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**REMEDIAL ACTION HEALTH AND SAFETY PLAN  
PHASE 1 FACILITY SITE WORK CONSTRUCTION  
HUDSON RIVER PCBs SUPERFUND SITE**

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## LIST OF ACRONYMS

°F	Degrees Fahrenheit (°F)
µG/M3	Micrograms per Cubic Meter
AAUS	American Academy of Underwater Sciences
ACGIH	American Conference of Governmental Industrial Hygienists
AED	Automated External Defibrillator
AHA	Activity Hazard Analysis
ANSI	American National Standards Institute
CARA	Cultural and Archaeological Resources Assessment
CAZ	Controlled Access Zone
CDZ	Controlled Decking Zone
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CHST	Construction Health and Safety Technician
CIH	Certified Industrial Hygienist
CII	Construction Industry Institute
CM	Construction Manager
COC	Constituents of Concern
CPR	Cardiopulmonary Resuscitation
CRZ	Contaminant Reduction Zone
CSP	Certified Safety Professional
dBA	Decibels on the A-scale
DEET	Diethyl toluamide
DGPS	Differential Global Positioning System
DSO	Diving Safety Officer
EDC	Engineering Data Collection
eDMS	Environmental Data Management System
EHS	Environmental, Health and Safety
EMS	Emergency Medical Services
EPS	Engineering Performance Standards
EZ	Exclusion Zone
FCE	Functional Capacity Examination
FDR	Final Design Report

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## LIST OF ACRONYMS (CONTINUED)

FWPCA	Federal Water Pollution Control Act
GE	General Electric Company
HAZWOPER	Hazardous Waste Operations and Emergency Response
HDR	Habitat Delineation and Assessment
HEPA	High-Efficiency Particulate Air
LED	Light-Emitting Diode
LEL	Lower Explosive Limit
LOTO	Lockout/Tagout
MG/M <sup>3</sup>	Milligram per Cubic Meter
MPH	Miles per Hour
MSDS	Material Safety Data Sheet
NFPA	National Fire Protection Association
NIOSH	National Institute For Occupational Safety and Health
NOV	Notice of Violation
NRR	Noise Reduction Ratio
NYSCC	New York State Canal Corporation
NYSDEC	New York State Department of Environmental Conservation
OHST	Occupational Health and Safety Technician
OPA	Oil Pollution Act
OSHA	Occupational Safety and Health Administration
PADI	Professional Association of Diving Instructors
PCB	Polychlorinated Biphenyls
PEL	Permissible Exposure Limit
PFD	Personal Flotation Device
PPE	Personal Protective Equipment
PSI	Pounds per Square Inch
PSM	Project Safety Manager
PVC	Polyvinyl Chloride
QAPP	Quality Assurance Project Plan
QoLPS	Quality of Life Performance Standards
R&D	Receiving and Departure

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## LIST OF ACRONYMS (CONTINUED)

RA	Remedial Action
RA CHASP	Remedial Action Community Health and Safety Plan
RA HASP	Remedial Action Health and Safety Plan
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RIP	Repair In Place
RMSF	Rocky Mountain Spotted Fever
ROD	Record of Decision
RQ	Reportable Quantity
SENAC	Steel Erection Negotiated Rule Advisory Committee
SMS	Safety Monitor System
SPCC	Spill Prevention, Control and Countermeasure
SSAP	Sediment Sampling and Analysis Plan
SSHO	Site Safety and Health Officer
SSI	Scuba Schools International
SSO	Site Safety Officer
SSR	Site Safety Representatives
SZ	Support Zone
TLV	Threshold Limit Value
TOC	Total Organic Carbon
TSCA	Toxic Substances Control Act
TWA	Time-Weighted Average
UFPO	Underground Facilities Protection Organization
USCG	United States Coast Guard
USCS	Unified Soil Classification System
USEPA	United States Environmental Protection Agency
VHF	Very-High-Frequency

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## SECTION 1

### INTRODUCTION

The United States Environmental Protection Agency (USEPA) issued a Superfund Record of Decision (ROD) on February 1, 2002 (USEPA, 2002) calling for, among other things, the dredging and disposal of certain sediments from the Upper Hudson River containing polychlorinated biphenyls (PCBs). On August 18, 2003, the General Electric Company (GE) and EPA entered into an Administrative Order on Consent for Hudson River Remedial Design and Cost Recovery (RD AOC) (Index No. CERCLA-02-2003-2027) (USEPA/GE, 2003), under which GE agreed to design the remedy outlined in the ROD.

On October 6, 2005, the Consent Decree (CD) for the remedial action (RA) in the Upper Hudson River (CD) (Civil Action No. 1:05-CV-1270) was filed in Federal Court. After an extensive public review and comment period, the court approved and entered the CD on November 2, 2006 (USEPA/GE, 2005).

GE prepared the Phase 1 Final Design Report (FDR) and submitted it to the USEPA on March 21, 2006. On May 31, 2006, the USEPA approved the portion of the FDR that included the civil site work construction (Contract 1) and rail yard construction (Contract 2), which comprise the scope of this work plan. However, USEPA has not yet approved the designs for access road and the work support marina.

Included as Appendix B to the CD is the *Statement of Work for Remedial Action and Operations, Maintenance and Monitoring* (SOW) which sets forth a number of requirements for implementing the remedial action set forth in the ROD. Section 2.1.2 of the SOW requires that GE submit to USEPA for its review and approval an RA Work Plan for Facility Site Work Construction which is to include a Remedial Action Health and Safety Plan (RA HASP). This document is being submitted to satisfy that requirement.

This RA HASP presents the health and safety plan that will govern remedial design (RD) and remedial action field work to be performed in support of the Hudson River PCBs Superfund Site remedial activities described in the Phase 1 Final Design Report (FDR), (BBL, 2006), including:

- Facility site work construction;
- Rail yard construction;
- Processing facility construction and operations;
- Dredging operations;
- Habitat construction;

# RA HEALTH AND SAFETY PLAN

- Rail yard operations; and
- RA Monitoring – sediment, fish, and water column.

In addition, in accordance with Section 2.3.2.3 of the SOW, GE has updated the *Revised Health and Safety Plan* (Revised HASP) prepared by Blasland, Bouck and Lee, Inc. (BBL) in 2003 for design support activities submitted pursuant to the RD AOC and has incorporated that document into this RA HASP. Thus, this RA HASP supersedes the Revised HASP for design support activities. RD support activities covered by this RA HASP include:

- Engineering data collection (EDC) ;
- Base-mapping;
- Baseline monitoring;
- Habitat delineation and assessment (HDA);
- Cultural and archaeological resources assessment (CARA);
- Sediment core collection; and
- Sediment core processing.

Additional worker HASPs will be prepared by each contractor and submitted as addendums to the RA HASP.

A separate *Remedial Action Community Health and Safety Plan* (RA CHASP) (Parsons, 2006) has been developed to address community health and safety concerns and to inform the community of emergency procedures during remedial activities.

This RA HASP is available for review at the USEPA’s Hudson River Field Office at 421 Lower Main Street in Fort Edward, New York; at information repositories located in Glens Falls, Saratoga Springs, Albany, Poughkeepsie, and New York City, New York; as well as on the USEPA’s website, available at: [www.epa.gov/hudson](http://www.epa.gov/hudson).

If additional field activities are identified during the course of the remedial activities that are not covered by this RA HASP, GE will develop and submit to the USEPA, addenda to this RA HASP to cover such additional field activities. Upon USEPA review of such addenda, the addenda will be available for review at the same locations noted above, and the provisions of such addenda will be implemented.

## 1.1 OBJECTIVES

The project goal is zero incidents and zero injuries with work tasks designed to minimize or eliminate hazards to personnel, equipment, the environment, and the general public. No individuals shall perform tasks that may endanger their own safety and health or that of others. In other words, all individuals are empowered to have “stop work authority”.

# RA HEALTH AND SAFETY PLAN

This RA HASP outlines safety and health requirements and guidelines developed for project work. When implemented, these requirements will help protect site personnel, visitors, the public, and the environment from exposure to potential safety and health hazards.

This RA HASP will be updated as conditions or situations change.

The objectives of this RA HASP are to:

- Identify the physical, chemical, and biological hazards potentially present during field work associated with the RA Work Plan;
- Prescribe the protective measures necessary to control those hazards;
- Define emergency procedures; and
- Prescribe training and medical qualification criteria for site personnel.

