirotrac.com

David Lorthioir, PG

Project Manager

Solutions in Action

Experience Summary

- Management & Oversight of Soil & Groundwater Investigations
- Phase I & II ESAs
- Technical Reporting & Regulatory Agency Interaction
- Emergency Spill Response
- Pilot Testing for Soil & Groundwater Remediation
- Evaluation of Field & Laboratory Data
- Use of Ground Penetrating Radar
- Coordination & Oversight of Soil & Groundwater Remediation System Installation, Operation & Maintenance
- UST Closures

Education

- BS Geology, Hofstra University, 1992

Mr. Lorthioir has over 22 years experience in the Environmental Consulting and Remediation field. He has extensive experience performing and overseeing soil and groundwater investigations and remediation projects, as well as UIC clean-ups, UST removals and environmental site assessments. Other specific experience includes: National Environmental Policy Act (NEPA), the New York State Environmental Quality Review Act (SEQRA), the New York City Environmental Quality Review procedures (CEQR), the operation of ground penetrating radar, soil and ground-water monitoring and sampling, underground storage tank testing, emergency spill response, gasoline tank maintenance and repair, testing of underground storage tanks, inspection of above-ground storage tank facilities and the disposal of hazardous and non-hazardous materials.

Currently as a Senior Geologist, Mr. Lorthioir coordinates subsurface investigations, monitoring well installations, UST removals and remedial construction projects. These duties include the scheduling of technicians to perform monthly operation and maintenance on existing remediation systems, as well as monthly ground water monitoring and sampling. His responsibilities also include the preparation of cost estimates and proposals and the financial oversight of projects.

Professional Certifications

Professional Geologist, PG-691, State of New Hampshire

OSHA Certification, 40 hr Health & Safety Training at Hazardous Waste Sites

OSHA Certification, 8 hr Refresher Health & Safety Training at Hazardous Waste Sites

OSHA Certification – Confined Space Entry and Supervision

Corporate Resume

David Lorthioir, PG

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Professional Highlights and Selected Projects

- Mr. Lorthioir has been involved in managing numerous subsurface soil and groundwater investigations throughout New York State. Investigation and delineation techniques have included soil borings, groundwater monitoring well networks, direct push sampling, geophysical methods, soil-gas surveys, aquifer testing, waste characterization and test pits.
- Mr. Lorthioir has extensive experience in the design, installation and maintenance of a wide range of soil and groundwater remediation systems. Remedial systems that have been installed and operated by Mr. Lorthioir include groundwater pump and treat, soil-vapor extraction and air sparging. In addition, Mr. Lorthioir has experience in other remedial methods such as vacuum enhanced fluid recovery (VEFR) and bioremediation.
- Mr. Lorthioir has managed and directly supervised numerous UST system closures in New York State. Responsibilities included coordinating with the State and local regulatory agencies, local fire marshals, building departments and contractors to permit and remove or abandon petroleum USTs. Following UST removal, responsibilities included soil or groundwater sampling, report preparation and submittal to regulators.
- Mr. Lorthioir has performed over 50 drywell and septic system investigations, remediation and closures. The remediation techniques utilized included supersuckers and clamshells. All remediated systems had to meet federal or local guidelines. The drywell/septic systems were then stabilized for future use or removed or abandoned. Mr. Lorthioir was also responsible for the disposal of all hazardous and non-hazardous material removed from drywells.
- Mr. Lorthioir has several years of experience in the performance, supervision and management of emergency spill response. His duties included the initial response and inspection of the spill, the mobilization of manpower and equipment, interaction with the proper regulatory agencies and the on-site management of emergency cleanup. Types of spills include ground surface spills, releases in crawl spaces and

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Corporate Resume

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releases in basements. The types of spilled materials cleaned up by Mr. Lorthioir include petroleum, sewage, pesticides and sodium hypochloride.

- Mr. Lorthioir has been responsible for the management of UST testing programs. Mr. Lorthioir was involved in the use of both volumetric and non-volumetric methods of testing underground storage tanks (UST) at gasoline stations and other types of facilities. In addition, Mr. Lorthioir performed monthly compliance inspections of above-ground storage tanks at several facilities utilized to fuel and lubricate diesel locomotives.
- Mr. Lorthioir has been responsible for some aspects of gasoline station maintenance. He coordinated and managed a small fleet of vacuum trucks which removed water and sludge from underground storage tanks.
- Mr. Lorthioir has forged a working relationship with most local and state environmental regulators including the New York State Department of Environmental Conservation, Suffolk County Department of Health Services and Nassau County Department of Health.

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Corporate Resume

EnviroTrac

Michael Alliegro

Project Scientist

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Solutions in Action

Experience Summary

- Groundwater Monitoring & Sampling
- Soil & Groundwater Investigations
- Environmental Compliance
- Environmental Construction & Remediation Services
- Soil & Groundwater Remediation System Operation & Maintenance
- Drilling & Monitoring Well Installation

Education

- BA, Environmental Studies, Green Mountain College, VT

Mr. Alliegro has been employed with EnviroTrac for thirteen (13) years. Specific experience includes: coordination of ground water sampling programs, environmental data collection, entry and reporting. Operation & Maintenance (O&M) of soil and ground water remediation systems, logging and installation of remediation systems, waste sampling and management, pilot testing, and operation of mobile remediation equipment.

Mr. Alliegro currently is responsible for the O&M of complex remediation equipment including soil vapor extraction, air sparging, high vacuum extraction, oxygen diffusion, LNAPL recovery, groundwater extraction and treatment at many sites. Mr. Alliegro coordinates all field activities, performs routine preventative maintenance, prepares written reports, and troubleshoots equipment failures.

Professional Certifications

OSHA Certification, 40hr Health & Safety Training at Hazardous Waste Sites

OSHA Certification, 8 hr Refresher Health & Safety Training at Hazardous Waste Sites

OSHA Certification-Confined Space Entry and Supervision

Red Cross CPR Certification

Red Cross First Aid Certification

OSHA Certification, 10 hr Construction Safety

OSHA Certification, 8 hr Supervisor Training

Corporate Resume

EnviroTrac

Michael Alliegro

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Professional Highlights and Selected Projects

- **Suffolk County Water Authority (SCWA) Groundwater Sampling Program**

  Mr. Alliegro assisted in a large-scale sampling program for the SCWA, sampling, gauging and collecting field data for approximately 2,000 monitoring wells located through Suffolk County, New York. Monitoring of wells sampled ranged from shallow water table wells up to approximately 500 feet in depth. Purging equipment used includes a variety of submersible pumps, including Redi-Flow II pumps typically used for low-flow sampling. Parameters analyzed for include volatile organics, inorganics, soluble/insoluble iron, chlorides, pesticides and perchlorate. His responsibilities include: scheduling, sample dates; coordinating sample container shipments and deliveries from the contract laboratory; well gauging, well purging and sample collection from monitoring wells; field analysis of water quality parameters (pH, conductivity, temperature, ORP, etc) Completion of Chain-of-Custody (COC) procedures; transportation of samples to contract laboratory; field data documentation and entry into Excel spreadsheet for monthly reports.

- **Environmental Compliance Audits**

  Mr. Alliegro conducted Environmental Compliance Audits at over 200 retail petroleum sites in New York. The Audits included a check on procedures and monitoring equipment at each site to determine compliance with applicable state and federal environmental guidelines. Mr. Alliegro's responsibilities included the identification of non-compliance issues, photo documentation, data entry, and reporting of adults.

- **Low-Flow Groundwater Sampling**

  Mr. Alliegro has sampled hundreds of groundwater monitoring wells for Major Petroleum and Industrial Clients throughout the Northeast. Well purging and sampling procedures were in accordance with both state and federal ground water sampling guidelines. Mr. Alliegro has experience in the following well sampling procedures: EPA Region I Low Stress (low flow) Purging and Sampling Procedure for the collection of Ground water samples from monitoring wells (July 30, 1996); EPA Region Ground water Sampling Procedure, Low Stress (low flow) Purging and Sampling

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Project Scientist

(March 16, 1998); RCRA Ground water Monitoring Technical Enforcement Guidance Document (TEGD) (1986); NYSDEC Ground water Sampling Guidelines; New Jersey Field Sampling Procedure Manual (1992).

Mr. Alliegro is familiar with a variety of sampling pump equipment operation, maintenance, troubleshooting and repairs, including: Bladder Pumps-GeoPump, Inc (formerly Geoguard); Micro-Flo, Solinst Integra Bladder Pump (with Flow-Though Cell System); and Portable Bladder Pump (SamplePro MicroPurge Pump) and QED Well Wizard dedicated pumps; Submersible Pumps-variety of Grunfos pumps for both high velocity and low-flow purging, including Grunfos Redi-Flow 2 pumps; Peristaltic Pumps-Masterflex; Micro-purge Pumps– Whale pumps 12V DC; Bailers-variety of bailers including dedicated disposable, Teflon, and stainless steel.

Mr. Alliegro has experience operating and maintaining the following Water Quality Instrumentation: YSI Model 85 Multimeter (conductivity, pH, DO, Temperature); YSI Model 55 Handheld Meter (DO & temperature); Aqua Check Water Analyzer (DO, pH, Cond., Temp, ORP); Horiba U-10 Mulitmeter (pH, cond., salinity, DO, turbidity, temp.); Oakton 35641(DO & temp).

- **NYSDEC Project (Division of Environmental Remediation, Region 3**

  Mr. Alliegro assisted in a soil and ground water investigation at two (2) active petroleum spill sites in Fort Montgomery NY in March 2002. The investigation was conducted to determine the degree of petroleum impacted overburden and bedrock. Mr. Alliegro's responsibilities include oversight of monitoring well drilling and installation, soil and rock core logging, surveying elevations of well castings, collecting water level data, ground water sampling, private well sampling and waste characterization.

- **Enhanced LNAPL Recovery and Pilot Testing Program**

  Mr. Alliegro has been part of an ongoing program that consists of LNAPL recovery. Bioslurping, High Vacuum Extraction and pilot testing at numerous locations throughout New York City sanitation, firehouses and police stations. Mr. Alliegro's responsibilities include system sampling, operation of a Liquid-Ring Recovery trailer system, collection and submittal of pilot test data, waste management and characterization

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Michael Alliegro

Project Scientist

(proper drum labeling, sampling and disposal) and calibration of field instrumentation.

- **New York City Department of Design and Construction (DDC) Remediation Projects**

  Mr. Alliegro provides Operation & Maintenance (O&M) services at various remediation projects throughout New York. Remediation Systems Include Pump & Treat, Soil -Vapor Extraction, Bioremediation, and High Vacuum Extraction (Bioslurping). Mr. Alliegro's responsibilities include the proper maintenance of system equipment, data collection, equipment monitoring, system sampling, observation well monitoring, ground water sampling, waste sampling, data entry and reporting.

- **Verizon UST removal project**

  During 2005, Mr. Alliegro was involved in the removal and oversight of over 30 UST (under ground storage tanks) at various locations all the New York metropolitan area and upstate. Mr. Alliegro's responsibilities included soil sampling, screening data collection and site coordination.

- **Hertz Laguardia**

  During 2008, Mr. Alliegro was involved in the delineation of the Herz rent a car facility at La Guardia airport. Mr. Alliegro's responsibilities included soil sampling, screening data collection and site coordination. Mr. Alliegro's responsibilities also included planning and coordinating well locations and action plans to identify the plume.

- **Jimmy's Dry Cleaner**

  During the summer of 2009, Mr. Alliegro was involved in the installation of monitoring and injection wells of a NYSDEC HAZ waste site in Roosevelt New York. Mr. Allegro's responsibilities included directing drilling activities along with working with NYSDEC and the project engineers. Mr. Alliegro was also involved in the injection pilot study of permanganate.

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Experience
highlight 2014

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Michael Alliegro

Project Scientist

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- **NYSDEC 1st and 90TH**

Mr. Alliegro was involved in the delineation and vapor intrusion project for the NYSDEC HAZ waste division. Mr. Alliegro's responsibilities included working with the DEC to identify possible source areas through monitoring and vapor well installation. Mr. Alliegro's responsibilities also included the low flow sampling and vapor sampling of all the newly installed wells. Mr. Alliegro was also involved in the reporting process associated with the project.

- **Glendale/Kliegman Brothers Hazardous Waste Project**

Mr. Alliegro was responsible for oversight and management of sonic injection well installation for the Glendale/ Kliegman Brothers Hazardous Waste Project from July-October 2013.

- **Sonic Well Remediation**

Mr. Alliegro was responsible for oversight and management of a Brooklyn based job taking place over three active properties. Twenty-three large diameter NAPL recovery wells were installed along with NAPL collection equipment and the project required extensive traffic monitoring, health and safety oversight and coordination with property owners. Mr. Alliegro coordinated the installation of wells and transport and disposal of all excavated materials.

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Experience highlight 2014

Appendix D
Safety Data Sheets

Monsanto
Material Safety Data

POLYCHLORINATED BIPHENYLS (PCBs)

Emergency Phone No.
(Call Collect)
314-694-1000

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: POLYCHLORINATED BIPHENYLS (PCBs)
Aroclor® Series 1016, 1221, 1232, 1242, 1248, 1254, 1260, 1262, 1268
Therminol® FR Series

MSDS Number: M00018515 Date: 12/95

Chemical Family:	Chlorinated Hydrocarbons
Chemical Name:	Polychlorinated biphenyls
Synonyms:	PCBs, Chlorodiphenyls, Chlorinated biphenyls

Trade Names/Common Names:

PYRANOL® and INERTEEN® are trade names for commonly used dielectric fluids that may have contained varying amounts of PCBs as well as other components including chlorinated benzenes.

ASKAREL is the generic name for a broad class of fire resistant synthetic chlorinated hydrocarbons and mixtures used as dielectric fluids that commonly contained about 30 - 70% PCBs. Some ASKAREL fluids contained 99% or greater PCBs and some contained no PCBs.

PYDRAUL® is the trade name for hydraulic fluids that, prior to 1972, may have contained varying amounts of PCBs and other components including phosphate esters.

The product names/trade names are representative of several commonly used Monsanto products (or products formulated with Monsanto products). Other trademarked PCB products were marketed by Monsanto and other manufacturers. PCBs were also manufactured and sold by several European and Japanese companies. Contact the manufacturer of the trademarked product, if not in this listing, to determine if the formulation contained PCBs.