This RA HASP must be reviewed by all contractor and subcontractor managers, supervisors, foremen, and safety personnel. All other project personnel performing field activities will receive a site-specific project safety orientation summarizing the content of the RA HASP. If requested, project personnel will be provided the time necessary to review the entire RA HASP. All personnel will be required to sign the appropriate documentation acknowledging an understanding of the RA HASP. Visitors will also be required to receive an abbreviated project safety orientation, in addition to being escorted by an authorized project team member when going on the site.

## 1.2 SITE SETTING

The Upper Hudson River is defined as the section of river upstream from the Federal Dam at Troy, New York. The ROD calls for, among other things, a remedial action to remove and dispose of sediments from the Upper Hudson River. Sediments to be removed are defined based on the PCB mass per unit area (MPA) and surface concentration or characteristic criteria (USEPA, 2002). The location of each section is described below and presented on Figure 1:

- **River Section 1:** Former location of Fort Edward Dam to Thompson Island Dam (approximately 6.3 miles);
- **River Section 2:** Thompson Island Dam to Northumberland Dam (approximately 5.1 miles); and
- **River Section 3:** Northumberland Dam to the Federal Dam at Troy (approximately 29.5 miles).

The remedial action is to be conducted in two phases, designated Phase 1 and Phase 2. Phase 1 is defined as the first year of dredging and will be completed in a portion of River Section 1. Phase 1 also includes preparation of the land-based sediment processing facility. Phase 2 covers the remaining dredging in the three river sections.

# RA HEALTH AND SAFETY PLAN

## 1.3 ZERO INCIDENT PHILOSOPHY

This RA HASP uses the Zero Incident management approach. The safety goal for this project is zero incidents, zero injuries. The Zero Incident philosophy originated with a study by the Construction Industry Institute (CII), which identified specific control measures shown to dramatically reduce the probability of incidents. These control measures, known as Zero Incident Techniques, provide the framework for this RA HASP, and the Project Team’s proactive approach to manage the interrelated areas of safety, health, environment, and risk management. The definition of an incident is any unplanned or unexpected event that results in or has the potential to result in (i.e., near-miss incident) a personal injury, property damage or environmental release.

To ensure the success of the RA HASP, the project safety culture must be dynamic and evolving. This begins with training all management personnel in the foundations and philosophy of the Zero Incident Techniques and through Supervisory Training in Accident Reduction Techniques, known as the START program. This training lays the groundwork for a successful project by creating accountability and responsibility for the safety and risk process with all individuals. The nine focus areas for our success are:

<b>Zero Incident Techniques: A Snapshot of What and Why</b>		
<b>Key Technique</b>		<b>What and Why</b>
1	Demonstrated Management Commitment	All levels of management consistently display their commitment to the safety management process. As organization leaders, managers are role models whose actions send a strong message to employees.
2	Staffing for Safety	Each company funds a full-time lead safety person, either a site safety officer (SSO) or site safety and health officer (SSHO), in addition to site safety representatives (SSRs) as required, to assist in implementing and administering the RA HASP. The safety personnel consult with line organizations, helping to emphasize that safety is the responsibility of each employee on the project, not just the safety department.
3	Safety Planning – Pre-project/Pre-task	Planning safety into design and construction by using activity hazards analyses are key to eliminating incidents in the workplace. Planning job tasks with safety as a key component raises safety awareness of supervisors and employees. Pre-task planning improves productivity and reduces the negative impact of direct and indirect costs of incidents.



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<b>Zero Incident Techniques: A Snapshot of What and Why</b>		
<b>Key Technique</b>		<b>What and Why</b>
4	Safety Training and Education	Orientations and training sessions are conducted at all levels of an organization, as appropriate. Specialized training is also conducted to provide specific knowledge about hazardous work activities. Ongoing safety orientation and training gives employees the knowledge and skills to complete their job tasks without incident.
5	Worker Involvement and Participation	Empowering employees to identify hazards in the workplace is a valuable tool to increase safety awareness. Employee observation programs drive the behavior-based process. When employees identify and have the ability to correct hazards in the workplace, safety motivation and awareness increase and fewer incidents occur.
6	Recognition and Rewards	Employee recognition programs to reward and recognize employees for safe behavior can be based on individual or group accomplishments. Safe behavior is positively reinforced through management involvement, personal contact, communication, and training.
7	Subcontractor Management	Each organization must ensure that subcontractors comply with safety and health rules and regulations in accordance with contractual requirements. Careful management of subcontractor safety reduces incidents on the jobsite, which prevents injury and damage to property.
8	Incident Reporting and Investigation	Each organization must investigate incidents immediately and report to the appropriate personnel. The investigation process includes root cause determination and recommendations to prevent future occurrences. “Near misses” are important learning experiences and will be investigated as actual incidents.
9	Drug and Alcohol Testing	Site project personnel are tested for drugs/alcohol: pre-employment, post-accident, random and reasonable suspicion. Testing employees for drugs and alcohol reduces the likelihood of serious incidents as a result of workers being impaired while working on a project.

## 1.4 REMEDIAL ACTION ACTIVITIES

A description of the tasks expected to be completed under each RA activity listed on page 1-1 above is presented in the FDR, with each such potential field activity summarized in the following subsections. The descriptions of these potential field activities are general, since the specific field activities are described in more detail in the contractor HASP submitted by each contractor performing the work.

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## 1.4.1 Contract 1 – Phase 1 Facility Site Work Construction

- General civil work;
- Wharf area construction;
- Development of a work support marina; and
- River mooring installation.

These descriptions are currently general; the actual need for and scope of these activities will be specified in a contractor HASP to be prepared by the contractor and submitted for construction manager (CM) review and approval.

### 1.4.1.1 General Civil Work

Initial site preparation, such as clearing, grubbing, grading, and fencing, will take place before developing the property for use as a sediment processing/transfer facility. Primary utilities from main line locations to secondary connections points will be extended to the site. General activities shall include earthwork (i.e., cut and fill, general fill and compaction); installation of the rail yard drainage layer (i.e., liner, sand, piping, and geotextile) and sub-ballast, along with the corresponding drainage; construction of site access roads; asphalt paving of roads, storage areas and decontamination pads; installation of box culverts over Bond Creek and the Diversion Canal; concrete paving; and installation of the storm water management system, including sumps, pumps, piping, storage tanks, controls, and foundations.

### 1.4.1.2 Wharf Area Construction

Wharf area construction will involve clearing, grubbing, excavation, and earthwork; pile installation; revetment construction and rip-rap installation; construction of the wharf structural steel superstructure and framework; forming and installation of the concrete deck and its rails; concrete paving in the access area, including storm water control piping and trenches; construction of the decontamination areas; and the extension of primary utilities from main line locations to secondary connection points.

### 1.4.1.3 Work Support Marina

Construction of the small craft marina will involve clearing and grubbing; earthwork (cut and fill, general fill and compaction); construction of site access roads; grading of parking areas; extending primary utilities to secondary connections; installation of the floating dock; and installation of dock anchors.

### 1.4.1.4 River Mooring Installations

River mooring installations will include one turning dolphin and four mooring dolphins located south of Lock 7.

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## **1.4.2 Contract 2 – Phase 1 Rail Yard Construction**

The Phase 1 rail yard construction shall consist of activities required to construct rail yard track and facilities on both GE and Canadian Pacific Railway properties. Additional breakdown of these activities include but are not limited to the following:

### **1.4.2.1 Rail Yard Construction Work**

Rail yard construction work will involve the construction of ballasted track and special work (on prepared sub-grade and/or sub-ballast by others under Contract 1, Phase 1 Facility Site Work Construction). Activities to be provided by the rail yard contractor will include but are not limited to installation of bottom ballast for all track and special track work; installation of ties, rail, and other track material required to construct ballasted jointed and/or relay welded track; construct new welded rail track; provide required “cut over” ballasted welded special work on Canadian Pacific Railway property as required; surface, align and stabilize ballasted track and special work; and construct low density at grade crossing.

### **1.4.2.2 Rail Yard Facilities Work**

Rail yard facilities work will involve construction on both GE and Canadian Pacific Railway property. Activities performed by the railroad contractor on the project site shall include but not be limited to constructing an engine house, repair track facility, and weigh-in-motion scale.

Activities performed by the railroad contractor on Canadian Pacific Railway property shall include but not be limited to constructing a “yard air” facility.

## **1.4.3 Contract 3A – Phase 1 Processing Facility Construction**

The Phase 1 Processing Facility Construction work shall consist of activities for the supply and installation of processing equipment including supply, construction, and installation of foundations, equipment pads, enclosures, containment structures, piping, mechanical, electrical, instrumentation, and start-up commissioning.

Process facility equipment construction will involve the construction of the coarse material separation area; installation of the trommel screen, tanks, and pumps; installation of hydrocyclones, screens, tanks, and associated pumps; installation of piping, electrical systems, controls, and related accessories; construction of the process tank area; construction of foundations, containment slabs, and curbing; installation of the filter press system and polymer system; construction of the process water treatment area; and construction of the treatment building.

## **1.4.4 Contract 3B – Phase 1 Processing Facility Operations**

Operations of the facility will include but not be limited to off loading, dewatering, and staging of dredged sediments and debris, the collection and treatment of residual water and storm water, and general operation and maintenance activities.

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Operating the process facility equipment will involve operating and maintaining the process facility system, the coarse material separation system, the dewatering system, the water treatment system (process and storm water), the storm water management system, the stockpile storage area (management and maintenance), material handling including stockpiling, on-site transportation of coarse material, debris, and filter cake; operating and managing the decontamination station; and maintaining the haul road.

## **1.4.5 Contract 4 – Phase 1 Dredging Operations**

The Phase 1 dredging operation shall consist of activities related to the dredging of materials from the river and associated waterways and the subsequent backfilling and capping of the dredged areas. These activities include but are not limited to:

### **1.4.5.1 Sheet Pile Installation**

Installing and removing sheet piles on the east side of Rogers Island and Griffin Island.

### **1.4.5.2 Rock Dike Installation**

Installing and removing rock dike on the north end of Rogers Island.

### **1.4.5.3 Dredging**

The dredging operation will involve clearing overhanging vegetation; debris removal; inventory and residual dredging with mechanical dredges; operate and maintain tugs, barges, support boats, and fuel boats as needed; transport dredged sediments to site wharf; and install silt curtains and other resuspension controls as needed.

### **1.4.5.4 Backfill, Capping, and Shoreline Restoration**

Backfill, capping, and shoreline restoration will involve the use of barges, tugs, work boats, and other equipment for placing materials as specified. Backfill material will be transported by barge to the designated area for placement and shoreline stabilization as needed.

## **1.4.6 Contract 5 – Phase 1 Habitat Construction**

The Phase 1 habitat construction consists of activities related to planting specified vegetation in habitat construction areas.

## **1.4.7 Contract 6 – Phase 1 Rail Yard Operations**

Phase 1 rail yard operations shall consist of activities required to load outbound trains and receive inbound empty trains.

Rail yard and railcar loading area activities include but are not limited to the following:

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## **1.4.7.1 Rail Operations**

The rail yard operator will switch empty and loaded railcars on and off Track 1 on Canadian Pacific Railway property. Railcars to be switched on and off this track will consist of unit trains up to 81 cars in length and other miscellaneous freight cars destined for the material unloading track or any other track on the project site. In addition, on Canadian Pacific Railway property the rail yard operator will be responsible for inspecting and repairing the train air supply and associated appurtenances that provide train air to the south end of the Repair In Place (RIP) tracks.

The rail yard operator will switch empty and loaded railcars on and off tracks on the project site. This includes the ladder tracks, receiving and departure (R&D) tracks, set out track, loading yard/scale lead, loading track(s), material track, RIP track, and engine house track. Railcars to be switched on and off this track will consist of unit trains up to 81 cars in length and other miscellaneous freight cars destined for material unloading track. The operator will perform an inspection of all inbound railcars. The operator will weigh inbound empty and outbound loaded railcars as required. The operator will assemble, inspect, and make necessary repairs to outbound loaded railcars to successfully perform a terminal test. The operator will be responsible for inspecting and repairing all track, special track work, road crossings, car air supply, and other track and mechanical appliances.

## **1.4.7.2 Rail Yard Facilities**

The operator will inspect, maintain, and operate an engine house, track RIP and weigh-in-motion scale that support the project. The operator will also maintain facilities and associated tools, machinery, heavy equipment, and automotive equipment (trucks) in a state of good repair.

## **1.4.7.3 Railcar Loading Facility**

Functions to be performed at the railcar loading facility include activities associated with loading railcars. Depending on whether a lid or wrap system is used, this could involve removal of lids from empty railcars, lining of empty railcars, folding and securing of car liners, and placing and locking lids on loaded cars. The exterior of railcars will be cleaned as needed, inspected and then released to rail yard crews for movement back to rail yard.

## **1.4.8 Remedial Action Monitoring**

Phase 1 RA monitoring will be conducted during dredging to evaluate compliance with engineering performance standards (EPS) and quality of life performance standards (QoLPS). RA monitoring activities include but are not limited to the following:

### **1.4.8.1 Sediment**

Sediment sampling will be conducted in areas of the Hudson River where dredging has been performed to verify that post dredging conditions meet the project criteria. Core samples will be

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collected at pre-determined locations along a grid system. The core samples will be collected from a boat equipped for core sampling using vibracoring or manual coring techniques. At the end of each day, the cores will be transported to a shore-based processing facility where they will be cut into segments, placed in containers, and submitted for laboratory analysis. If subsequent dredging is performed in a dredge area, another round of sediment sampling may be performed.

### 1.4.8.2 Fish

Fish monitoring will be performed in the Upper and Lower Hudson River at the following locations:

#### Upper Hudson

- Feeder Dam
- Thompson Island Pool
- Northumberland/Fort Miller Pools
- Stillwater Pool

#### Lower Hudson

- Albany/Troy
- Catskill
- Tappan Zee area

Fish collection will be performed annually at the Upper Hudson Stations and Albany/Troy. Monitoring at Catskill and the Tappan Zee area will be performed every other year. Fish may be collected for analysis using electro-shocking equipment, nets, or by angling. Fish sampling will be conducted from an appropriately equipped boat.

### 1.4.8.3 Water

Water sampling activities will be performed to monitor the in-river activities associated with dredging to assess achievement of the resuspension performance standard and *Substantive Requirements of State Pollutant Discharge Elimination System Permit for Potential Discharges to Champlain Canal (land cut above Lock 7)*. The water monitoring will include the following activities:

- Near-Field water column monitoring
- Far-Field water column monitoring
- Off-season water column monitoring
- Monitoring of discharges to the Hudson River and Champlain Canal (Land Cut above Lock 7)

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Near-Field water column monitoring will consist of deployment and operation of floating monitoring stations located in the river in the vicinity of dredging operations. These stations will be used to collect continuous water quality data which will be transmitted routinely to an environmental data management system (eDMS). The Near-Field monitoring stations will be maintained on a daily basis. Maintenance activities will include cleaning and calibration of monitoring equipment, and manual collection of water samples. Personnel will service the stations by boat, and may be required to work after dark.

Far-Field water column monitoring will involve the maintenance and operation of fixed automated water sampling stations at five locations on the Upper Hudson River. These stations will pump water from the river on a continuous basis, enabling the collection of water samples using programmable water sampling equipment at predetermined times. Additionally, these stations will be used to collect continuous water quality data which will be transmitted routinely to the eDMS. The automated samplers will be housed in the pump house located on shore. Personnel will travel to the stations in a vehicle and perform maintenance activities on a daily basis. Additionally, samples will be collected manually at Bakers Falls, from the Mohawk River, and from the Lower Hudson River. At Bakers Falls and the Mohawk River, samples will be collected from a bridge; the Lower Hudson River stations will be sampled using a boat. Control measures for working on a bridge are described in Section 4.22. Samples will also be collected manually if an automated water sampling station becomes inoperative; these samples will be obtained either from near-by bridges or by boat, depending on safety conditions.

Off-season water column monitoring may be performed at all, or a portion of, the same locations utilized for Far-Field monitoring following the same general procedures. This monitoring will begin after dredging operations have been suspended for the year in the fall, and will continue until operations begin the following spring.

Monitoring of discharges to the Hudson River and Champlain Canal (Land Cut above Lock 7) will be performed using automatic sampling equipment located at the sediment processing facility. This sampling equipment will be maintained by personnel traveling by vehicle.