In 1972, Monsanto restricted sales of PCBs to applications involving only closed electrical systems, (transformers and capacitors). In 1977, all manufacturing and sales were voluntarily terminated. In 1979, EPA restricted the manufacture, processing, use, and distribution of PCBs to specifically exempted and authorized activities.

MONSANTO COMPANY, 800 N. LINDBERGH BLVD., ST. LOUIS, MO 63167

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE, OR ACCIDENT
Call CHEMTREC - Day or Night - 1-800-424-9300 Toll free in the continental U.S., Hawaii, Puerto Rico, Canada, Alaska, or Virgin Islands. For calls originating elsewhere: 202-483-7616 (collect calls accepted)

For additional nonemergency information, call: 314-694-3344.

2. COMPOSITION/INFORMATION ON INGREDIENTS

Chemically, commercial PCBs are defined as a series of technical mixtures, consisting of many isomers and compounds that vary from mobile, oily liquids to white crystalline solids and hard noncrystalline resins. Technical products vary in composition, in the degree of chlorination, and possibly according to batch.

The mixtures generally used contain an average of 3 atoms of chlorine per molecule (42% chlorine) to 5 atoms of chlorine per module (54% chlorine). They were used as components of dielectric fluids in transformers and capacitors. Prior to 1972, PCB applications included heat transfer media, hydraulic, and other industrial fluids, plasticizers, carbonless copy paper, paints, inks, and adhesives.

Component	CAS No.
chlorinated biphenyl	1336-36-3
Aroclor 1016	12674-11-2
Aroclor 1221	11104-28-2
Aroclor 1232	11141-16-5
Aroclor 1242	53469-21-9
Aroclor 1248	12672-29-6
Aroclor 1254	11097-69-1
Aroclor 1260	11096-82-5
Aroclor 1262	37324-23-5
Aroclor 1268	11100-14-4

There are also CAS Numbers for individual PCB congeners and for mixtures of Aroclor® products.

PCBs are identified as hazardous chemicals under criteria of the OSHA Hazard Communication Standard (29 CFR Part 1910.1200). PCBs have been listed in the International Agency for Research on Cancer (IARC) Monographs (1987)-Group 2A and in the National Toxicology Program (NTP) Annual Report on Carcinogens (Seventh).

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Appearance and Odor: PCB mixtures range in form and color from clear to amber liquids to white crystalline solids. They have a mild, distinctive odor and are not volatile at room temperature. Refer to Section 9 for details.

WARNING!
CAUSES EYE IRRITATION
MAY CAUSE SKIN IRRITATION

PROCESSING AT ELEVATED TEMPERATURES MAY RELEASE VAPORS OR FUMES WHICH MAY CAUSE RESPIRATORY TRACT IRRITATION

POTENTIAL HEALTH EFFECTS

Likely Routes of Exposure: Skin contact and inhalation of heated vapors

Eye Contact: Causes moderate irritation based on worker experience.

Skin Contact: Prolonged or repeated contact may result in redness, dry skin and defatting based on human experience. A potential exists for developing chloracne. PCBs can be absorbed through intact skin.

Inhalation: Due to the low volatility of PCBs, exposure to this material in ambient conditions is not expected to produce adverse health effects. However, at elevated processing temperatures, PCBs may produce a vapor that may cause respiratory tract irritation if inhaled based on human experience.

Ingestion: No more than slightly toxic based on acute animal toxicity studies. Coughing, choking and shortness of breath may occur if liquid material is accidentally drawn into the lungs during swallowing or vomiting.

Other: Numerous epidemiological studies of humans, both occupationally exposed and nonworker environmentally exposed populations, have not demonstrated any causal relationship between PCB exposure and chronic human illnesses such as cancer or neurological or cardiovascular effects. PCBs at high dosage can cause skin symptoms; however, these subside upon removal of the exposure source.

Refer to Section 11 for toxicological information.

4. FIRST AID MEASURES

IF IN EYES, immediately flush with plenty of water for at least 15 minutes. If easy to do, remove any contact lenses. Get medical attention. Remove material from skin and clothing.

IF ON SKIN, immediately flush the area with plenty of water. Wash skin gently with soap as soon as it is available. Get medical attention if irritation persists.

IF INHALED, remove person to fresh air. If breathing is difficult, get medical attention.

IF SWALLOWED, do NOT induce vomiting. Rinse mouth with water. Get medical attention. Contact a Poison Control Center. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

NOTE TO PHYSICIANS: Hot PCBs may cause thermal burn. If electrical equipment arcs between conductors, PCBs or other chlorinated hydrocarbon dielectric fluids may decompose to produce hydrochloric acid (HCl), a respiratory irritant. If large amounts are swallowed, gastric lavage may be considered.

5. FIRE FIGHTING MEASURES

Flash Point: 284 degrees F (140 degrees C) or higher depending on the chlorination level of the Aroclor product

Fire Point: 349 degrees F (176 degrees C) or higher depending on the chlorination level of the Aroclor product

NOTE: Refer to Section 9 for individual flash points and fire points.

Extinguishing Media: Extinguish fire using agent suitable for surrounding fire. Use dry chemical, foam, carbon dioxide or water spray. Water may be ineffective. Use water spray to keep fire-exposed containers or transformer cool.

PCBs are fire-resistant compounds. They may decompose to form CO, CO2, HCl, phenolics, aldehydes, and other toxic combustion products under severe conditions such as exposure to flame or hot surfaces.

Dielectric fluids having PCBs and chlorinated benzenes as components have been reported to produce polychlorinated dibenzo-p-dioxins (PCDDs) and furans (PCDFs) during fire situations involving electrical equipment. At temperatures in the range of 600-650 degrees C in the presence of excess oxygen, PCBs may form polychlorinated dibenzofurans (PCDFs). Laboratory studies under similar conditions have demonstrated that PCBs do not produce polychlorinated dibenzo-p-dioxins (PCDDs).

Federal regulations require all PCB transformers to be registered with fire response personnel.

If a PCB transformer is involved in a fire-related incident, the owner of the transformer may be required to report the incident. Consult and follow appropriate federal, state and local regulations.

Fire Fighting Equipment: Fire fighters and others exposed to products of combustion should wear self-contained breathing apparatus. Equipment should be thoroughly decontaminated after use.

6. ACCIDENTAL RELEASE MEASURES

Cleanup and disposal of liquid PCBs and other PCB items are strictly regulated by the federal government. The regulations are found at 40 CFR Part 761. Consult these regulations as well as applicable state and local regulations prior to any cleanup or disposal of PCBs, PCB items, or PCB contaminated items.

If PCBs leak or are spilled, the following steps should be taken immediately:

All nonessential personnel should leave the leak or spill area.

The area should be adequately ventilated to prevent the accumulation of vapors.

The spill/leak should be contained. Loss to sewer systems, navigable waterways, and streams should be prevented. Spills/leaks should be removed promptly by means of absorptive material, such as sawdust, vermiculite, dry sand, clay, dirt or other similar materials, or trapped and removed by pumping or other suitable means (traps, drip-pans, trays, etc.).

Personnel entering the spill or leak area should be furnished with appropriate personal protective equipment and clothing as needed. Refer to Section 8 for personal protection equipment and clothing.

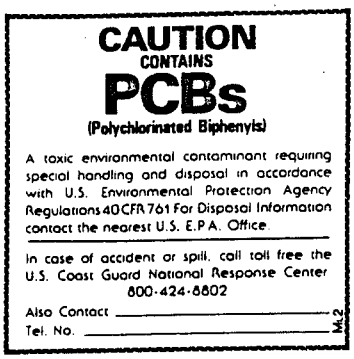
Personnel trained in emergency procedures and protected against attendant hazards should shut off sources of PCBs, clean up spills, control and repair leaks, and fight fires in PCB areas.

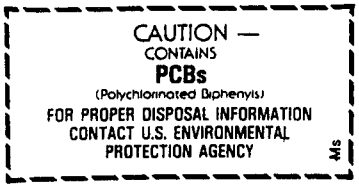
Refer to Section 13 for disposal information and Sections 14 and 15 for information regarding reportable quantity, and Section 7 for marking information.

7. HANDLING AND STORAGE

Care should be taken to prevent entry into the environment through spills, leakage, use vaporization, or disposal of liquid or containers. Avoid prolonged breathing of vapors or mists. Avoid contact with eyes or prolonged contact with skin. If skin contact occurs, remove by washing with soap and water. Following eye contact, flush with water. In case of spillage onto clothing, the clothing should be removed as soon as practical, skin washed, and clothing laundered. Comply with all federal, state, and local regulations.

Federal regulations under the Toxic Substances Control Act require PCBs, PCB items, storage areas, transformer vaults, and transport vehicles to be marked (check regulations, 40 CFR 761, for details).





Storage: The storage of PCB items or equipment (those containing 50 ppm or greater PCBs) and PCB waste is strictly regulated by 40 CFR Part 761. The storage time is limited, the storage area must meet physical requirements, and the area must be labeled.

Avoid contact with eyes.
Wash thoroughly after handling.
Avoid breathing processing fumes or vapors.
Process using adequate ventilation.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Eye Protection: Wear chemical splash goggles and have eye baths available where there is significant potential for eye contact.

Skin Protection: Wear appropriate protective clothing and chemical resistant gloves to prevent skin contact. Consult glove manufacturer to determine the appropriate type glove for a given application. Wear chemical goggles, face shield, and chemical resistant clothing such as a rubber apron when splashing is likely. Wash immediately if skin is contacted. Remove contaminated clothing promptly and launder before reuse. Clean protective equipment before reuse. Provide a safety shower at any location where skin contact can occur. Wash thoroughly after handling.

ATTENTION! Repeated or prolonged skin contact may cause chloracne in some people.

Respiratory Protection: Avoid breathing vapor, mist, or dust. Use NIOSH/MSHA approved equipment when airborne exposure limits are exceeded. Full facepiece equipment is recommended when airborne exposure limits are exceeded and, if used, replaces the need for face shield and/or chemical splash goggles. Consult respirator manufacturer to determine the type of equipment for a given application. The respirator use limitations specified by NIOSH/MSHA or the manufacturer must be observed. High airborne concentrations may require use of self-contained breathing apparatus or supplied air respirator. Respiratory protection programs must be in compliance with 29 CFR Part 1910.134.

ATTENTION! Repeated or prolonged inhalation may cause chloracne in some people.

Ventilation: Provide natural or mechanical ventilation to control exposure levels below airborne exposure limits (see below). If practical, use local mechanical exhaust ventilation at sources of vapor or mist, such as open process equipment.

Airborne Exposure Limits:

Product: Chlorodiphenyl (42% chlorine)

OSHA PEL: 1 mg/m^3 8-hour time-weighted average - Skin*
ACGIH TLV: 1 mg/m^3 8-hour time-weighted average - Skin*

Product: Chlorodiphenyl (54% chlorine)

OSHA PEL: 0.5 mg/m^3 8-hour time-weighted average - Skin*
ACGIH TLV: 0.5 mg/m^3 8-hour time-weighted average - Skin*

*For Skin notation see Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices, American Conference of Government Industrial Hygienists, 1995-1996.

9. PHYSICAL AND CHEMICAL PROPERTIES

PROPERTIES OF SELECTED AROCLORS®							
PROPERTY	**1016**	**1221**	**1232**	**1242**	**1248**	**1254**	**1260**
Color (APHA)	40	100	100	100	100	100	150
Physical state	mobile oil	mobile oil	mobile oil	mobile oil	mobile oil	viscous liquid	sticky resin
Stability	inert	inert	inert	inert	inert	inert	inert
Density (lb/gal 25°C)	11.40	9.85	10.55	11.50	12.04	12.82	13.50
Specific gravity x/15.5°C	1.36-1.37 x-25°	1.18-1.19 x-25°	1.27-1.28 x-25°	1.30-1.39 x-25°	1.40-1.41 x-65°	1.49-1.50 x-65°	1.55-1.56 x-90°
Distillation range (°C)	323-356	275-320	290-325	325-366	340-375	365-390	385-420
Acidity mg KOH/g, maximum	.010	.014	.014	.015	.010	.010	.014
Fire point (°C)	none to boiling point	176	238	none to boiling point	none to boiling point	none to boiling point	none to boiling point
Flash point (°C)	170	141-150	152-154	176-180	193-196	none	none
Vapor pressure (mm Hg @ 100°F)	NA	NA	0.005	0.001	0.00037	0.00006	NA
Viscosity (Saybolt Univ. Sec. @ 100°F) (centistokes)	71-81 13-16	38-41 3.6-4.6	44-51 5.5-7.7	82-92 16-19	185-240 42-52	1800-2500 390-540	— —

NA—*Not Available*

NOTE: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specifications for the product.

10. STABILITY AND REACTIVITY

Stability: PCBs are very stable, fire-resistant compounds.
Materials to Avoid: None
Hazardous Decomposition
Products: PCBs may decompose to form CO, CO_2, HCl, phenolics, aldehydes, and other toxic combustion products under severe conditions such as exposure to flame or hot surface.
Hazardous Polymerization: Does not occur.

11. TOXICOLOGICAL INFORMATION

Data from laboratory studies conducted by Monsanto and from the available scientific literature are summarized below.
Single exposure (acute) studies indicate:
Oral - Slightly Toxic (Rat LD50 - 8.65 g/kg for 42% chlorinated; 11.9 g/kg for 54% chlorinated)

The liquid products and their vapors are moderately irritating to eye tissues. Animal experiments of varying duration and at different air concentrations show that for similar exposure conditions, the 54% chlorinated material produces more liver injury than the 42% chlorinated material.

There are literature reports that PCBs can impair reproductive functions in monkeys. The National Cancer Institute (NCI) performed a study in 1977 using Aroclor 1254 with both sexes of rats. NCI stated that the PCB, Aroclor 1254, was not carcinogenic under the conditions of their bioassay. There is sufficient evidence in the scientific literature to conclude that Aroclor 1260 can cause liver cancer when fed to rodents at high doses. Similar experiments with less chlorinated PCB products have produced negative or equivocal results.

The consistent finding in animal studies is that PCBs produce liver injury following prolonged and repeated exposure by any route, if the exposure is of sufficient degree and duration. Liver injury is produced first, and by exposures that are less than those reported to cause cancer in rodents. Therefore, exposure by all routes should be kept sufficiently low to prevent liver injury.