## **1.5 REMEDIAL DESIGN SUPPORT ACTIVITIES**

A description of the tasks being undertaken in support of RD, with each such potential field activity is summarized in the following subsections. The descriptions of these potential field activities are general, since the specific field activities are described in more detail in various data collection work plans developed in support of design.

### **1.5.1 Engineering Data Collection**

Ongoing support activities involving EDC include sediment sampling, debris and obstruction surveying, geotechnical characterization of sediments, sub-bottom physical

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characterization, disposal characterization and backfill source material identification and characterization.

## 1.5.1.1 Sediment Sampling

Sediment sampling will require use of a vibracore sampler or barge-mounted drill rig. Such equipment poses hazards in addition to those posed by working on or adjacent to the river. The control measures associated with barge-based drilling are described in Section 4.20.

## 1.5.1.2 Debris and Obstruction Survey

In-river surveys are being conducted to identify the types and locations of debris and obstructions on the river bottom. This information will be used to evaluate river bottom conditions, which will be important in the RA dredging activities.

This task includes collecting and analyzing debris information obtained from the side-scan sonar survey, sediment coring program, and sub-bottom physical investigation conducted as part of the Sediment Sampling and Analysis Plan (SSAP) activities. Debris and obstruction survey activities may employ a combination of geophysical techniques, including side-scan sonar, multi-beam sonar, sub-bottom profiling, use of a marine magnetometer, and/or use of a submerged video camera.

The field work associated with this activity shall include use of survey vessels. In addition, a vessel may be used to collect underwater video via remote video equipment or underwater video may be collected using divers with video equipment. Divers will use standard self-contained underwater breathing apparatus (scuba) and/or snorkel equipment. Appendix C contains a *Diving Safety Manual* for this project.

## 1.5.1.3 Geotechnical Characterization of Sediments

Geotechnical characterization of sediments is being conducted to supplement the geotechnical information obtained during the SSAP. These activities may include collecting additional sediment samples and submitting them for analysis of geotechnical parameters. The activities may also include other geotechnical tests.

The field work associated with this activity may include collecting sediment cores using vessels and equipment similar to those used for sediment coring activities, but also may include using other types of field equipment from the vessels to measure sediment properties in place.

## 1.5.1.4 Sub-Bottom Physical Characterization

Sub-bottom physical characterization is being conducted to learn more about the sub-bottom sediment (i.e., located below the sediment surface) in river areas designated for dredging. This characterization will provide geotechnical information on the makeup and integrity of the sub-grade conditions. This information will be used for developing the design for dredging,



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anchoring, spud setting, and the installation of other structures (e.g., sheet piling) deemed necessary for the remediation activities.

These sub-bottom physical characterization activities may include additional geophysical survey activities (e.g., sub-bottom profiling) and advancing soil borings into the river bottom to collect soil samples for laboratory analysis of geotechnical properties such as grain size, bulk density, and moisture content. The field work could consist of using the geophysical survey vessels and sediment coring procedure described above, as well as using barge-mounted drill rigs to collect deeper samples of underlying material.

## 1.5.1.5 Disposal Characterization

Disposal characterization activities will be conducted as necessary to obtain additional data necessary to further characterize the sediments for disposal. These activities may include collecting additional sediment samples for characterization of sediments under the Resource Conservation and Recovery Act (RCRA) and the Toxic Substances Control Act (TSCA). The work would be similar to other sediment coring activities in this RA HASP.

## 1.5.1.6 Backfill Source Material Identification and Characterization

Backfill source material identification and characterization activities are being conducted to support the development of the backfill specifications as part of the habitat replacement. It is anticipated that representative samples of the available materials from various potential borrow sources would be obtained to determine the physical and chemical characteristics. The field work would include collecting soil samples at potential borrow sources (some sources may be several miles from the river) and packaging and shipping the samples to laboratories for analytical testing.

## 1.5.2 Base-Mapping

This task involved developing a base map of the Upper Hudson River for the design activities. For the most part, the field work for this activity has already been completed. However, additional field work may be necessary to develop additional detailed mapping in certain areas (e.g., near shoreline areas, etc.) where surveyors may collect location-specific survey data (i.e., horizontal and vertical coordinates) to develop mapping information. These efforts would be performed by documenting features by boat or walking on shore.

## 1.5.3 Baseline Monitoring

Baseline monitoring activities are summarized in the *Baseline Monitoring Program Scoping Document* (QEA, 2003), and are described in detail in the Baseline Monitoring Quality Assurance Project Plan (QAPP). These activities are on-going and are being conducted to establish pre-dredging conditions for use in evaluating the achievement of performance standards during the RA and to provide data on PCB levels in fish and water to allow an evaluation of

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long-term recovery trends. These activities will include water column monitoring, fish monitoring, and special surface water studies.

Baseline monitoring field activities include:

- Collection of water column samples and water velocity measurements at monitoring stations at several locations along the Upper and Lower Hudson River – Monitoring stations will be accessed by personnel via boats and from bridges; and
- Fish survey activities at several locations along the Upper Hudson River and Albany/Troy in the Lower Hudson River – Sampling methods may include netting, electroshocking, and angling, conducted from the shore and from boats.

## 1.5.4 Habitat Delineation and Assessment

HDA activities are described in the HDA Work Plan (BBL, 2003) and are being conducted for each of the three primary habitat types present within the Upper Hudson River ecosystem:

1. River Bottom Habitats: Both unconsolidated river bottom and aquatic vegetation beds;
2. Shoreline Habitats: Maintained and natural shorelines; and
3. Wetland Habitats: Fringing wetlands (and other riverine hydrogeomorphic subclasses, if potentially impacted by dredging activities).

The data collection methods to be used for the HDA efforts described in the HDA Work Plan (BBL, 2003) include:

- Using a boat for personnel transport to document field conditions;
- Conducting an underwater inspection using standard scuba and/or snorkel equipment;
- Collecting sediment samples using clear Lexan tubes to visually inspect sediments and obtain samples for laboratory analysis;
- Collecting submerged aquatic and wetland vegetation for laboratory analysis;
- Verifying field position using a differential global positioning system (DGPS);
- Visually identifying fringing wetlands and wetland sediment conditions;
- Visually identifying other riverine hydrogeomorphic subclasses of wetlands, if potentially impacted by dredging activities;
- Identifying and documenting the presence or signs of wildlife;
- Measuring light attenuation using hand-held instrumentation such as quantum sensors;
- Measuring river velocity using a hand-held velocity meter; and
- Documenting the shoreline using tape measure, inclinometer, video tape, and digital camera.

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## 1.5.5 Cultural and Archaeological Resources Assessment

CARA activities are described in the CARA Work Plan (URS, 2003) and include an assessment of in-river cultural and archaeological resources that may be impacted by implementation of the USEPA remedy as well as shoreline areas that may become destabilized as a result of dredging.

CARA field activities being conducted include sediment coring, side-scan surveys, bathymetric surveys, magnetometer surveys, test pit installation, and scuba diving and/or snorkeling for data verification in dredge areas. The details of this work are specified in the *Archaeological Resources Assessment Reports*, as described in the CARA Work Plan (URS, 2003).

## 1.5.6 Sediment Core Collection

Since 2002, over 8,000 sediment cores have been collected at predetermined locations in each river section, as described in the FSP. Additional sediment core collection may be performed in support of dredge area delineation activities. The procedures for collecting the sediment cores will follow the SOPs to be included in the QAPP (ESI/QEA 2002).

Most sediment cores have been collected with the use of vibratory coring equipment by advancing a sample collection tube into the sediment until significant resistance is encountered, at which time cores will be pulled from the sediments. Other sampling methods have been used, including push coring (in shallow water) and ponar dredges (areas with insufficient sediment for core collection). Each collected core is then capped, measured for length, logged and labeled, and stored upright in specialized storage coolers on the sampling vessel. At the end of each day the cores are transported to the processing laboratory for secure overnight storage.

## 1.5.7 Core Processing

The processing of the sediment cores into analytical samples is performed at the processing facility, which will be located in a laboratory at GE's Fort Edward Plant. The processing laboratory consists of laboratory, office, and storage space.

Sediment cores will be processed in the processing laboratory following the SOPs presented in the QAPP. The following procedures are used when processing cores:

- logging the core information into a database and generating corresponding sample labels;
- weighing, measuring, and marking segment locations on each sediment core;
- draining water from the core and collecting that water for disposal;
- segmenting each core into subsections using a vibratory saw or pipe cutter;

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- extruding each subsection into a stainless steel bowl, homogenizing (i.e., thoroughly mixing) the sediment sample, and placing into labeled sampling containers;
- decontaminating processing equipment; and
- storing excess core material, decontamination fluids, and disposable personal protective equipment.

### **1.6 SCHEDULE FOR FIELD ACTIVITIES**

The schedule for field activities is discussed in the Phase 1 Remedial Action Work Plans submitted to USEPA in conjunction with this RA HASP. Construction field activities will typically occur six days per week, between dawn and dusk. Dredging and processing operations will typically occur six days per week, 24 hours per day, with maintenance and/or schedule recovery being performed on the seventh day.

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## SECTION 2

### SITE SAFETY PERSONNEL

#### 2.1 CONTACT INFORMATION FOR SITE SAFETY PERSONNEL

The project team shall implement a safety program that ensures the safety of all project employees, contractors, visitors, and others involved in the project. The site is defined as the processing/operations facility, rail yard, wharf, small craft marina and any river section where project related activities or equipment are involved (e.g., dredging, moving barge, etc). The names and contact information for lead site safety personnel is presented in Attachment A. As lead site safety personnel and phone numbers are added or changed during the course of RA activities, modifications to this list will be provided to the USEPA for posting at the USEPA's Hudson River Field Office and on the USEPA's website. This information will be available in all areas where RA activities are taking place.

#### 2.2 LEAD SITE SAFETY PERSONNEL

The following two organization charts outline the overall project safety organization and chain of command for the site safety personnel.

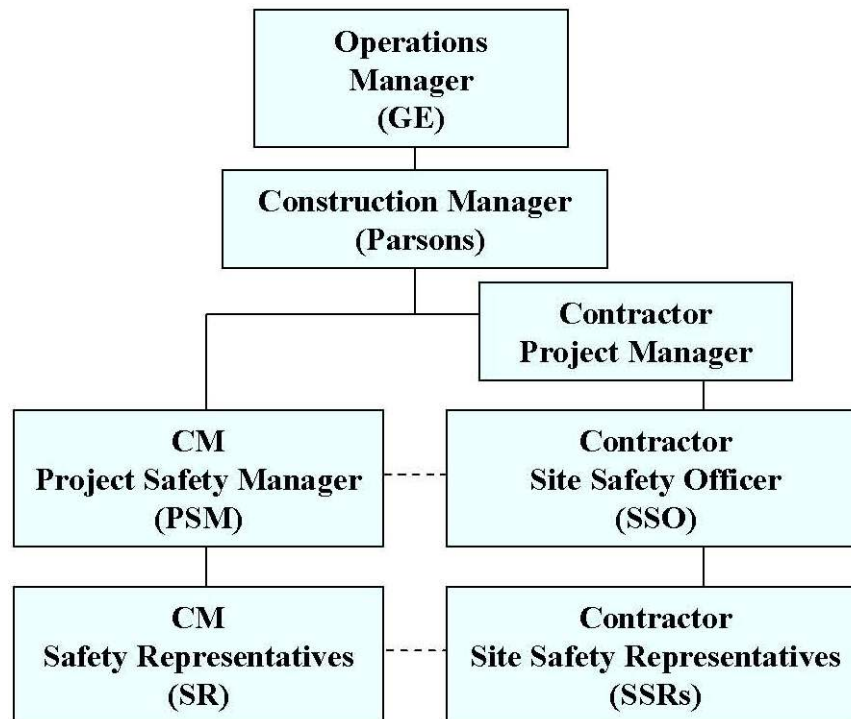
The roles of the lead site safety personnel — the CM Safety Manager and CM safety representatives — as they relate to the health and safety issues, are outlined below. The CM project safety manager (PSM) will be supported by the different CM safety representatives, including SSRs, for each type of field activity.

The CM's role in implementing a safety program includes the following responsibilities:

- Provide leadership by demonstrating a personal commitment to safety at all times;
- Provide hands-on participation in the development and implementation of the RA HASP;
- Develop incentive/rewards programs to recognize safety achievements;
- Establish a disciplinary program for unsafe behavior; and
- Meet safety targets.

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## RA HASP PROJECT SAFETY ORGANIZATION



### 2.2.1 Safety Manager (for CM)

The CM PSM or designee will be available on site whenever field activities are occurring. The PSM will confirm that all site personnel are familiar with the provisions of this RA HASP and the CHASP (Parsons, 2006) and that workers understand the hazards that they may encounter and the procedures for mitigating those hazards (e.g., safe work practices, personal protective equipment [PPE]). The PSM will also serve as the emergency response liaison and incident commander, in addition to being the primary contact with GE and regulatory agencies for health and safety issues. The roles and responsibilities of the PSM shall include but may not be limited to the following:

- Be the most visible leader for the project's zero incident safety culture and lead the jobsite in the belief that all incidents are preventable and a zero incidents goal is attainable;
- Will act as the incident commander for project emergencies that are handled internally. In the event of an emergency requiring external emergency response, the first responding agency's lead officer will become the incident commander when he arrives on site. The PSM will serve as liaison to the external incident commander, as appropriate;

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- Ensure preparedness for emergency responses to incidents and that project personnel are adequately trained in the emergency response plan procedures;
- Inform appropriate authorities and response agencies in the event of a spill that potentially poses a hazard to the public;
- Release a Stop-Work order after the conditions that initiated the order are corrected. The CM construction manager will issue an authorization to proceed after receipt of the release from the PSM and any other required conditions have been met;
- Maintain, update, and implement the RA HASP;
- Approve any changes to the RA HASP due to modifications of procedures or newly proposed site activities;
- Ensure that personnel assigned to the project have appropriate training certifications and medical clearance;
- Ensure controlled substance and alcohol testing is completed for all workers prior to starting work;
- Assess site security and control procedures that address the health and safety of the public and non-authorized personnel who may visit the work sites;
- Work with GE's health and safety personnel to inform personnel of any site-specific practices and procedures that must be followed in addition to the provisions of this RA HASP;
- Display leadership in all HASP activities and confirm regulatory compliance by subordinates/team members;
- Coordinate the SSRs on matters relating to work site activities, ongoing and/or planned, to verify that adequate consideration is given to maximum employee health and safety protection and compliance with applicable local, state, and federal regulations;
- Consult with SSRs and project team members on matters relating to suspending site activities in the event of an emergency; and
- Verify that corrective actions resulting from deficiencies identified by audit and observation are implemented and effective. Reviews are conducted regularly; deficiencies, if any, are identified; issues are tracked to closure; improvements are made to prevent potential hazards; and mitigation measures are implemented as a result of these reviews.

Audits will include the inspection and assessment provisions set forth above, as well as a brief summary report noting any deviations from this RA HASP and corrective actions that may be necessary to promote the health and safety of workers and the public.

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While field activities are underway, the PSM will be either on site or available via cell phone should an emergency arise. While off site, the PSM will designate an alternate — typically one of the CM SSRs — to be the primary point of contact for daily health and safety issues. This person will be identified during the daily health and safety briefings.

The PSM will work with the CM to address any community health and safety issues. The PSM will be a board-certified safety professional (CSP) or certified industrial hygienist (CIH), as well as have completed Occupational Safety and Health Administration (OSHA) 40-hour hazardous waste operations (HAZWOPER) training (29 CFR 1910.120), additional 8-Hour HAZWOPER Supervisor Training and current eight-hour annual refresher. In addition, the PSM will have current training in first aid and cardiopulmonary resuscitation (CPR).