Numerous epidemiological studies of humans, both occupationally exposed and nonworker environmentally exposed population, have not demonstrated any causal relationship between PCB exposure and chronic human illnesses such as cancer or neurological or cardiovascular effects. PCBs at high dosage can cause skin symptoms; however, these subside upon removal of the exposure source.

PCBs have been listed in the International Agency for Research on Cancer (IARC) Monographs (1987)-Group 2A and in the National Toxicology Program (NTP) Seventh Annual Report on Carcinogens.

12. ECOLOGICAL INFORMATION

Care should be taken to prevent entry of PCBs into the environment through spills, leakage, use, vaporization or disposal of liquid or solids. PCBs can accumulate in the environment and can adversely affect some animals and aquatic life. In general, PCBs have low solubility in water, are strongly bound to soils and sediments, and are slowly degraded by natural processes in the environment.

13. DISPOSAL CONSIDERATIONS

The disposal of PCB items or equipment (those containing 50 ppm or greater PCBs) and PCB wastes is strictly regulated by 40 CFR Part 761. For example, all wastes and residues containing PCBs (wiping cloths, absorbent material, used disposable protective gloves and clothing, etc.) should be collected, placed in proper containers, marked and disposed of in the manner prescribed by EPA regulations (40 CFR Part 761) and applicable state and local regulations.

14. TRANSPORT INFORMATION

The data provided in this section are for information only. Please apply the appropriate regulations to properly classify a shipment for transportation.

DOT Classification:	IF WEIGHT OF PCBs TO BE SHIPPED IS OVER ONE POUND, THE FOLLOWING CLASSIFICATION AND LABEL APPLY.	
DOT Label:	LIQUID:	Environmentally Hazardous Substance, liquid, n.o.s. (Contains PCB), 9, UN 3082, III
	SOLID:	Environmentally Hazardous Substance, solid, n.o.s. (Contains PCB), 9, UN 3077, III
DOT Label:	Class: 9	
DOT Reportable Quantity:	One Pound	
IMO Classification:	Polychlorinated Biphenyls, IMO Class 9, UN 2315, II IMO Page 9034, EMS 6.1-02	
IATA/ICAO Classification:	Polychlorinated Biphenyls, 9, UN2315, II	

15. REGULATORY INFORMATION

For regulatory purposes, under the Toxic Substances Control Act, the term "PCBs" refers to a chemical substance limited to the biphenyl molecule that has been chlorinated to varying degrees or any combination of substances which contain such a substance (40 CFR Part 761).

TSCA Inventory: not listed.

Hazard Categories Under Criteria of SARA Title III Rules (40 CFR Part 370): Immediate, Delayed.
SARA Section 313 Toxic Chemical(s): Listed-1993 (De Minimis concentration 0.1%.)

Reportable Quantity (RQ) under DOT (49 CFR) and CERCLA Regulations: 1 lb. (polychlorinated biphenyls) PCBs.

Release of more than 1 (one) pound of PCBs to the environment requires notification to the National Response Center (800-424-8802 or 202-426-2675).

Various state and local regulations may require immediate reporting of PCB spills and may also define spill cleanup levels. Consult your attorney or appropriate regulatory officials for information relating to spill reporting and spill cleanup.

16. OTHER INFORMATION

Reason for revision: Conversion to the 16 section format. Supersedes MSDS dated 10/88.

FOR ADDITIONAL NONEMERGENCY INFORMATION, CONTACT:

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Appendix E
Job Hazard Analysis (JHA)

JOB HAZARD ANALYSIS

Job/ Title: NYDEC-LNAPL Recovery Piolet Test-College Point 3 Site			WP/JSA #	Revision: 3
Risk Team Members: (Name/ Title)		**Signature:**	**Effective Date: 7/23/2015**	**Review date: 7/23/2015**
Michael Clark, Director Health & Safety				
			Applicable Subject Area Guidance:	
			▪Mobilization and Demobilization ▪Natural Hazards in the Environment ▪Walking and Working Surfaces ▪Noise and Hearing Conservation ▪Fall Protection ▪Aerial ▪Forklift Safety ▪Electrical Safety	▪Excavation Safety ▪Fire Safety ▪Lifting Safety ▪Hand Tool Safety ▪Portable Equipment

Revision History:

Work Summary: Excavation of petroleum contaminated soils, concrete and buried construction and demolition (C&D) debris in the area of the former USTs. Characterization of material for disposal. Loading of material for offsite transportation. Backfilling of excavation and covering area with asphalt.

Minimal Personal Protective Equipment: Level D

None ☐	Disp Clothing ■	Ear Muffs ☐	Gloves ■	Hard Hat ■	Respirator ☐	Safety Glasses ■	Safety Shoes ■	Other ☐
Coveralls ☐	Ear Plugs ■	Face Shield ☐	Goggles ☐	Lab Coat ☐	Shoe Covers ☐	Safety Harness ☐	Safety Vest ■	

Basic Job Tasks:	Potential Hazards:	Hazard Control:	PPE Controls:
Mobilization to and from site	Driving accidents and exposure to vehicular and heavy equipment traffic	▪Wear seatbelts. Do not use cell phone while driving, and minimize other distractions. ▪Keep unnecessary ground personnel away from loading and unloading areas. ▪Use signs, barricades, flashers, flagmen and other traffic control devices, as necessary. ▪Designate temporary walkways for outside personnel. ▪Maintain line of sight between operators and ground workers.	▪None above minimum
Mobilization and Demobilization	Exposure to vehicular and heavy equipment traffic and traffic accidents	▪Keep unnecessary ground personnel away from excavation and loading areas. ▪Use signs, barricades, flashers, flagmen and other traffic control devices, as necessary. ▪Designate temporary walkways for outside personnel. ▪Maintain line of sight between operators and ground workers. ▪Wear seatbelts, do not use cell phone while driving, and minimize other distractions.	▪None above minimum
Work Area set up and control	Unauthorized personnel entry	▪Delineate the work area with barriers (e.g. - caution tape, construction fencing). ▪Provide signage in conspicuous areas to notify personnel of entry requirements. ▪Brief workers of entry requirements through tailgate meetings followed by required signing of attendance sheet, prior to entering work area. ▪Provide "Self-Briefing" for non-workers performing tours and observations.	▪None above minimum
General Work Activities (work in all areas)	Insect and arachnid bites and stings	▪Stay out of high grass whenever possible. ▪Use insect, tick/ chigger repellent or wasp/ hornet spray when practical. ▪Check body for insects/arachnids during work and at the end of shift.	▪Long sleeves, if possible. ▪Long pants with socks.

Basic Job Tasks:	Potential Hazards:	Hazard Control:	PPE Controls:
General Work Activities (work in all areas)	Slips, trips, falls, uneven surfaces	▪Physically inspect work area prior to starting work. ▪Be aware of slipping and tripping hazards that may exist in work area. ▪Be cognizant of your own safe work practices as well as those of your coworkers. ▪Maintain good housekeeping. ▪Remove or mark any potential tripping hazards. ▪Maintain area clear of obstructions; material must be stored in designated areas out of passageways and shall not be allowed to accumulate in the work area, so as to cause a hazard. ▪Keep surfaces free of slipping hazards. ▪Cover and secure any holes or openings. ▪Maintain barriers (e.g., construction fencing, caution tape, etc.) around perimeter of open trenches. ▪Elevate electric lines, when possible. ▪Do not allow liquids to accumulate in puddles on work area surfaces. ▪Remove unnecessary equipment and material from work area. ▪Remove snow and be cautious of ice covered walk/ working surfaces.	▪None above minimum
General Work Activities (work in all areas)	Noise	▪Delineate "Hearing protection required" boundary from noise source by use of sound level measurements by trained personnel, as required. ▪Wear hearing protection for noise levels above 85dB, or in designated areas.	▪Hearing Protection
General Work Activities (work in all areas)	Pinch points, cuts and scraps	▪Inspect work area for potential pinch points and sharp or protruding edges that could cause cuts or scraps.	▪Wear appropriate gloves when working with material that may cause cuts, scraps or pinch points.
General Work Activities (work in all areas)	Personal injury from equipment operation	▪Brief workers on entry requirements and equipment being used through tailgate meetings followed by required signing of attendance sheet, prior to entering the work area. ▪Do not place hands or any part of body between articulating parts of equipment. ▪Maintain a safe distance from moving equipment based on swing radius of equipment. Adjust barriers as required. ▪Maintain communication between equipment operators and workers. ▪Do not wear any loose jewelry, clothing or other loose objects around equipment and machinery. ▪Tie back long hair to prevent from getting entrapped in machinery or equipment. ▪Ensure work area is vacated prior to start up of remotely operated equipment.	▪High visibility clothing, as required or as directed by safety professional. ▪Hard hats, when overhead hazards are present.
Working at elevated surfaces	Fall from elevation (Use fall protection when personnel are required to work within 15 feet of a fall of a fall greater than 6 feet).	▪Install guard rails for fall protection. ▪Use lanyard restraints at approved points to ensure personnel are protected from falls over edges. If lanyard restraints can not be used, approved locations will be used for retractable lanyards and shock absorbing lanyards. ▪Verify approved tie off locations. ▪Inspect lanyards, retractable, D-rings and harnesses for fitness prior to use.	▪Safety harness, lanyards, D-rings and retractable.

Basic Job Tasks:	Potential Hazards:	Hazard Control:	PPE Controls:
Working from aerial/ scissor lift	Fall from elevation	▪Make sure operator controls are easily accessible and properly marked. ▪Do not exceed the rated load capacity for the lift (including workers, tools, materials, bucket liner, etc.). ▪Check safety devices and operating controls before each use. ▪Check area in which lift will be used: level surface (do not exceed manufacturer slope recommendations); holes, drop-offs, bumps, debris, etc.; overhead power lines; stable surfaces; other hazards. ▪Set outriggers and breaks, as appropriate. ▪Apply wheel chocks as appropriate. ▪Do not travel to job location with lift in elevated position. ▪Do not move more than necessary to perform minor repositioning with lift in elevated position. ▪Use fall protection when on aerial lift.	▪Hard hats while on lift. ▪Hard hat when working below lift. ▪Full body harness with appropriate length lanyard as restrain device while on aerial lift.
Working from ladders or platforms ladders	Fall from elevation	▪Inspect all ladders prior to use (rungs, sides, feet). ▪Ensure non-skid safety feet are in good condition. ▪Place straight and extension ladders at a safe angle (4 to 1). ▪Ensure the ladder extends at least 3 feet above roof or platform. ▪Maintain a 3 point contact while climbing up or down the ladder. ▪Do not over reach - maintain center of gravity between ladder rails. ▪Ensure ladders are placed securely on level surfaces. ▪Do not stand on two steps or cap of the ladder. ▪Do not carry tools or materials up/down the ladder, use a belt or tool pouch or have tools handed up. ▪Secure ladders to prevent movement or support ladder by personnel holding it. ▪Use platform ladders whenever possible.	▪None above minimum
Scaffolding	Fall from scaffolding	▪Inspect and approve scaffolding after each alteration or movement, by a competent person to ensure scaffolding construction conforms to established standards. ▪Install guardrails, midrails and toe boards on all open sides of scaffolds as required. ▪Ensure all scaffolds are fully planked. Scaffold planks must be at least 2X10 inch full -thickness lumber, structural grade or equivalent and must be cleated or secured from movement. ▪Provide access ladders for each scaffold. climbing the end frame is prohibited unless their design incorporates an approved ladder. ▪Alterations to scaffolding and work surfaces is prohibited by unauthorized personnel. ▪Visually inspect all scaffolding members prior to use during shift. Damaged scaffold members must be removed from service immediately.	▪None above minimum
Working below elevated surfaces (balcony, lift or scaffolding, etc.)	Personnel injury due to falling objects	▪Be aware of surroundings.	▪Hard hat required
Use of Common Hand Tools	Eye injury, laceration, hand injury, impact injury, etc.	**GENERAL:** ▪Use only BNL approved tools. ▪Select and use proper tools for job. ▪Inspect tools prior to each use. ▪Keep body parts clear of pinch points and cutting edges.	▪Hearing protection, as required. ▪Snug fitting gloves to ensure proper grip. ▪Eye protection.
Use of HAMMERS (e.g., Claw, ball-peen hammers, welding/slag hammers, mauls, and sledge hammers):	Eye injury, laceration, hand injury, impact injury, etc.	▪Use proper tool for job (e.g., don't use maul to drive nails). ▪Ensure hammer swing area is clear of other workers. ▪Keep steadying hand clear of hammer head.	▪Snug fitting gloves to ensure proper grip. ▪Eye protection.