## 2.2.2 Safety Representatives (for CM)

CM safety representatives will be responsible for managing on-site health and safety activities and will provide support to the PSM on health and safety issues that relate to their tasks. Additional responsibilities for the CM safety representative include but shall not be limited to the following:

- Be a visible leader for the project's zero incident safety culture and carry out their tasks with the belief that all incidents are preventable and a zero incidents goal is attainable;
- Implement the RA HASP;
- Suspend field work in an emergency or if unsafe work conditions exist;
- Review safety protocols and procedures (activity hazard analysis [AHA]) as necessary for field work;
- Observe workers for signs and symptoms of chemical exposure, heat/cold stress, fatigue, etc.;
- Initiate emergency response plan procedures as necessary;
- Provide site-specific project orientation to field workers and verify that all personnel know who to contact and what to do in the event of an emergency at each work site;
- Perform and document periodic audits of compliance with health and safety procedures and work with contractors to address any deficiencies and develop solutions that are compliant and correctly address the safety concern;
- Follow-up and conduct investigations on all incidents and near-miss incidents, share conclusions and findings with workers during daily tool-box meetings, or initiate safety work stand-downs to communicate important findings;
- Ensure PPE is available for workers and ensure that workers are aware of the availability;



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- Audit the health and safety practices and procedures within the work zones/areas on a continuous basis and work with contractor to adapt practices and procedures to changing circumstances (encourage the safety system to be a living and organic system that adapts to changes);
- Be a resource for leading the daily health and safety briefings and encourage personnel to raise safety concerns. Work with individuals to address any specific health and safety issues that may be raised at the meetings and ensure that they are aware that they can refuse to do unsafe tasks or activities and that they can do so without fear of reprisal or dismissal (otherwise known as their “stop work authority”);
- Inspect the site work zones/areas (i.e., construction, processing/operations, dredging) to verify that adequate hazard communication measures are in place; and
- Inspect the site work zones/areas to verify that proper procedures are in place and are being followed for decontamination and that the support zone (SZ), contaminant reduction zone (CRZ), and exclusion zone (EZ) are clearly delineated.

CM safety representatives involved with the processing facility or dredging operations will have completed the required OSHA 40-hour HAZWOPER training (29 CFR 1910.120) and current eight-hour annual refresher. CM safety representatives involved with the construction of the processing facility or rail yard will have a 30-hour OSHA construction safety certification, or certification as a CSP or construction health and safety technician (CHST). CM safety representatives involved with the processing or dredging operations will have a 30-hour OSHA construction safety certification, or certification as a CSP, CIH, or occupational health and safety technician (OHST). In addition, all CM safety representatives will have current training in first aid and CPR.

Additional responsibilities of the CM PSM, safety representatives, and site supervisors related to emergency response are described in Section 10.

## **2.2.3 Site Safety Officer / Site Safety and Health Officer (for Contractor)**

Contractor SSO or SSHO will be responsible for all on-site health and safety activities that relate to their scope of work, and will have the authority to suspend such activities in the event of an emergency or unsafe working conditions. The SSO or SSHO will be the primary point of contact for all field personnel and visitors observing field activities, and has direct responsibility for the implementation and administration of the contractor’s RA HASP. Specifically, the SSO or SSHO will be responsible for the following:

- Be a local leader for the project’s zero incident safety culture and lead their workers in the belief that all incidents are preventable and a zero incidents goal is attainable;
- Enforce all health and safety rules and regulations within the scope of this RA HASP;

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- Lead the daily health and safety briefings and encourage personnel to raise safety concerns and then work with them to address any specific health and safety issues that may be raised at those meetings
- Ensure that the workers are aware that they can refuse to do unsafe tasks or activities; and that they can do so without fear of reprisal or dismissal (otherwise known as their “stop work authority”).
- Conduct and document health and safety audits;
- Coordinating with the PSM and the CM safety representative on matters pertaining to project health and safety;
- Evaluate field activities to detect unsafe acts and conditions and develop solutions that address the root cause of the unsafe act or condition;
- Educate employees regarding the zero incident safety culture, applicable work practices, procedures, rules, and regulations;
- Be a mentor, facilitator, and encourager of workers in being responsible for their own and their colleague’s safety;
- Educate employees on applicable emergency contingency plans;
- Report all incidents and injuries to the project manager, PSM, and appropriate safety representative; and
- Share with project manager, PSM, and appropriate safety representative safety accomplishments, solutions, and achievements, so that they can be passed onto other parts of the project.

Contractor SSO or SSHO will also be available to assist in addressing community health and safety issues.

The SSO involved with construction activities shall have a minimum of 10 years of safety experience of a progressive nature with at least 5 years of experience on similar projects, will have completed the required OSHA 40-hour HAZWOPER training (29 CFR 1926.65), additional eight-hour HAZWOPER supervisor training, and current eight-hour annual refresher (for activities involved with PCB-impacted sediments) and shall possess one of the following certifications:

- CSP.
- CHST.

The SSHO involved with processing and dredging activities shall have a minimum of 10 years of safety experience of a progressive nature with at least 5 years of experience on similar projects, will have completed the required OSHA 40-hour HAZWOPER training

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(29 CFR 1910.120), additional eight-hour HAZWOPER supervisor training, and current eight-hour annual refresher and shall possess one of the following certifications:

- CSP.
- CIH.
- OHST.

## 2.2.4 Site Safety Representative (for Contractor)

A SSR involved with construction activities shall have a minimum of five years of safety experience of a progressive nature with at least two years of experience on similar projects, and have completed a 30-hour OSHA Construction Safety course or equivalent. Each SSR involved with construction activities shall have formal documented safety training for competent person status for the following 7 areas of competency, based on the Contractor scope of work and the SSRs assigned responsibility:

- Excavation (29 CFR 1926 Subpart P);
- Scaffolding (29 CFR 1926 Subpart L);
- Fall protection (29 CFR 1926 Subpart M);
- Manlifts (29 CFR 1910 Subpart F);
- Material Handling (29 CFR 1910 Subpart N);
- Hazardous energy (29 CFR 1910.147);
- Confined space (29 CFR 1910.146); and
- Hazardous Waste Operations and Emergency Response (29 CFR 1926.65).

All SSRs involved with processing and dredging activities shall have a minimum of 5 years of safety experience of a progressive nature with at least 2 years of experience on similar projects, will have completed the required OSHA 40-hour HAZWOPER training (29 CFR 1910.120), and current eight-hour annual refresher and have completed a 30-hour OSHA Construction Safety course or equivalent. Each SSR will also have formal documented safety training for competent person status for at least the following three areas of competency:

- Hazardous Waste Operations and Emergency Response (29 CFR 1910.120);
- Personal Protective Equipment (29 CFR 1910 Subpart I);
- Machinery and Machine Guarding (29 CFR 1910 Subpart O); and
- Commercial Diving Operations (29 CFR 1910 Subpart T).

The SSR involved with habitat construction will have formal documented safety training for competent person status for at least the following areas:

## **RA HEALTH AND SAFETY PLAN**

- Commercial Diving Operations (29 CFR 1910 Subpart T); and
- Hazardous Waste Operations (29 CFR 1910.120).

Contractors shall provide at least two individuals current in CPR/First Aid training for each work area during every shift, including each individual barge/dredge. Where automated external defibrillator (AEDs) are required, at least two individuals must be trained in its use.

### **2.2.5 Project Workers**

Every project worker on the jobsite (from GE management to Contractor workers) is responsible for safety. These responsibilities include:

- To commit to the project zero incident culture and to believe that all incidents are preventable and zero incidents are attainable;
- To exercise your “Stop Work Authority” by intervening if you see co-workers about to commit an unsafe act and to call a halt to any unsafe activity you witness;
- To participate in daily tool box meetings and to share opinions or ideas on better safe work practices;
- To adhere to the buddy system at all times;
- To follow all procedures identified in the RA HASP, Contractor HASP or may be communicated to you by supervisory staff;
- To be receptive to training in safer work practices; and
- To be tolerant towards your co-workers and open to their views and suggestions pertaining to safer work practices even if they are different from what you are used to doing.

### **2.2.6 Processing/Operations Facility, Dredging and Habitat Construction Personnel**

All contractor and subcontract personnel involved with the processing/operations facility, dredging operations or habitat construction will be required to provide proof of OSHA 40-hour HAZWOPER training (29 CFR 1910.120) and current refresher, and a written statement of medical clearance to wear a respirator. All personnel will be made aware of the provisions of this RA HASP and will be required to sign the HASP acknowledgment (Attachment B). This documentation will be maintained by the PSM.

All contractor processing/operations facility, dredging, and habitat construction personnel working on the project will be required to have a medical evaluation certifying their physical fitness for hazardous waste site operations [29 CFR 1910.120(f)]. At a minimum, this evaluation will comply with OSHA’s Respiratory Protection Standard, 29 CFR 1910.134.