Basic Job Tasks:	Potential Hazards:	Hazard Control:	PPE Controls:
Use of MATERIAL CUTTING TOOLS (e.g., wire cutters, lineman pliers, needle-nosed pliers w/ side cutters, wire cutters/ strippers, bolt cutters, tin snips, diagonal cutters, etc.):	Eye injury, laceration, hand injury, impact injury, etc.	▪Use proper tool for job (e.g., don't use tin snips to cut wire). ▪Keep steadying hand clear of jaws when applying pressure. ▪Do not exceed manufacturer's rating when using bolt cutters. ▪Use diagonal cutters whenever cutting tie wraps.	▪Snug fitting gloves to ensure proper grip. ▪Eye protection.
Use of MATERIAL CUTTING TOOLS (e.g., utility knives, pocket knives):	Eye injury, laceration, hand injury, impact injury, etc.	▪Close/retract blade when not in use. ▪Always draw blade AWAY from you- not towards you. ▪Keep steadying hand clear of blade. ▪Place material being cut on firm surface.	▪Snug fitting gloves to ensure proper grip. ▪Eye protection.
Use of SAWS (e.g., Hack, cross - cut and back saws):	Eye injury, laceration, hand injury, impact injury, etc.	▪Select proper saw for material being cut. ▪Keep steadying hand clear of saw blade. ▪Ensure blade is tightened securely in frame when using hack saw.	▪Snug fitting gloves to ensure proper grip. ▪Eye protection.
Use of common power tools	Electrical shock; Eye injury, laceration, hand injury	**GENERAL:** ▪Use only BNL approved power tools, extension cords and adapters. ▪Select and use proper tool for job. ▪Inspect tools before each use. ▪Keep body parts clear of pinch points and cutting edges. ▪Ensure tools have 3-wire ground cord or shall be double insulated. ▪Ensure 110-volt AC power tools are powered only from GFCI protected sources- test GFCI devices prior to each use. ▪De-energize power equipment prior to changing bits or blades. ▪Elevate wiring to keep it away from water on the ground and to prevent damage from foot or vehicle traffic [avoid stringing electric wiring across wet areas]. ▪Do not allow water to accumulate in puddles in work areas. ▪Dispose of batteries and bulbs as directed by ERP ECR. ▪Know location of power source (plug, breaker, disconnect, etc.) in case of emergency. ▪Do not wear any loose jewelry/ clothing that can be caught in a blade ▪Tie back long hair.	▪Hearing protection, as required. ▪Snug fitting gloves to ensure proper grip. ▪Eye protection.
Use of common power tools (continued)	Noise	▪Delineate "Hearing protection required" boundary from noise source by use of sound level measurements by trained personnel, as required. ▪Wear hearing protection for noise levels above 85dB, or in designated areas.	▪Hearing protection
Use of ELECTRIC DRILLS/ DRIVERS:	Electrical shock; Eye injury, laceration, hand injury	▪Keep hands clear of rotating chuck. ▪Inspect bit prior to use. ▪Tighten bit in chuck. ▪Ensure back or blind areas where drill could impact are clear	▪Hearing protection, as required. ▪Snug fitting gloves to ensure proper grip. ▪Eye protection. ▪Full face shield, as required.
Use of POWER ROTARY FILES:	Electrical shock; Eye injury, laceration, hand injury	▪Keep hands clear of rotating chuck. ▪Inspect bit prior to use. ▪Tighten bit in chuck.	▪Hearing protection, as required. ▪Snug fitting gloves to ensure proper grip. ▪Eye protection. ▪Full face shield, as required.
Use of POWER SAWS (circular saws, etc.):	Electrical shock; Eye injury, laceration, hand injury	▪Ensure back, side or blind areas behind material being cut are clear. ▪Secure material being cut- use clamp and/ or helper. ▪Use sawhorses to place material being cut at waist height, when at all practicable. ▪Inspect blade guard and fence. ▪Tighten blade securely using correct wrench. ▪Select proper blade tooth count for material being cut. ▪Set blade depth to allow complete cut through. ▪Use only blades that are in good, sharp condition.	▪Hearing protection, as required. ▪Snug fitting work gloves to ensure proper grip. ▪Eye protection. ▪Full face shield, as required.

Basic Job Tasks:	Potential Hazards:	Hazard Control:	PPE Controls:
Use of CUT OFF MACHINE (e.g., concrete saw):	Electrical shock; Eye injury, laceration, hand injury	▪Ensure back, side or blind are behind material being cut are clear. ▪Hold the cut-off machine firmly with both hands. ▪Keep your body clear of the cutting attachment and avoid standing in direct line with the wheel. ▪Do not cut above shoulder height. ▪Only cut at full throttle. ▪Inspect the blade guard. ▪Tighten blade securely using correct wrench. ▪Select proper blade tooth count for material being cut. ▪Use only blades that are in good, sharp condition.	▪Hearing protection, as required. ▪Snug fitting work gloves to ensure proper grip. ▪Eye protection. ▪Full face shield, as required.
Use of POWER SAWS (straight blade saws, etc.):	Electrical shock; Eye injury, laceration, hand injury	▪Ensure back, side or blind are behind material being cut are clear. ▪When performing in-situ material cutting, inspect hidden or blind areas where saw blade may impact. ▪Keep steadying hand clear of blade. ▪Secure material being cut- use clamps and/or helper. ▪Inspect blade guard and guide. ▪Tighten blade securely using correct wrench. ▪Select blade tooth count and length based on material being cut.	▪Hearing protection ▪Snug fitting gloves to ensure proper grip. ▪Eye protection
Use of CHIPPING HAMMER:	Flying debris, pinch points, silica, dust, and noise	▪Inspect tool for damage prior to each use. ▪Ensure proper chisel is installed for job. ▪Inspect area for pinch points and avoid contact. ▪Provide water suppression to work area, if possible, to minimize dust/ silica generation. ▪Ensure proper footing and balance at all time.	▪Hearing protection ▪Snug fitting gloves to ensure proper grip. ▪Eye protection ▪Full face shield required when operating chipping hammer.
Use of VIBRATORY PLATE COMPACTOR:	Inhalation	▪Do not use in confined spaces without adequate ventilation	None above minimum
Excavation	Excavation cave in	▪Ensure trench shoring and/or sloping comply with the Excavation Plan and OSHA Standards. ▪Remove or support surface encumbrances (e.g., rocks, trees, telephone poles, fire hydrants). ▪Ensure approved access/egress points have appropriate sloping (1.5 to 1)(or sloping shall not exceed 34°), ladders, ramps or stairs. ▪Space ladders (if required) no more than 50 feet apart. A worker shall not have to travel more than 25 feet laterally to a means of egress. ▪Set equipment, materials and spoils back from the trench edge per the excavation plan but not less than 2 feet. ▪Inspect the excavation and document on the Daily Excavation Checklist at the start of each work shift, as needed throughout the shift and after every rainstorm. The inspection and checklist are completed by a "Competent Person", when work will occur in the excavation. ▪Control/divert surface water. ▪Provide support systems for sidewalks, pavements, and other structures that may be affected by the excavation operations. ▪Select trench boxes or shoring (as required). Selection performed by a "Competent Person". ▪Use a support system for excavation depths greater than 20 feet. Support systems shall be approved by a professional engineer licensed. in the State of New York.	▪None above minimum
Excavation/Soil Backfill/Grading	Exposure to vehicular and heavy equipment traffic	▪Keep unnecessary ground personnel away from excavation and loading areas. ▪Use signs, barricades, flashers, flagmen and other traffic control devices, as necessary. ▪Designate temporary walkways for outside personnel. ▪Maintain line of sight between operators and ground workers.	▪None above minimum

Basic Job Tasks:	Potential Hazards:	Hazard Control:	PPE Controls:
Excavation	Equipment Rollover	▪Ensure outriggers are on stable platform. ▪Maintain stable excavation slope. ▪Travel equipment perpendicular to slopes.	▪None above minimum
Drilling	Caught in rotating equipment	▪An exclusion zone with a radius of at least one mast length is to be created around the rig. Unauthorized personnel shall be kept clear of this zone. ▪Prior to removing cutting, the rig will be shut down and the operators will be away from the controls. ▪Hardhats and eye protection are required at all time in a work zone when the drill rig is present. ▪Hearing protection is required in work zone while drill rig is operated. ▪Proper hand protection is required, work gloves when handling equipment, chemical resistant work gloves when handing potentially contaminated equipment or cuttings.	▪None above minimum
Outdoor Work Activities (working in warm weather	Heat Stress	▪Comply with ET requirements of Working in Heat Stress Environment. Work activities that are conducted outdoors and have no requirements for full body PPE will be governed by BNL's heat stress advisory program. If full bodied PPE is required then the following guidelines are applied: When WBGT temperatures in the work area exceed 75° F when performing heavy work in double protective clothing or 82° F in single protective clothing or work clothes. ▪Use "Self Determination" to allow workers to remove themselves from working in warm/ hot environment. ▪Have adequate fluid replacement available for all employees. ▪Provide a readily accessible refuge from hot environment for workers to recover. ▪Do not exceed maximum stay times when heat stress advisory is in effect. ▪Monitoring area for temperature will take place on a periodic basis.	▪None
Outdoor Work Activities (working in cold weather)	Cold Stress	▪Follow ET Cold Stress Occupational Exposure Limits when temperatures fall below 50 degrees F. ▪Wet conditions will exacerbate cold exposures, workers are to be kept dry. Change clothes or remove from cold exposure if employee becomes wet. ▪Plan work to take place during higher temperature time periods when possible.	▪None
Electrical work, wiring, working in electrical breaker boxes	Electric shock Puncture from wires	▪Test and identify sources of electrical current leading into the work area. ▪Institute Lockout/Tagout (LOTO) procedures to control electrical sources per EnviroTrac's LOTO practice. ▪Always wear safety glasses when working with electricity. ▪Wear work gloves when pulling or manipulating wire.	▪Safety glasses ▪Work gloves
Use of temporary wiring (extension cords)	Electrical shock	▪Use only ET approved extension cords ▪Inspect extension cords prior to use for damage to prongs and insulation. ▪Use GFCI protected extension cords in hazardous environments (e.g. wet, outdoors) or when plugging in power tools. ▪Protect wiring from damage (e.g., Pinch points, sharp extrusions) and water. ▪Do not interconnect extension cords (e.g., daisy chain). ▪Test GFCI prior to use. ▪Route power cords so as not to create trip hazards-keep cords clear of sharp surfaces or pinch hazards.	None above minimum

Basic Job Tasks:	Potential Hazards:	Hazard Control:	PPE Controls:
Use of temporary lighting and electric service	Electrical hazards	▪Ensure power to equipment to be removed has been insolated. ▪Ensure all power tools is equipped with ground fault circuit interrupters (GFCI) or double insulated. ▪Avoid stringing electrical wiring across ground ▪Elevate wiring to keep it away from water on ground and prevent damage from foot or vehicle traffic, whenever possible. ▪Do not allow water to accumulate in puddles in work area ▪Inspect equipment and cords daily to ensure they are in good condition. ▪Do not plug portable lights into same power extension cord as power tools.	None above minimum
Walking on sidewalks and other outdoor paved surfaces	Falls to same level from loss of balance due to uneven surfaces; slips on snow or ice; fall from curb	▪Provide sufficient lighting. ▪Ensure all walking surfaces are maintained. ▪Provide housekeeping to prevent trip / fall hazards. ▪Perform Tier I inspections, periodically. ▪Use non-slip surface coating where appropriate ▪Ensure timely snow and ice removal	None
Walking on unpaved outdoor surfaces including grass	Falls to same level from loss of balance due to uneven surfaces, obscured holes; insect bites (ticks)	▪Provide sufficient lighting. ▪Ensure all walking surfaces are maintained. ▪Provide housekeeping to prevent trip / fall hazards. ▪Tuck in pants legs when walking through tall grass ▪Apply repellants when walking/working in grassy areas	None
Material handling- Rigging	Personal injury, equipment damage, load damage	▪Ensure personnel stay clear of load. ▪Ensure no body part is placed under load during lifting. ▪Direction of material handling operations shall be given by only one Person-in-Charge (PIC). ▪Perform rigging directly and / or supervised by a "Competent Person". ▪Inspect rigging prior to and following each use.	▪High visibility clothing (vest or approved shirt)
Heavy material handling (e.g.; crane, hoist, jacks)	Worker/machine impact resulting in worker injury and/or equipment/material damage	▪Ensure only one Person-in-charge (PIC); directs all material handling operations. ▪Use OSHA specified hand signals to direct work, as necessary. ▪Minimize manual lifting activities- use forklifts and/or pallet jacks as applicable. ▪Control the work area; keep non-essential personnel away from work activities. ▪Ensure no body part is placed under load during lifting. ▪Appoint a spotter with multiple forms of communication (e.g.; air-horn, radio, hand signals, walkie-talkie, cell phone) when equipment is in operation. A spotter must be in place to observe workers and must sound alert if any worker is in danger of being struck by equipment.	▪High visibility clothing (vest or approved shirt), as appropriate.
General Material Handling	Back injury, head and foot injury	▪Make use of material handling devices whenever possible. ▪Use lifting assistance when lifting over 40-lbs for an individual. ▪Use proper lifting techniques. ▪Use equipment to lift loads when feasible. ▪Use two man lift whenever possible. ▪Ensure loads are secure to prevent shifting during transportation.	▪None above minimum
Storage of Combustibles/ Flammables	Personal injury, fire	▪Store propane (including empty tanks) outside of buildings. ▪Store Flammables in designated flammable cabinets when not in use. ▪Follow transient combustible limits or ordinary combustibles as documented in the appropriate work package.	None above minimum

Basic Job Tasks:	Potential Hazards:	Hazard Control:	PPE Controls:
Use of Pumps	Leaks, spills, personal injury	▪Provide catch container/ glove bags per RWP requirements. ▪Ensure spill equipment is available and used as necessary. ▪Wear face shield when there is a potential for splash	▪Face Shield
Demolition of Concrete	Dust and Silica	▪Conduct real time exposure monitoring to assure compliance to regulatory limits. ▪Wear respirators when exposure levels are shown to be above regulatory limits. ▪Provide water suppression to demolition area, if possible, to minimize dust / silica generation. NOTE: Water mixed with latex paint may be used as a substitute for water.	Respirator if exposure levels are above regulatory limits.
Striking Utilities	Shock, burn, electrocution	▪Ensure work planning is completed, including digging permit and excavation plan. ▪Ensure utilities have been located and marked. ▪Dig by hand when identifying location of utilities. ▪Ensure a minimum clearance of 10 feet between overhead lines, cranes, excavators or back hoe; for lines rated 50 kV or less. ▪Suspend work for additional evaluation by Safety and Health Manager or designee if an overhead line of greater than 50kV is encountered.	Gloves (when digging)
Disconnect and breaker operation	Arc Flash	▪Operation of breakers/disconnects shall be performed using the appropriate PPE for the hazard category identified on the equipment and using the minus-one rule when applicable.	▪As identified on the equipment
Portable Equipment Fueling	Fire	▪Keep fuel container at least 10 feet from equipment when not in use. ▪Do not refuel equipment while engine is running. ▪Do not refuel equipment when engine is hot. Allow a minimum of 20 minutes for engine to cool down. ▪Keep fire extinguisher in proximity while in use.	▪None above minimum
Portable Equipment Fueling	Fuel Spill	▪Set up equipment inside non-porous containment constructed of materials compatible with fuel type or on an absorbent pad. ▪Ensure spill equipment and material is available during refueling. ▪Ensure fuel container is bonded to machine prior to fueling. ▪Use only BNL approved fuel containers. ▪Inspect closure lid and fueling spout for wear. ▪Ensure closure lid is tight and secure.	▪None above minimum
Portable Diesel / Gas Equipment	Personnel Burns	▪Lift equipment using only lift grips (as available). ▪Do not touch equipment hot surfaces until surfaces have been cooled (wait a minimum of 20 minutes to touch).	▪None above minimum

Appendix F

Permit-required confined space program and employee training certificates

(training certificates provided on request)

29 CONFINED SPACE ENTRY PROGRAM

29.1 Purpose

To clearly specify a confined space and a permit-required confined space and under what conditions the employees of EnviroTrac may enter a permit-required confined space.