All project personnel will be required to attend the daily health and safety and project coordination meeting to be eligible to work on the site that shift. At this meeting, personnel will

## **RA HEALTH AND SAFETY PLAN**

sign in with the site supervisor (or designee), who will verify the status of employee credentials and distribute the daily sign-in sheets to appropriate project personnel.

Contractors are responsible for the ultimate health and safety of their employees that will participate in RA work activities. This RA HASP represents the minimum acceptable health and safety standards to be followed on the project. Contractors shall develop a contractor HASP that mandates additional health and safety protection measures for their employees, which will be included as addenda to this RA HASP. Contractor employees associated with dredging, processing/operations and/or handling PCB-impacted sediments shall have medical examinations in compliance with 29 CFR 1910.120(f), and as required based upon the substances that the employees will or could be exposed to. Contractor employees required to wear a respirator shall be trained, medically qualified and fit tested on an annual basis as per 29 CFR 1910.134.

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## SECTION 3

### SITE LAYOUT AND CONTROL PLAN

#### 3.1 GENERAL

The Upper Hudson River (from Hudson Falls to Troy, New York) has been divided into River Sections 1, 2, and 3, as shown on Figure 1. The area includes numerous towns and villages and several major roadways. The various areas to be dredged are shown on Figure 2.

Figure 3, Site Security Plan, depicts the processing facility (e.g., construction areas, processing areas, the barge unloading area, and the rail yard), which will be fenced and gated on all non-water sides. Figure 4 is a site layout of the work support marina, which will also be fenced and gated on all non-water sides. Approximately 16,000 feet of perimeter and exclusion zone chain link fencing will be installed around the perimeter and interior portions of the processing facility to restrict unauthorized access.

Entry points will either be locked or staffed by security personnel to restrict access and minimize potential public trespass. Routine access to the facility processing area will be by the Main Access Road. During an emergency the Main Access Road will be supplemented by the East Access Road. Access to the support marina will be a single access road off of West River Road. Anyone wishing to enter either site will be required to inform the security guard the purpose of their visit and the name of a project contact person (if applicable). Workers will be provided with personal ID badges to access either the facility site, work support marina or both. The security guard will also have a list of project personnel with phone numbers or radio contact information. If an individual attempting to enter the site does not have a personal ID badge, then the security guard will notify the appropriate project personnel for site access approval. Workers and visitors authorized to access the site must show proper identification and sign in and out. Visitors authorized to access the site shall be escorted by project personnel at all times.

Personnel authorized to access any marine vessel (e.g., barge, dredge, tug boat, etc) will be determined by the CM, vessel captain or contractor safety representative for the vessel. Safety personnel for the CM will be permitted on any marine vessel at any time.

#### 3.2 RIVER WORK

Field work that requires using vessels in the river will be coordinated with the New York State Canal Corporation (NYSCC), which operates the Champlain Canal System, the United States Coast Guard (USCG), who has jurisdiction of the waterway, and will be overseen by the USEPA or its designee. All vessels associated with the field activities will monitor marine band channel 13 as well as the project marine band channel. While performing field work within the designated navigational channel proper, the boats will station buoys to clearly denote the area in

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which other boats may freely navigate. Vessels associated with the field activities will adhere to standard NYSCC and USCG navigation laws. Vessel movement will stop when visibility is below 500 feet, except barges, for which movement will stop when visibility is below 2000 feet.

For field efforts that require using divers for river bottom observations, appropriate protocols (i.e., dive flags) will be used to alert boaters where diving operations are underway.

Dive plans have to be submitted to the CM and approved before any diving activity can take place.

Contractor has to develop a lock transit safety plan in conjunction with NYSCC. That addresses collisions and spills inside the lock area.

Contractor shall submit vessel safety inspections prior to being used on the project and monthly thereafter.

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## SECTION 4

### POTENTIAL HEALTH AND SAFETY HAZARDS AND CONTROLS

#### 4.1 FIELD HAZARDS AND CONTROL MEASURES

The following sections discuss general safety and health hazards associated with the specific field activities of the RA Work Plans and support activities. The descriptions of these field activities are general, since the specific field activities will be described in more detail in the contractor HASP submitted by each contractor performing the work. Each contractor HASP will specify minimum procedures for controlling the hazards associated with the various field activities.

Minimum control measures and procedures to be used on the project are detailed in Section 4.2 – General Hazard and Control Measures. In this section, the overall guidelines on when and how to develop an AHA for specific tasks are discussed. Sections 4.3 through 4.23 specifically address procedures and control measures for water safety, lockout/tagout, (LOTO) fire prevention/hot work permits, confined space entry, fall protection, cranes, hoisting and rigging, scaffolding, electrical safety, hand/power tools, ladder safety, housekeeping, steel erection, diving safety, soft/hard line handling, heat stress, cold stress, biological hazards, safe lifting, PCBs, drilling operations, working on ice, electrofishing and working on a bridge.

All work must be performed using the buddy system, a system of organizing employees into work groups so that each employee of the work group is designated to be observed by at least one other employee in the work group. The purpose of the buddy system is to provide rapid assistance to employees in the event of an emergency. If an individual in a work group does not have a direct line of sight with another group member, then the individual must have a means of communicating with the group (i.e., two-way radio).

##### 4.1.1 Contract 1 – Phase 1 Facility Site Work Construction

Infrastructure, including electricity, water, sewers, utilities, and roads, will be developed within the property. Backfill will be used to grade the property for construction, and security fencing will be placed around the entire perimeter of the property.

A waterfront unloading facility will be constructed on property owned by the NYSCC. The waterfront area will encompass approximately 1,450 feet of shoreline and will be able to accommodate multiple barges at a time.

Approximately 35,000 cubic yards of material will be excavated along the canal to construct the unloading facility.



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## Hazards

The hazards associated with these activities can be physical, biological, and environmental.

Physical hazards include but are not limited to:

- Being caught in/between/under equipment or materials;
- Being struck by tools/equipment/materials;
- Coming in contact with electricity;
- Coming into contact with contaminated sediment (for in-river work below Lock 7) or hazardous materials;
- Drowning;
- Fall from elevation;
- Fatigue;
- Fires;
- Lifting or carrying heavy materials;
- Pulling or pushing objects and materials;
- Slips/trips/falls on same elevation surfaces;
- Vehicle/train incidents; and
- Working in trenches/excavations.

Biological hazards include exposure to dead animals, organic wastes, and contaminated soil and water that can harbor parasites and pathogens. Environmental hazards include exposure to poisonous vegetation, insects, animals, rodents, heat, cold, ultra-violet radiation, noise, and lightning.

Manual materials handling and manual project site preparation may cause blisters, sore muscles, and joint and skeletal injuries; these activities may also present eye, overhead, contusion, and laceration hazards. The work area may present slip, trip, and fall hazards from scattered debris and irregular walking surfaces. Rainy weather may cause wet, muddy, slick walking surfaces and unstable soil. Freezing weather hazards include frozen, slick, and irregular walking surfaces.

## Control Measures

In accordance with Section 5 in the contractor HASP, a hazard/risk/exposure assessment will be provided for each major activity that will take place. Section 6 of the contractor HASP provides the AHA for each major activity, which identifies the steps, hazards and control measures for each task. Also included will be applicable procedures to mitigate known risks or

# RA HEALTH AND SAFETY PLAN

hazards, such as emergency equipment or supplies required to be available on site based on the field activities taking place and potential releases to the environment.

## 4.1.2 Contract 2 – Phase 1 Rail Yard Construction

The Phase 1 rail yard construction shall consist of activities required to construct rail yard track and facilities on both GE and Canadian Pacific Railway properties. This will involve the construction of ballasted track, engine house, repair track facility, and weigh-in-motion scale.

### **Hazards**

The hazards associated with these activities are mainly physical and environmental.

Physical hazards include but are not limited to:

- Being caught in/between/under equipment or materials;
- Being struck by tools/equipment/materials;
- Coming in contact with electricity;
- Coming into contact with hazardous materials;
- Fall from elevation;
- Fatigue;
- Fires;
- Lifting or carrying heavy materials;
- Pulling or pushing objects and materials;
- Slips/trips/falls on same elevation surfaces;
- Vehicle/train incidents; and
- Working in trenches/excavations.

Environmental hazards include exposure to insects, animals, rodents, heat, cold, ultra-violet radiation, noise, and lightning.