29.2 Scope

This document covers the hazards, procedures, and training associated with the entering of confined spaces for any reason by EnviroTrac employees. Confined space entry occurs when any part of a person's body breaks the plane of an opening into a confined space. It is intended to provide the guidelines under which employees can protect themselves from hazardous atmospheres, entrapment, engulfment, external energy sources, and other hazards when working in confined spaces.

29.3 Administration and General Information

It is the policy of EnviroTrac that "confined spaces" are to be eliminated as soon as practically possible from any work site where they are encountered. This program defines and outlines the conditions and methods under which employees may enter confined spaces for sampling and equipment installation and removal. The Confined Space Entry Program described herein is based upon the following government regulations and publication:

- CFR Title 29 Part 1910.146, Permit Required Confined Spaces
- CFR Title 29 Part 1910.147, The Control of Hazardous Energy (Lockout/Tagout)
- A Guide to Safety in Confined Spaces - DHHS (NIOSH) Publication No. 87-113
- OSHA Permit-Required Confined Spaces (OSHA 3138-01R 2004)

Within EnviroTrac, this program will be administered by the Director of Health and Safety and the designated Regional Health and Safety Coordinators, who together will be responsible for the generation and execution of all portions of the program, and who will have the necessary authority to assure that all requirements of this program are properly fulfilled.

The following definitions, taken directly from 29CFR 1910.146, are pertinent to this program:

CONFINED SPACE is a space that:

1. Is large enough and so configured that an employee can bodily enter and perform assigned work
2. Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry)
3. Is not designed for continuous employee occupancy.

PERMIT-REQUIRED CONFINED SPACE has one or more of these characteristics:

1. Contains or has the potential to contain a hazardous atmosphere;
2. Contains a material with the potential to engulf someone who enters the space;
3. Has an internal configuration that might cause an entrant to be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a smaller cross section; and/or

4. Contains job-introduced hazards, such as: welding, cutting, grinding, hot riveting, burning, heating or the introduction of sources of ignition within the confined space, or the use of flammable or toxic cleaning solutions.
5. Contains any other recognized serious safety or health hazards.

Worksites will be inspected for spaces that meet the definition of a permit-required confined space and any EnviroTrac employee that is exposed to these areas will be informed existence, location and the hazards they pose. Areas will be identified with signs stating: “DANGER—PERMIT-REQUIRED CONFINED SPACE—AUTHORIZED ENTRANTS ONLY”

If a confined space is entered for the purpose of eliminating hazards of the space, it is considered a permit required confined space until the hazards have been removed and the entrants have vacated the space. Once all the hazards have been removed, the confined space is subject to reclassification. A permit is not required if the hazards can be eliminated without entering the space.

EnviroTrac employees that are required to enter a permit-require confined space are required to follow all requirements of this practice, unless:

1. The only hazard posed by the space is an actual or potential hazardous atmosphere that continuous forced air ventilation alone is sufficient to maintain that space safe for entry.
   a. The space must be inspected and documented that there are no other potential hazards exist other than the potential atmosphere that be rendered safe by ventilation.
   b. The determination and supporting data is to be made available to each employee who enters the permit space or to that employee's authorized representative.
   c. Entry to the space will not require: testing of the atmosphere prior to entrance or during continuous ventilation, a completed permit for entry, an entry supervisor or attendants, or rescue personnel or equipment.
2. The permit-required confined space is reclassified as a non-permit confined space.

   If the permit space poses no actual or potential atmospheric hazards and if all hazards within the space are eliminated without entry into the space, the permit space may be reclassified as a non-permit confined space for as long as the non-atmospheric hazards remain eliminated.

   The reclassification is to be documented and approved by the Director of Health and Safety that all hazards in a permit space have been eliminated, the documentation will contain the date, the location of the space, and the signature of the person making the determination. The re-classification will be made available to each employee entering the space or to that employee's authorized representative.

29.4 Atmosphere Monitoring

It will be the policy of EnviroTrac not to allow any of its employees to enter permit-required confined spaces for any reason until a confined space permit has been completed.

The permit requires that the atmosphere is sampled at the top, center, and bottom of the space to determine oxygen content and combustible or toxic atmospheres. The following monitoring must be conducted, in this order:

- OXYGEN CONTENT: Check using a direct reading Oxygen Meter, the concentration of oxygen inside of the confined space is to be between 19.5% and 23.5%. If the confined space atmosphere cannot be ventilated to achieve an oxygen concentration of at least 19.5%, entry will only be made using a Supplied Air Respirator with an escape bottle, or an SCBA. If the oxygen concentration cannot be lowered below *23.5%,* the confined space will not be entered.
- COMBUSTIBLE GAS CONCENTRATION: Check using a direct reading Combustible Gas Meter, the concentration of combustible gas in the confined space is not to exceed 10% of the lower explosive limit (LEL) of the gas present in the confined space. Should the combustible gas concentration exceed 10% of the LEL, employees will not enter the confined space unless ventilation can successfully lower the concentration below 10% of the LEL.
- TOXIC VAPOR CONCENTRATION: Using either a Photoionization Detector (PID) or Flame Ionization Detector (FID), the confined space will be sampled for the presence of toxic vapors. If a contaminant in the space is known, and the concentration of that substance is measured at levels above published permissible exposure limits (i.e., OSHA PELs), and the confined space cannot be ventilated to lower the concentration to below published exposure limits, appropriate air purifying or supplied air respirators must be used to enter the space. The specific respiratory protection required must be determined on a site-by-site basis for each confined space and conform to EnviroTrac's Respiratory Protection program (Section 19).

In addition to a hazardous atmosphere, a confined space may contain hazardous materials or physical hazards, such as low ceilings or pipes where a worker may strike his or her head. Personal Protective Equipment to be worn to protect employees from these hazardous conditions.

Heat and cold stress may impact workers in confined spaces. Follow EnviroTrac's Heat and Cold Stress Practice (Section 25).

29.5 Emergency Response Protocol

Emergency response to incidents in a permit-required confined space is to be coordinated prior to entry. Rescue services must be either be: 1) provided by the host facility (stated in contract agreement), or 2) provided by an outside service which is given an opportunity to examine the entry site, practice rescue, and decline as appropriate. EnviroTrac does not perform in-house emergency response services.

Rescue services are to be evaluated for capabilities to respond to particular permit-required confined space rescue scenario and have the capability to reach the victim(s) within a time frame that is appropriate for the permit space hazard(s) identified. Rescue services are required to be on site for all IDLH conditions while work is being performed.

The medical facility to be used in the event of an incident is to be provided with copies of SDSs of hazardous materials that an injured *Entrant* may have been exposed.

The *Entry Supervisor* will coordinate with the Emergency Response Teams prior to allowing employees to enter the confined space. The telephone numbers will be on the Confined Space Entry Permit and in the possession of the *Attendant* during confined space entry, and a telephone or radio will be at the site to provide communications with emergency response teams.

29.6 Confined Space Entry Procedures

Whenever employees of EnviroTrac are required to enter confined spaces for any reason, a permit will be developed prior to site entry, to address the following procedures:

- The Confined Space Entry project has a minimum of three positions:

  The *Entry Supervisor* establishes the terms of the confined space entry and prepares the permit. The *Entry Supervisor* manages the project, determines the space hazards and mitigations, verifies emergency plans and availability of rescue services, and cancels the permit after entry operations are complete.

  The *Entrant* enters the confined space and will be equipped with a body harness and lifeline, and the appropriate Personal Protective Equipment dictated by the atmosphere and other hazards present inside the confined space. The *Entrant* is to Stop Work and exit the space if conditions are felt to be unsafe or provisions of the confined space entry permit are not followed.

  The *Attendant* remains outside the confined space, in control of the lifeline, in constant communication with the entrant, and alert for signs that the entrant is experiencing adverse problems associated with the conditions inside the confined space. The Attendant will not leave the entrance of the confined space while an Entrant is inside unless replaced by another qualified Attendant. One Attendant will be assigned to each confined space entry; Attendants will not be allowed to monitor more than one confined space.

- Provisions for emergency rescue will be established during the project planning by the Entry Supervisor. Rescue services must be either be: 1) provided by the host facility, or 2) provided by an outside service which is given an opportunity to examine the entry site, practice rescue, and decline as appropriate. Rescue services are required to be on site for all IDLH conditions while work is being performed.

- When hazardous energy sources, such as electrical, mechanical, chemical, thermal, pneumatic, hydraulic, or stored are present in a confined space, procedures to control that hazardous energy will be used as required in Section 26 – Control of Hazardous Energy Sources (Lockout / Tagout) or a protective shield, barrier, or other insulating device/material will be used to protect workers from the potential energy source.

- The EnviroTrac Confined Space Entry Permit will be completed by the *Entry Supervisor* and is required to be present at the confined space until the assignment is completed. The Attendant and Entrant will complete the EnviroTrac Confined Space Pre-Entry Checklist. A copy of both documents is located at the end of this practice and on the Safety Portal.

- A Work Zone will be established around the entrance of the Confined Space to allow adequate room for the Attendant; equipment, materials, and supplies; rescue and monitoring equipment; and emergency rescue services. Where required, the Work Zone will use barriers and other traffic control devices to control vehicular and pedestrian traffic.

- Any conditions making it unsafe to remove an entrance cover is to be eliminated before the cover is removed. When entrance covers are removed, the opening is to be promptly guarded by a railing, temporary cover, or other temporary barrier that will prevent an accidental fall through the opening and that will protect each employee working in the space from foreign

objects entering the space.

- Atmospheric monitoring will have been conducted and provisions to protect *Entrants*. . *Entrants* will have the opportunity to participate in and review monitoring equipment calibration data and testing before entry.
- Continuous positive ventilation will be used to supply air into the space for the duration of the time *Entrants* are in the space. The air will be tested periodically and if the atmosphere changes to something not expected, all *Entrants* will be removed from the space and a new confined space entry permit will be developed.
- The space will be continuously evaluated by the *Entrant(s)* and the *Attendant(s)* for changes that could affect confined space entry. Any changes observed or suspected must be addressed or the permit and entry into the confined space terminated. Any changes in conditions are to be noted on the permit.
- The *Entry Supervisor* will cancel the entry permit when the assignment is completed or when new conditions exist. New conditions must be noted on the canceled permit and used in revising the permit space program. Canceled entry permits will be retained for at least one year.

Should the *Entrant* be overcome by conditions within the confined space, the standby employee will either remove the *Entrant* with the lifeline or will summon assistance from professional emergency response personnel as listed on the Confined Space Entry permit. The stand by employee will not enter the confined space or leave the space unattended unless replaced by another qualified stand by employee.

When EnviroTrac is employed as the prime/sole contractor at a facility where confined spaces are or will be present, the Project Manager, in conjunction with the Corporate Health and Safety Director or Regional Health and Safety Coordinator, will have the responsibility to ascertain that all the requirements of this program are fulfilled prior to any employee entering into such confined spaces.

When EnviroTrac is employed as a sub-contractor or there are multiple employers working in the same confined space, one person will be designated as a *Person-In-Charge* to coordinate all activities for multiple contractors. No contractors will be allowed to perform work unless it is coordinated through the Person-In-Charge.

Should contractors, clients or others request an employee to enter confined spaces which the employee does not feel meet the above entry program requirements, they should inform those requesting them to enter that they do not consider the confined space safe for entry, inform their supervisor and await further instructions. Employees will enter such confined spaces only if they are satisfied that the provisions of this program are fulfilled.

29.7 Confined Space Energy Isolation

Any hazardous energy within the confined space will be controlled as required by 29CFR 1910.147 and by EnviroTrac's Control of Hazardous Energy practice (Section 27). Examples of controlling hazardous energy include:

- Electrical energy devices must be de-energized, and the switching either locked out and/or tagged out.
- Hydraulic energy devices must be de-energized as above, lines capped or blanked, and the stored energy in the systems released of the devices blocked.
- Hydrostatic or pneumatic energy devices must be de-energized, and lines either capped or blanked.
- All other sources of hazardous energy need to be identified and controlled prior to allowing anyone into the confined space.

It will be the policy of EnviroTrac not to permit employees to enter confined spaces that contain the potential for hazardous energy devices without engineering controls. Confined spaces containing well heads with electrically operated pumps may be entered providing the pumps have intrinsically safe or explosion proof motors and the electrical circuits are protected with ground fault circuit interrupters (GFCI).

29.8 Employee Training

All employees who are required to enter confined spaces for any reason will successfully complete a Confined Space Entry Training Program, training be conducted prior to initial assignment, prior to a change in assigned duties, and if a new hazard has been created or special deviations have occurred, and will include, but not be limited to the following topics:

- The contents of this Confined Space Entry Program
- The hazards of confined space entry
- Temperature extremes in confined space
- Duties of the entrant and standby personnel
- Isolation and control of hazardous energy in the confined space
- Rescue methods for confined space entry

Employees will be required to demonstrate competency on confined space entry training through either skills demonstration or a written examination.

Documentation of training will be maintained by the EnviroTrac's Safety Department and will include the employee's name; date(s) of training; subject, curriculum, handouts, and pertinent training materials; and trainer's name and title.

The Regional Health and Safety Coordinator will conduct periodic inspection of random work sites to ascertain that this Confined Space Entry Program is conscientiously being followed.

29.9 Program Evaluation

The Corporate Health and Safety staff will review all aspects of this Confined Space Entry Program at least annually to assure its effectiveness and update the program accordingly. Whenever modifications revisions of federal or applicable state regulations or standards, or any action that would necessitate a change in any of the contents of this practice occur, such changes will be made. , Everyone affected by changes to this program will be notified and retrained, if necessary. All such modifications will be made in writing, and the nature of the modification noted and dated. Examples of program review include: any

unauthorized entry of a confined space, a hazard not covered by the permit, the occurrence of an injury or near miss, employee complaints.

Canceled confined space entry permits will be retained for one year and be used in the aforementioned review to ensure that employees are protected. The cancelled permits will be reviewed for any unauthorized entry of a confined space, terminated permits due to hazards not covered by the permit, the occurrence of an injury or near miss, or employee complaints.

29.10 Enforcement

The following disciplinary actions will be administered to employees found to be willfully negligent or not complying with the provisions of this policy:

- First Offense: If the violation is correctable, the employee will receive a written warning detailing the nature of the offense, which will be documented in the employee's personnel file. In addition, if the violation is not correctable, the employee will be dismissed from the site and sent home for the day without pay.
- Second Offense: The employee will receive a written warning detailing the nature of the offense, documented to their personnel file, and one day off without pay, regardless of whether the violation is correctable.
- Third Offense: The employee will receive a written warning detailing the nature of the offense, documented to their personnel file, and one week off without pay, regardless of whether the violation is correctable.
- Fourth Offense: The employee will be terminated with cause.

Should willful noncompliance or negligence to the provisions of this policy result in injury or increased risk to another individual then disciplinary action will be more severe than the normal sequence of the above procedures may be administered. All of the above disciplinary steps will be administered within the scope and intent of written company personnel policies.

EnviroTrac Environmental Services
Health and Safety Program

CONFINED SPACE ENTRY PERMIT

Page 1 of 2

1. Permit Space To Be Entered
2. Purpose of Entry
3. Date of Entry — Authorized Duration of Entry Permit
4. Authorized Entrants
5. Attendants(s)
6. Name of Current Entry Supervisor(s) — 1. Time — 2. Time

Entry Supervisor who Originally Authorized Entry

Signature or Initials

7. Record hazards of the permit space to be entered. Hazard	Yes	No	N/A
A. Lack of Oxygen	☐	☐	☐
B. Combustible Gases	☐	☐	☐
C. Combustible Vapors	☐	☐	☐
D. Combustible Dusts	☐	☐	☐
E. Toxic Gases	☐	☐	☐
F. Toxic Vapors	☐	☐	☐
G. Chemical Contact	☐	☐	☐
H. Electrical Hazards	☐	☐	☐
I. Mechanical Exposure	☐	☐	☐
J. Temperature	☐	☐	☐
K. Engulfment	☐	☐	☐
L. Entrapment	☐	☐	☐
M. Others	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐

8. Check or list the measures used to isolate the permit space and to eliminate or control permit space hazards before entry.	
☐	A. Purge-Flush and Vent
☐	B. Ventilation
☐	C. Lockout/Tag Out
☐	D. Inerting
☐	E. Blanking, Blocking, Bleeding
☐	F. External Barricades
☐	G. Confined Space Identification/Signs

DO NOT DESTROY THIS PERMIT - PERMIT MUST BE RETAINED FOR ONE YEAR AFTER CANCELLED

Rev 11/30/2010

EnviroTrac Environmental Services
Health and Safety Program

CONFINED SPACE ENTRY PERMIT

9. Acceptable Entry Conditions

10.	Test(s) To Be Taken	Permissible Entry Levels	Test 1	Test 2	Test 3	Test 4
A.	Percent of Oxygen	19.5% to 23.5%				
B.						
C.						
D.						
E.						
F.						
G.						
H.						
I.						
	Name or Initials of Tester					
	Test Times					

11. Rescue and Emergency Services Available:

Name _____ Name _____

Telephone _____ Telephone _____

12. Communication procedures to be used by authorized entrants and attendants.

13. Equipment supplied to the employee.

Yes	No	N/A	Equipment	Description			
☐	☐	☐	(i) Gas Test and Monitoring	Name _____ Serial/Unit No. _____			Model/Type _____
☐	☐	☐	(ii) Ventilating				
☐	☐	☐	(iii) Communications				
☐	☐	☐	(iv) Personal Protective Equipment	☐ Safety Harness With Life Lines ☐ Respiratory	☐ Hard Hats ☐ Eye ☐ Ear ☐ Face	☐ Hand ☐ Foot ☐ Clothing	
☐	☐	☐	(v) Lighting				
☐	☐	☐	(vi) Barriers/ Shields	☐ Pedestrian	☐ Vehicle	☐ Other	
☐	☐	☐	(vii) Safe Ingress/Egress	☐ Ladders			
☐	☐	☐	(viii) Rescue and Emergency	☐ Lifelines	☐ Hoists	☐ Resuscitators-Inhalator	
☐	☐	☐	(ix) Other Safety Equipment				

14. Other information for this particular confined space to ensure employee safety.

15. Additional Permits Required. ☐ Hot Work ☐ Other

THIS CONFINED SPACE ENTRY PERMIT HAS BEEN CANCELLED:

BY _____ _____ AM PM _____
Entry Permit Supervisor Time Date

DO NOT DESTROY THIS PERMIT - PERMIT MUST BE RETAINED FOR ONE YEAR AFTER CANCELLED

Rev 11/30/2010

EnviroTrac Environmental Services
Health and Safety Program

CONFINED SPACE PRE-ENTRY CHECKLIST

LOCATION _____ DATE_____ TIME_____

ENTRY SUPERVISOR_____ PHONE_____

Mark the appropriate column: X Yes, X No, or X N/A Not Applicable.	Yes	No	N/A
1. Is a "DANGER CONFINED SPACE" sign posted to identify the site as requiring a confined space entry permit to occupy the area?	☐	☐	☐
2. Is a written permit space entry program developed and implemented that complies with Section 1910.146(c)(4)?	☐	☐	☐
3. Is the written program available for inspection by employees and their representatives?	☐	☐	☐
4. Have all ENTRANTS been provided training and acquired the understanding, knowledge and skills necessary for the safe performance of the duties assigned in Section 1910.146(h)?	☐	☐	☐
5. Have all ATTENDANTS been provided training and acquired the understanding, knowledge and skills necessary for the safe performance of the duties assigned in Section 1910.146(i)?	☐	☐	☐
6. Have all ENTRY SUPERVISORS been provided training and acquired the understanding, knowledge and skills necessary for the safe performance of the duties assigned in Section 1910.146(j)?	☐	☐	☐
7. Is the only hazard an actual or potential hazardous atmosphere?	☐	☐	☐
8. Will continuous forced air ventilation alone be sufficient to maintain the permit space safe for entry?	☐	☐	☐
9. Has monitoring and inspection data been developed to eliminate the hazardous atmosphere through forced air ventilation?	☐	☐	☐
10. Has the permit space been isolated?	☐	☐	☐
11. Have steps been taken for purging, inerting, flushing or ventilating the permit space to eliminate or control atmospheric hazards?	☐	☐	☐
12. Is monitoring available to verify that conditions are acceptable for entry throughout the duration of an authorized entry?	☐	☐	☐
13. Are employees trained on how to maintain and properly use testing and monitoring equipment?	☐	☐	☐

REV 11/30/2010 Page 1 of 4

EnviroTrac Environmental Services
Health and Safety Program

Mark the appropriate column: X Yes, X No, or X N/A Not Applicable.	Yes	No	N/A
14. Is ventilating equipment needed to obtain acceptable entry?	☐	☐	☐
15. Is communication equipment necessary and available for use between attendant and entrant?	☐	☐	☐
16. Are the entrants provided with personal protective equipment to be adequately protected insofar as feasible engineering and work practice controls allow?	☐	☐	☐
17. Has adequate lighting equipment been supplied to allow a safe work area and allow a quick exit in an emergency?	☐	☐	☐
18. Has the area been secured with barriers and shields from pedestrian, vehicle or other barriers to protect the entrants from external hazards?	☐	☐	☐
19. Is the confined space provided with equipment, such as ladders, needed for safe ingress and egress by authorized entrants?	☐	☐	☐
20. Is there other training, equipment or services needed to provide safe confined space entry?	☐	☐	☐

SAFETY EQUIPMENT CHECKLIST

☐ Safety Harness with Attached Life Lines

☐ Respirator and type _____

☐ Hard Hat
☐ Eye Protection
☐ Hand Protection

☐ Other (specify)

☐ Ear Protection

☐ Foot Protection
☐ Protective Clothing
☐ Ventilator
☐ Resuscitator
☐ Communications Equipment
☐ Gas Tester with Alarms

REV 11/30/2010 Page 2 of 4

EnviroTrac Environmental Services
Health and Safety Program

GAS TESTS TAKEN

	GAS	PERMISSIBLE ENTRY LEVEL	YES	NO	INSTRUMENT USED	ACTUAL READING	TESTED BY
1.	Oxygen %	19.5% to 23.5%	☐	☐			
2.			☐	☐			
3.			☐	☐			
4.			☐	☐			
5.			☐	☐			
6.			☐	☐			
7.			☐	☐			
8.			☐	☐			
9.			☐	☐			
10.			☐	☐			

Calibrated direct-reading instruments used to test confined space atmosphere:

1. Name _____ Name _____
   Make _____ Make _____
   Serial No. _____ Serial No. _____
   Last Calibration Date _____ Last Calibration Date _____

RESCUE AND EMERGENCY SERVICES

1. Contacts in the event of an emergency include name and telephone number.

A. _____ C._____
_____ _____
_____ _____

B. _____ D._____
_____ _____
_____ _____

2. Rescue services available for this confined space entry.

☐ employee ☐ outside rescue service

3. Rescue Equipment available:

☐ Oxygen ☐ Chest/full body harness
☐ Resuscitator – Inhalator ☐ Retrieval line properly installed
☐ First Aid Equipment ☐ Wristlets when it is the safest and most effective alternative
☐ De-Fibrillator

Additional rescue equipment available

REV 11/30/2010 Page 3 of 4

EnviroTrac Environmental Services
Health and Safety Program

NOTES

Appendix G
EnviroTrac's Practice for Ground Disturbance

28 GROUND DISTURBANCE PROGRAM

28.1 Purpose

To clearly specify under what conditions the employees of EnviroTrac may conduct operations where any indentation, interruption, intrusion, excavation, construction, or other activity results in the penetration of the ground at any depth.

This document also covers the hazards, procedures, and training associated with the entering of trenches and excavations by employees of EnviroTrac, as defined under 29 CFR 1926 Subpart P. It is intended to provide the guidelines that protect employees from the hazards of entrapment and engulfment when working around trenches and excavations.

28.2 Identification of Underground Installations

It is the policy of EnviroTrac that prior to any operations that disturb more than one foot below surface grade that all underground installations are to be identified. Before any ground disturbance activities, available records will be referenced and operator personnel and/or others that may be familiar with the property will be contacted to determine the existence and location of underground installations such as facilities/tanks/pipelines and utilities in the vicinity of the work area to verify, as far as is reasonable and practicable, the existence of known underground installations.

Areas where hand tools are used for ground disturbance operations, such as shovels, hand augers, etc., will be visually assessed for possible underground installations, utilities, and/or facilities. If underground installations are identified as having hazardous energy, such as electrical power, hydraulic pressure, chemical pipe lines, etc., than procedures to control that hazardous energy will be instituted as required in Section 26 – Control of Hazardous Energy Sources (Lockout / Tagout).

Ground disturbance operations that use mechanical equipment pose a greater threat to underground installations. Prior to ground disturbance operations using mechanical equipment, local requirements for identification of underground utilities will be followed, such as notifying a “One Call Center”, “Call Before Your Dig”, etc. or engaging a third party utility mark out contractor. The Regional Safety Coordinator will maintain current underground utility identification requirements for the regional operations.

<u>Exposing Underground Installations</u>

All underground installations within the dig zone or a drill zone will be hand exposed or vacuum excavated (pothole) to sufficiently verify location, line size, and alignment of underground installations. Care has to be taken during the process of exposing underground installations; damage could occur if cautious work procedures are not followed. The process to expose any installations is to be selected based on site conditions/risks.

The pothole(s) will be made large enough and suitably spaced to accurately determine location, depth, orientation, and facility size. The bottom and sides of the pothole are to be adequately illuminated to determine the presence or absence of underground facilities. Visually confirm the presence or absence of underground facilities continuously during potholing. Use a commercial jacking tool or A-frame and winch to extract a hand auger if the force required to extract the tool exceeds personal lifting limits (50 pounds).

Boreholes will be cleared to a minimum of 5 feet and 110 percent of the mechanical drilling tool diameter, or to the client's/facility's requirements, if different. If a boring is located within 2 feet of an underground facility, a protective casing will be placed in the cleared boring prior to mechanical drilling to guide the drilling tool instead of exposing the underground facility.

28.3 Overhead Utilities and other Overhead Hazards

Overhead utilities pose several hazards including electrical shock or burn, electrical arc or blast, and disruption of services provided by the overhead utilities. All work sites will be assessed for hazards associated with the overhead utilities including all means of access to and egress from the site.

In addition, other overhead and low clearance facilities and structures will be evaluated and assessed for hazards associated with the type of work being performed including all means of access to and egress from the site.

For work areas with overhead utilities, all work performed by EnviroTrac personnel or contractors will not violate the **Minimum Approach Distances** specified in the table below:

Nominal voltage in kilovolts (kV)	Distance: Phase to ground exposure
0.05 to 1.0	Avoid contact
1.1 to 15.0	2'-1" (0.64m)
15.1 to 36.0	2'-4" (0.72m)
36.1 to 46.0	2'-7" (0.77m)
46.1 to 72.5	3'-0" (0.90m)
72.6 to 121	3'-2" (0.95m)
138 to 145	3'-7" (1.09m)
161 to 169	4'-0" (1.22m)
230 to 242	5'-3" (1.59m)
345 to 362	8'-6" (2.59m)
500 to 550	11'-3" (3.42m)
764 to 800	14'-11" (4.53m)

Reference Table R-6 in 29 CFR 1910.269(l)(10)

The specific voltage of a line cannot be visually determined strictly by the placement of the line on the utility pole. Contact the local power company to determine specific voltages of power lines if the scope of work or access to or egress from the site could affect overhead utilities.

If Minimum Approach Distances cannot be maintained during the scope of the work, the lines are to be de-energized by the utility company who will need to certify, in writing, that the lines have been de-energized. To prevent damage, provisions will have to be made so de-energized lines are not contacted.

If the scope of work will bring workers or equipment near the Minimum Approach Distances, these areas will be demarcated and/or cordoned off to prevent crossing into unsafe areas. Spotters will be used if demarcation is not sufficient to prevent encroachment into these areas. The sole responsibility of the

spotter will be to warn workers and/or equipment operators that the Minimum Approach Distances may be encroached.

Equipment and vehicles will not be parked overnight or refueled under energized power lines.

In the event of a downed utility line (power or communication), a "circle of safety" will be maintained at a minimum of a 30-foot radius from the downed line. Contact emergency services (911) to report the downed line. Communication lines can become energized when dislodged from the pole or if in contact with power lines.

Other Overhead Hazards

Communication Lines:

Communications lines (generally the lines closest to the ground) usually do not transmit hazardous voltage under normal operating conditions. These lines can cause obstructions that may dislodge loads and/or equipment if contacted. In addition, the company may incur liability for disruption of service if these lines are broken.

Guy Wire:

Guy lines are used to support utility poles and are composed of braded steel cables generally under tension. These lines are not energized under normal operating conditions but may cause damage to equipment or personal injury if contacted.

Demark all Guy Lines in work areas and access to or egress from the site. Spotters will be used if demarcation is not sufficient to prevent contact with Guy Lines.

Building Overhang, Canopies, Bridges, Overpasses, Signs, etc.

In addition to overhead utilities, the project is to be assessed for other overhead hazards that may interfere with the scope of work. These hazards include: canopies, building overhang, signs, bridges, overpass and other hazards. The Project Manager will assess or have the work site assessed for these overhead hazards and include provisions in the work plan to prevent contact, damage, or encroachment of safe Minimum Approach Distances.

28.4 Traffic Control in Construction Sites

Limited space in a construction site increases the potential for worker injury and property damage from vehicle accidents and collisions. To alleviate this, construction sites are to be designed to facilitate vehicle flow and to limit backing.

When vehicles are required to back, a spotter should be used to clear a path of travel. Construction vehicles are to be equipped with a backup beeper. Workers are to wear high visibility apparel (i.e., safety vests), either Class I, II, or III depending on the speed limit of the work site and adjacent traffic areas.

The swing radius of construction equipment is to be demarked so workers are aware of the area and do not enter while equipment is operating. Workers will seek and receive acknowledgement from equipment operators prior to entering the swing radius. Equipment operators will stop operations when workers or equipment enters the swing area.

Operations adjacent to an active traffic area will follow the requirements of EnviroTrac's Work Zone Protection program and the requirements of the USDOT Uniform Traffic Control Manual.

28.5 Environmental Drilling

Work Zone Designation

A Work Zone will be established and controlled around environmental drilling activities that allow only authorized personnel access to the zone. The driller will *Stop Work* when an unauthorized person enters the drilling zone. Follow the procedures listed in the ET Stop Work Practice. The current version of the practice is located on the Safety Portal.

Where open auger operations are used, the driller will establish additional controls such as risk-assessed procedures, signals, an area guard, or other effective means to verify that personnel are clear of the auger any time it is rotating.

Inspection of Drilling Equipment

The driller will inspect the drilling equipment on a daily basis or before each new setup by using an inspection checklist. The inspection will verify that the equipment is in good working order; pressurized hoses are in good condition, and safeguards and kill switches are in place and operational. Any substandard items will be corrected prior to drilling.

Drill Rig Operator

The drill rig operator will remain at the controls unless the rig is shut down. While the drill rig is running, the drill rig operator will not use a mobile phone or radio. The drill rig operator will not wear loose objects or clothing that could inadvertently activate the rig clutch or controls.

Performing Drilling Operations

Prior to conducting drilling operations on site, a Pre-Drilling Site Walkover will be conducted by the drilling operators and a person familiar with the site, preferably the site owner/operator.

During the site walkover, the following will be reviewed, documented, and discussed with the Workforce during the Tailgate Safety Meeting:

- Emergency provisions including the location and operation of emergency shut-offs.
- Ground conditions and topography of locations where drilling rig is to located.
- Overhead utilities and/or obstructions.
- Lay down of materials and supplies including the process to secure of drilling rods and flights, and sampling and waste barrels from falling or rolling.
- Access and egress for the site and muster points in the event of emergency.

If during the site walkover it is determined that the proposed scope of work may impact underground facilities, the project will be re-evaluated for the necessity of data collection versus the risk from impacting underground facilities. If revised or alternative locations are selected, another site walkover will be conducted.

During drilling operations, caution must be taken when drilling between the cleared depth and 20' as underground facilities may still be present. Provisions must be made to communicate during high-noise conditions including the agreement on the meaning of hand signals.

Climbing the Rig

In the event it is necessary to the climb the drilling rig for maintenance or repair, follow procedures listed below:

- If the lowest part of the worker will be higher than 6', Working At Heights provisions will be required and the provisions of the ET Working At Heights practice will be followed.
- If work on the mast is to proceed, the drill rig will be shut down and locked out before any work on the rig, including the mast can proceed.

28.6 Trenching and Excavation

This section defines the conditions under which employees may enter trenches and excavations. The Excavation Awareness Program described herein is based upon the following government regulations and industry standards:

- CFR Title 29 Part 1926 Subpart P - Excavations
- CFR Title 29 Part 1926.650- Scope, applications, definitions
- CFR Title 29 Part 1926.651- General requirements
- CFR Title 29 Part 1926.652- Requirements for protective systems

The following definitions are included in the above regulations, and are considered pertinent to this program:

- EXCAVATION: Any man-made cut, cavity, trench or depression in the earth surface, made by earth removal.
- TRENCH: A narrow excavation made below the surface of the ground. In general, the depth is greater than the width, but the width cannot exceed 15 feet.
- BENCHING: A method of protecting employees from cave-ins by excavating the sides of an excavation to form one or a series of horizontal steps.
- SHIELDING: A structure that is able to withstand the forces imposed by a cave-in and thereby protects employees within the structure.
- SHORING: A structure that supports the sides of an excavation and which are designed to prevent cave-ins.
- SLOPING: A method of protecting employees from cave-ins by excavating to form sides of an excavation that is inclined away from the bottom of the excavation so as to prevent cave-ins.
- STABLE ROCK: Natural solid mineral material that can be excavated with vertical sides and will remain intact while exposed.
- COMPETENT PERSON: Defined by OSHA as a person capable of identifying existing and predictable hazards in the surroundings, or working conditions that are unsanitary, hazardous, or dangerous to employees. Authorized to take prompt corrective measures to eliminate existing and predictable hazards and to stop work when required. A competent person should have and be able to demonstrate the following:
    1. Training, experience, and knowledge of:
        a. Soil Analysis
        b. Use of protective systems
    2. Ability to detect:
        a. Conditions that could result in cave-ins
        b. Failures in protective systems
        c. Hazardous atmospheres

d. Other hazards including those associated with confined spaces

Any excavation five feet deep or deeper is not considered safe from cave-ins unless one or more of the following conditions exist:

- It is made entirely of stable rock.
- It has been inspected daily by a competent person and pronounced safe.
- Protective systems are installed which have the capacity to protect workers from cave-ins, which include: sloping, benching, shielding, and shoring that have been inspected daily by a competent person and pronounced safe.

Any excavation four feet deep or deeper that requires human occupancy will require a Competent Person to classify the soil and/or rock deposits of the excavation area as Stable Rock, Type A, Type B, or Type C in accordance with the definitions set forth in 1926 CFR Subpart P Appendix A paragraph (b). Protective systems will be selected based on the flow chart listed in 1926 CFR Subpart P, Appendix F – Selection of Protective Systems. For excavations greater than 20 feet, protective systems will be designed by a Professional Engineer. All protective systems will meet or exceed the minimum standards as specified in 1926 CFR Subpart P:

- Appendix B – Sloping and Benching,
- Appendix C – Timer Shoring for Trenches,
- Appendix D – Aluminum Hydraulic Shoring for Trenches, or
- Appendix E – Alternatives to Timber Shoring.

Atmospheric Testing of Excavation and Trenches

Any excavation, including trenches, four feet deep or deeper that requires human occupancy located in an area where hazardous atmospheres could reasonably be expected to exist, such as landfills, hazardous materials storage facilities, hazardous waste sites, and other environmental remediation areas may only be entered after the atmospheres in those excavations are tested to ascertain that the oxygen content in the excavation is greater than 19.5% and the combustible gas concentration is less than 10% of the LEL of the gas present.

Additional air monitoring is to be conducted for the presence of airborne toxins suspected based on the contamination present at the area of ground disturbance. Engineering controls will be instituted to alleviate employee exposure or, if not feasible, sufficient personal protective equipment will be worn to control worker exposure.

Access, Egress, and Crossings of Excavation or Trench

Any excavation four feet deep or deeper that requires human occupancy must have a ladder, ramp, or other safe means of egress located so that each employee need travel no more than 25 feet in any direction to reach a means of escape.

Crossings over the excavation or walkways within six (6) feet of the excavation are to be designed with handrails that meet OSHA requirements for fall protection.

Water Accumulation in Excavation or Trench

In the event water accumulates in the excavation, the following requirements for controlling this

accumulation must be provided if personnel are to enter or work in the excavation:

- Personnel must not work in excavations where standing water has accumulated,
- Water removal or de-watering equipment, such as pumps, are installed and monitored by a competent person,
- Personnel must exit from excavations during rainstorms,
- Trenches must be carefully inspected by a competent person after each rain and before personnel are permitted to re-enter.

Suspended Loads

Workers in the excavation and other areas of the worksite are to be protected against falling loads and are not allowed to be under or in the swing radius of any equipment working with a load.

Authority and Administration

Within EnviroTrac, the Director of Health and Safety, and the designated Regional Health and Safety Coordinators will be responsible for the generation and execution of all portions of the program, and will have the necessary authority to assure that all requirements of this program are properly fulfilled, will administer this program.

28.7 Excavation Entering Procedure

It will be the policy of EnviroTrac not to allow any of its employees to enter excavations for any reason unless that excavation meets the conditions for being safe from cave-in, has been tested to assure that the atmosphere is safe, and has a proper means of ingress/egress as outlined above.

When EnviroTrac is employed as the prime/sole contractor at a facility where excavations are or will be present, the EnviroTrac designated Competent Person will have the responsibility to ascertain that all excavations meet the requirements of the above regulations prior to any employee or contractor entering into such excavations. The Competent Person will perform daily inspections of the excavations or immediately after a rain event using the Trench Inspection and Entry Authorization form located at the end of the this practice.

When EnviroTrac is employed as a sub-contractor at a facility where the client has the responsibility for determining the hazards at the site or location associated with excavations, and consequently controls the compliance to the pertinent excavation regulations, EnviroTrac employees will enter such excavations only if the excavations has been inspected and cleared by the Competent Person and the employee is satisfied that the excavations are safe and meet the conditions for being safe from cave-in.

Should contractors, clients or others request an employee to enter an excavation that the employee does not feel is safe and free from cave-in hazards, the employee is to state that he/she does not consider the excavation safe, inform his/her supervisor and/or the Project Manager, and await further instructions.

28.8 Alternatives to Excavation Entry

Sampling in excavations should always be performed utilizing construction equipment such as backhoes or long handled samplers wherever possible. Entering excavations should always be the last

alternative, and must never be undertaken without first ensuring that the excavation is safe from cave-in.

28.9 Employee Training

All employees who are required to enter excavations for any reason will successfully complete an Excavation Awareness Training Program, which will include, but not be limited to the following topics,:

- The contents of 29 CER 1926 Subpart P
- The contents of this EXCAVATION AWARENESS PROGRAM.
- The dangers of excavation entry.
- Alternatives to entering excavations for sampling.

EnviroTrac employees must be made aware of the danger of sidewall collapse for persons standing near the excavation during training. The awareness training will include Control of Hazardous Energy (Lockout/Tagout) for operations that require ground disturbance and include local and pertinent requirements for underground utility identification and mark out.

Documentation of training will be maintained by the EnviroTrac's Safety Department and will include the employee's name; date(s) of training; subject, curriculum, handouts, and pertinent training materials; and trainer's name and title.

The Regional Health and Safety Coordinator will conduct periodic inspection of random work sites to ascertain that this Excavation Awareness Program is conscientiously being followed.

28.10 Program Evaluation

The Corporate Health and Safety staff will review all aspects of this Excavation Awareness Program at least annually to assure its effectiveness. Whenever modifications in work scope, equipment changes or modification, revision of federal regulations or standards, or any action that would necessitate a change in any of the contents of this Excavation Awareness Program occur, such changes will be made, and everyone affected by those changes notified and retrained, if necessary. All such modifications will be made in writing, and the nature of the modification noted and dated.

28.11 Enforcement

The following disciplinary actions will be administered to employees found to be willfully negligent or not complying with the provisions of this policy:

- First Offense: If the violation is correctable, the employee will receive a written warning detailing the nature of the offense, which will be documented in the employee's personnel file. In addition, if the violation is not correctable, the employee will be dismissed from the site and sent home for the day without pay.
- Second Offense: The employee will receive a written warning detailing the nature of the offense, documented to their personnel file, and one day off without pay, regardless of whether the violation is correctable.
- Third Offense: The employee will receive a written warning detailing the nature of the offense, documented to their personnel file, and one week off without pay, regardless of whether the violation is correctable.

- Fourth Offense: The employee will be terminated with cause.

Should willful noncompliance or negligence to the provisions of this policy result in injury or increased risk to another individual then disciplinary action will be more severe than the normal sequence of the above procedures may be administered. All of the above disciplinary steps will be administered within the scope and intent of written company personnel policies.

EnviroTrac Environmental Services

TRENCH INSPECTION AND ENTRY AUTHORIZATION FORM

LOCATION:				**DATE:**	
TIME OF INSPECTION(S)					
WEATHER CONDITIONS:				**APPROX. TEMP.:**	
CREW LEADER:				**SUPERVISOR:**	
DIMENTIONS:	**DEPTH =**			Yes No	**HAZARDOUS CONDITIONS**
	TOP =	W	L	❑ ❑	..... Saturated soil / standing or seeping water
	BOTTOM =	W	L	❑ ❑	..... Cracked or fissured wall(s)
SOIL TYPE:		**TESTED:**		❑ ❑	..... Bulging wall(s)
❑ Solid rock (most stable)		❑ Yes		❑ ❑	..... Floor heaving
❑ Average soil		❑ No		❑ ❑	..... Frozen soil
❑ Fill material				❑ ❑	..... Super-imposed loads
❑ Loose sand				❑ ❑	..... Vibration
				❑ ❑	..... Depth greater than 10'
PROTECTION METHODS:				**PLACEMENT OF SPOILS & EQUIPMENT**	
(Walls MUST be vertical—NO voids)				❑ ❑	..... Spoils at least 2 feet from edge of trench
SHORING				❑ ❑	..... Equipment at least 2 feet from edge
❑ Timber				❑ ❑	..... Backhoe at end of trench
❑ Pneumatic				❑ ❑	..... Compressor, etc. at remote location
❑ Hydraulic				**LADDER LOCATION**	
❑ Screw Jacks				❑ ❑	..... Located in protected area
❑ Trench Shield				❑ ❑	..... Within 25 feet of safe travel
UNEVEN, IRREGULAR WALLS				❑ ❑	..... Secured
❑ Trench Box				❑ ❑	..... Extends 36 inches above the landing
Sloping: ❑ **q 1:1 (45°)** ❑ **q 1 ½:1 (34°)**				❑ ❑	..... Leads to safe landing
Yes No	**ENVIRONMENTAL CONDITIONS:**			**OTHER:**	
❑ ❑	Gas detector used?			❑ ❑	Shoring equip. & matls inspected prior to use?
❑ ❑	Confined space permit issued?			❑ ❑	Is trench SAFE to enter?
COMMENTS:					
				Work Order #	

NOTE All unsafe conditions must be corrected prior to trench entry. If any hazardous conditions are observed, the trench must be immediately evacuated and no one is allowed to re-enter until corrective action has been taken.

Certification by Competent Person

Excavation Entry Authorized By: _____

Designated Competent Person

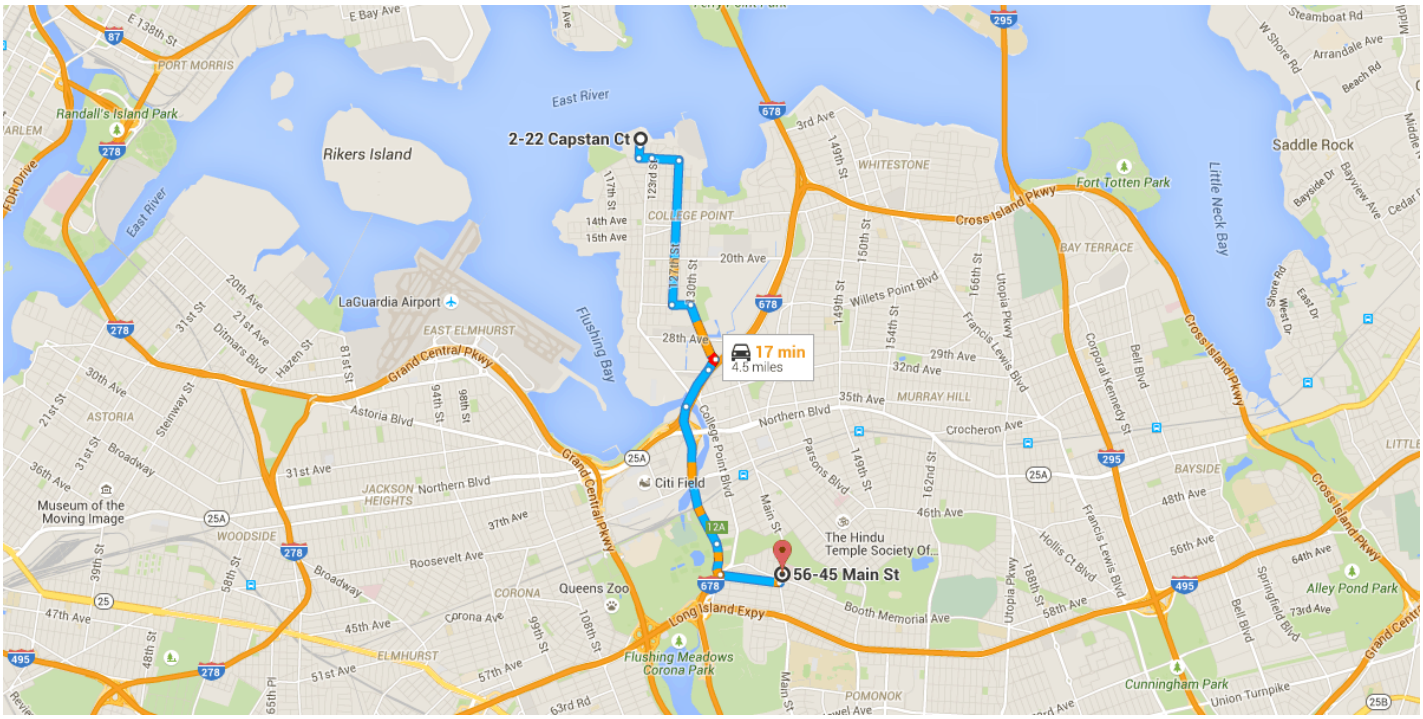
Appendix H
Directions To Nearest Medical Facility

Google

Directions from 2-22 Capstan Ct to 56-45 Main St

Drive 4.5 miles, 17 min

New York Hospital Queens
56-45 Main Street, Flushing, N.Y. 11355
718-670-2000.

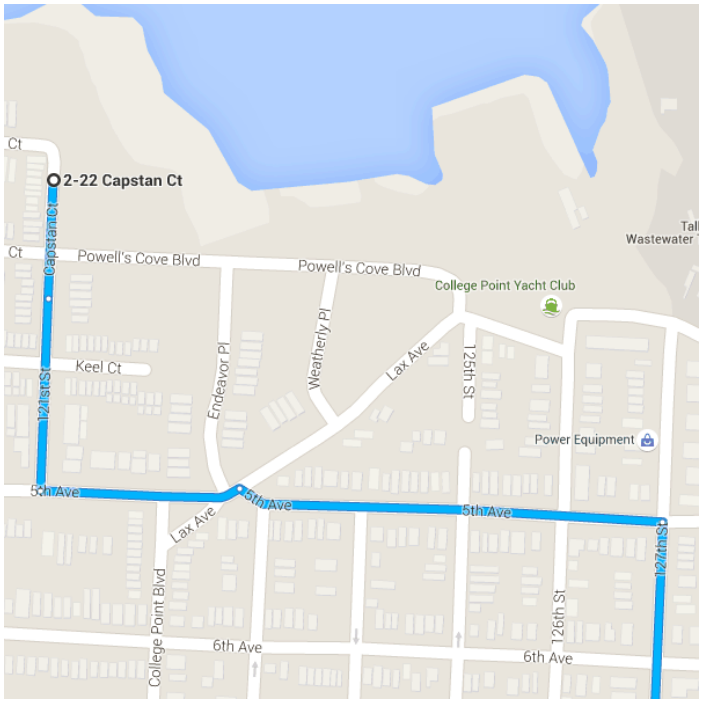


2-22 Capstan Ct

College Point, NY 11356

Take 5th Ave to 127th St

0.5 mi / 2 min



1. Head **south** on **Capstan Ct** toward **Powell's Cove Blvd**
   305 ft
2. Continue onto **121st St**
   492 ft
3. Turn **left** onto **5th Ave**
   0.1 mi
4. Turn **right** to stay on **5th Ave**
   0.2 mi

Continue on 127th St to Ulmer St

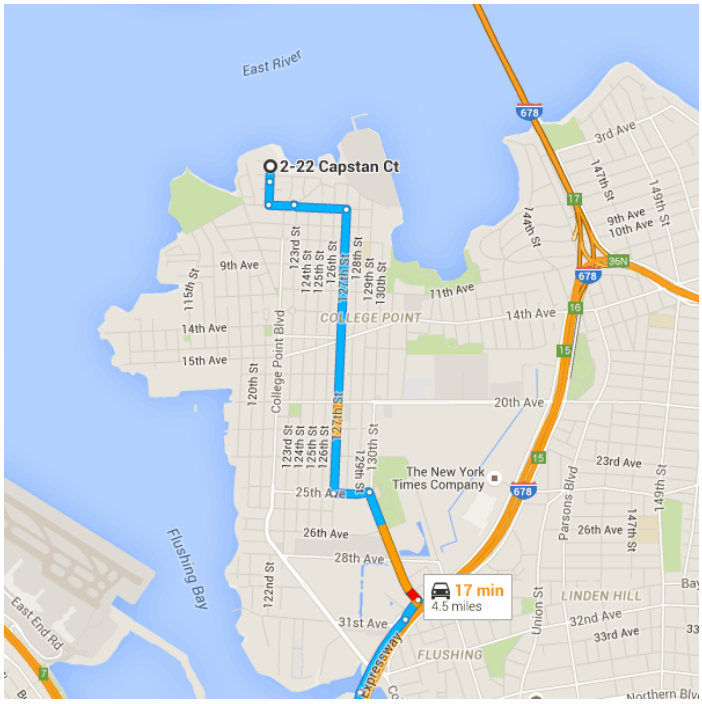
1.2 mi / 5 min

5. Turn **right** onto **127th St**

1.1 mi

6. Turn **left** onto **25th Ave**

0.1 mi



Get on **I-678 S**

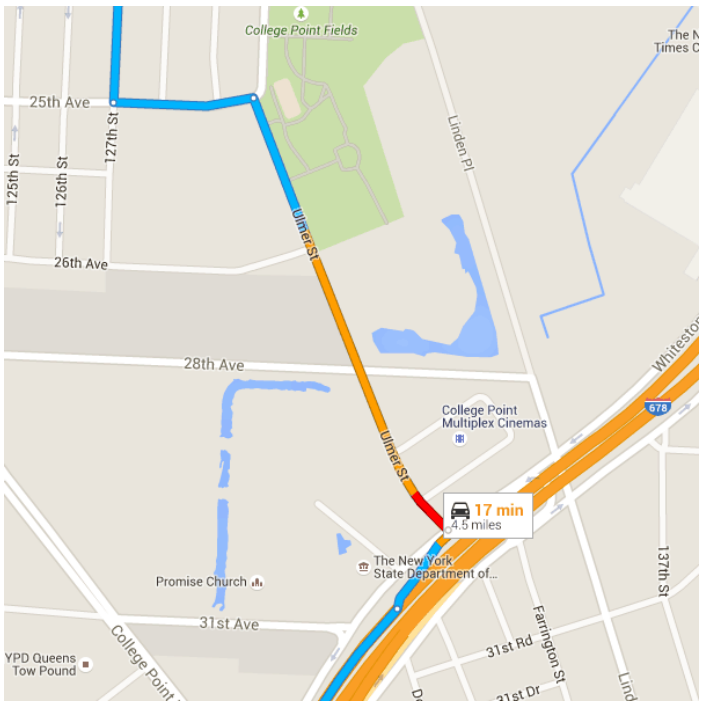
0.6 mi / 3 min

7. Turn **right** onto **Ulmer St**

0.5 mi

8. Turn **right** to merge onto **I-678 S**

0.1 mi



Continue on **I-678 S** to **57th Rd**. Take exit **12A** from **I-678 S**

1.7 mi / 3 min

9. Merge onto **I-678 S**

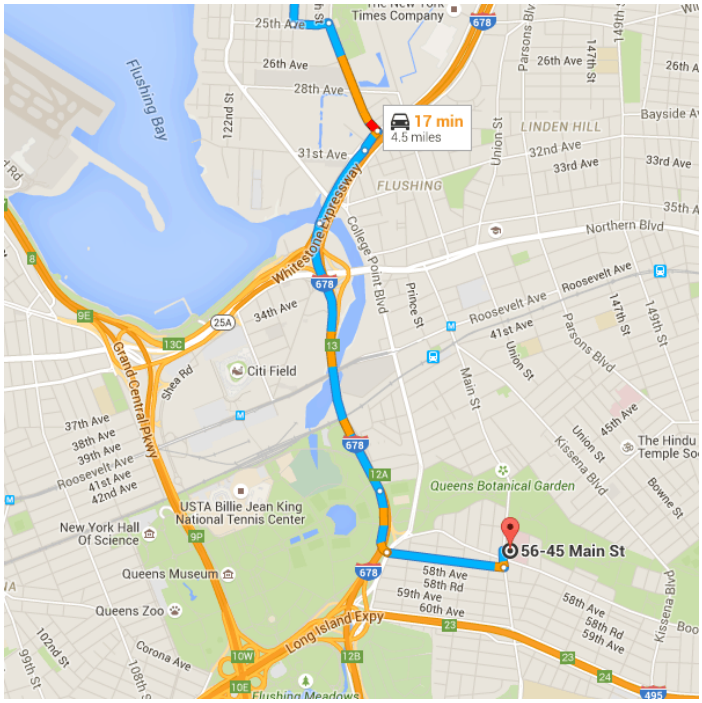
0.3 mi

10. Keep **left** at the fork to stay on **I-678 S**, follow signs for **Interstate 678 S/Van Wyck Expwy/Kennedy Airport**

1.1 mi

11. Take exit **12A** for **College Point Blvd** toward **Interstate 495**

0.3 mi



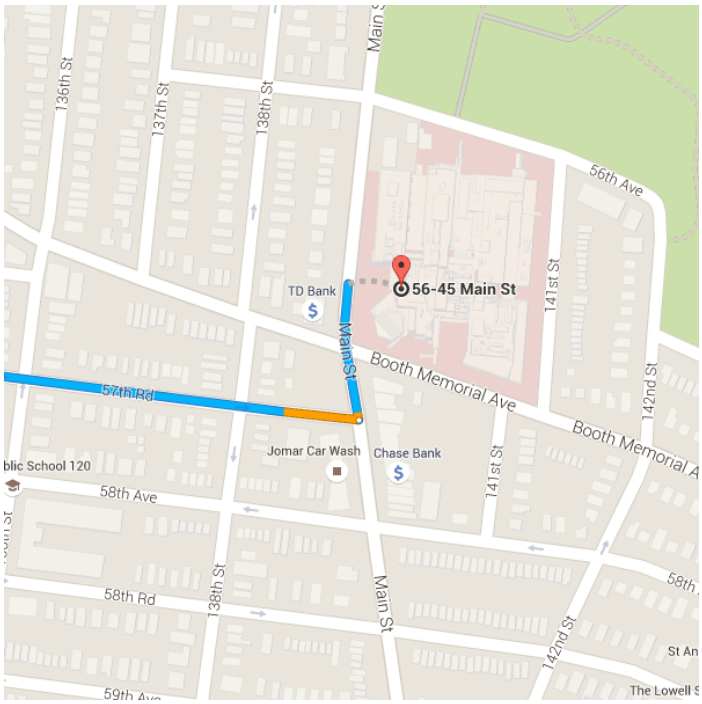
Continue straight onto **57th Rd**

0.5 mi / 3 min

Turn **left** onto **Main St**

Destination will be on the right

351 ft / 37 s



56-45 Main St

Flushing, NY 11355

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.