### **Control Measures**

In accordance with Section 5 in the contractor HASP, a hazard/risk/exposure assessment will be provided for each major activity that will take place. Section 6 of the contractor HASP provides the AHA for each major activity, which identifies the steps, hazards, and control measures for each task. Also included will be applicable procedures to mitigate known risks or hazards, such as emergency equipment or supplies required to be available on site based on the field activities taking place and potential releases to the environment.

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## 4.1.3 Contract 3A – Phase 1 Processing Facility Construction

Phase 1 processing facility construction will encompass electrical, mechanical, and limited civil work to install and commission unit-process equipment to be used for sediment dewatering. This effort will also cover the remaining site work, such as processing facility buildings, as well as piping, electrical, instrumentation, controls, and communications.

### **Hazards**

The hazards associated with these activities are mainly physical and environmental.

Physical hazards include but are not limited to:

- Being caught in/between/under equipment or materials;
- Being struck by tools/equipment/materials;
- Coming in contact with electricity;
- Coming into contact with hazardous materials;
- Fall from elevation;
- Fatigue;
- Fires;
- Lifting or carrying heavy materials;
- Pulling or pushing objects and materials;
- Slips/trips/falls on same elevation surfaces;
- Vehicle incidents; and
- Working in trenches/excavations.

Environmental hazards include exposure to insects, animals, rodents, heat, cold, ultra-violet radiation, noise, and lightning.

### **Control Measures**

In accordance with Section 5 in the contractor HASP, a hazard/risk/exposure assessment will be provided for each major activity that will take place. Section 6 of the contractor HASP provides the AHA for each major activity, which identifies the steps, hazards, and control measures for each task. Also included will be applicable procedures to mitigate known risks or hazards, such as emergency equipment or supplies required to be available on site based on the field activities taking place and potential releases to the environment.

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## 4.1.4 Contract 3B – Phase 1 Processing Facility Operations

Phase 1 operations of the processing facility will occur 24 hours a day, six days a week, with the seventh day reserved for maintenance, make-up time for unplanned outages, or as a contingency to satisfy the productivity requirement.

Dredged material will be unloaded from barges by a mechanical off-loader. Large debris will be separated and the remaining sediment will be sent to two hydrocyclone systems, which separate sediment into coarse material (e.g., sand and gravel) and fine (or silty) material.

Coarse material from the hydrocyclone systems will be placed on a screen to remove excess water. Fine material will be mixed with polymers to enhance dewatering and then sent through filter presses for water removal.

Trucks will move processed coarse materials from the dewatering area to enclosed structures on the property.

Water generated during sediment processing, along with rain that falls on material handling areas, will be collected for on-site treatment. Once treated, the clean water will be discharged into the Champlain Canal.

The processing facility operator will use a tug to aid in the efficient movement of barges between the unloading wharf and the mooring dolphins.

### **Hazards**

The hazards associated with these activities are mainly physical and environmental.

Physical hazards include but are not limited to:

- Being caught in/between/under equipment or materials;
- Being struck by tools/equipment/materials;
- Coming in contact with electricity;
- Coming into contact with hazardous materials;
- Drowning;
- Fall from elevation;
- Fatigue;
- Fires;
- Lifting or carrying heavy materials;
- Pulling or pushing objects and materials;

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- Slips/trips/falls on same elevation surfaces;
- Vehicle/train incidents; and
- Working in trenches/excavations.

Environmental hazards include exposure to insects, animals, rodents, heat, cold, ultra-violet radiation, noise, and lightning.

## **Control Measures**

In accordance with Section 5 in the contractor HASP, a hazard/risk/exposure assessment will be provided for each major activity that will take place. Section 6 of the contractor HASP provides the AHA for each major activity, which identifies the steps, hazards, and control measures for each task. Also included will be applicable procedures to mitigate known risks or hazards, such as emergency equipment or supplies required to be available on site based on the field activities taking place and potential releases to the environment.

### **4.1.5 Contract 4 – Phase 1 Dredging Operations**

Dredging of sediment will occur 24 hours a day, six days a week, with the seventh day reserved for maintenance and make-up time for unplanned project interruptions.

Environmental bucket dredges will be used. This type of mechanical dredging uses a sealed bucket to capture the contaminated sediment. Tugboats and barges will transport the sediment to the dewatering facility.

A marine support facility will provide docks for support vessels (e.g., survey, sampling, and oversight boats) to reduce the number of project-related vessels that need to travel through Lock 7.

After dredging, clean sand, gravel, or stone may be used as backfill to cover some dredged areas. The clean backfill materials will be transported directly from the staging areas of one or more quarries on the river to dredged areas via barge.

To minimize and control sediment resuspension during Phase 1, sheet piling and silt curtains will be installed in the river at some locations.

## **Hazards**

The hazards associated with these activities are mainly physical and environmental.

Physical hazards include but are not limited to:

- Being caught in/between/under equipment or materials;
- Being struck by tools/equipment/materials;

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- Coming into contact with contaminated sediment or hazardous materials;
- Confined space hazards;
- Drowning;
- Fall from elevation;
- Fatigue;
- Fires;
- Lifting or carrying heavy materials;
- Marine vessel incidents;
- Pulling or pushing objects and materials;
- Slips/trips/falls on same elevation surfaces; and
- Soft/hard line hazards.

Environmental hazards include exposure to insects, animals, rodents, heat, cold, ultra-violet radiation, high wind, river current, noise, and lightning.

## **Control Measures**

In accordance with Section 5 in the Contractor HASP, a hazard/risk/exposure assessment will be provided for each major activity that will take place. Section 6 of the contractor HASP provides the AHA for each major activity, which identifies the steps, hazards, and control measures for each task. Also included will be applicable procedures to mitigate known risks or hazards, such as emergency equipment or supplies required to be available on site based on the field activities taking place and potential releases to the environment.

### **4.1.6 Contract 5 – Phase 1 Habitat Construction**

The Phase 1 habitat construction shall consist of all activities related to the replacement of specified plantings in designated project areas. Scuba divers will carry out the habitat construction, following procedures intended to maximize protection of divers from accidental injury and/or illness. The requirements for diver experience and training are also included.

## **Hazards**

The hazards associated with these activities are mainly physical and environmental.

Physical hazards include but are not limited to:

- Being struck by tools/equipment/materials;
- Coming into contact with contaminated sediment or hazardous materials;

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- Drowning;
- Fatigue;
- Fires;
- Lifting or carrying heavy materials;
- Marine vessel incidents;
- Slips/trips/falls on same elevation surfaces; and

Environmental hazards include exposure to insects, animals, rodents, heat, cold, ultra-violet radiation, high winds, river current, and lightning.

## **Control Measures**

In accordance with Section 5 in the contractor HASP, a hazard/risk/exposure assessment will be provided for each major activity that will take place. Section 6 of the contractor HASP provides the AHA for each major activity, which identifies the steps, hazards, and control measures for each task. Also included will be applicable procedures to mitigate known risks or hazards, such as emergency equipment or supplies required to be available on site based on the field activities taking place and potential releases to the environment.

### **4.1.7 Contract 6 – Phase 1 Rail Yard Operations**

At the staging area of the facility, dewatered sediment will be loaded into railcars. The dewatered sediment will then be transported via rail to final destination(s).

Approximately 38,000 feet (just over seven miles) of railroad track will be installed to enable loading, maneuvering, repair, and inspection of rail cars. Rail will also be used for delivery of materials to the processing facility whenever possible.

During Phase 1, processed material will be transported off site. To move the material, trains will leave from the site each week.

## **Hazards**

The hazards associated with these activities are mainly physical and environmental.

Physical hazards include but are not limited to:

- Being caught in/between/under equipment or materials;
- Being struck by tools/equipment/materials;
- Coming into contact with contaminated sediment or hazardous materials;
- Fall from elevation;

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- Fatigue;
- Fires;
- Pulling or pushing objects and materials;
- Slips/trips/falls on same elevation surfaces; and
- Vehicle/train incidents.

Environmental hazards include exposure to insects, animals, rodents, heat, cold, ultra-violet radiation, noise, and lightning.

## **Control Measures**

In accordance with Section 5 in the contractor HASP, a hazard/risk/exposure assessment will be provided for each major activity that will take place. Section 6 of the contractor HASP provides the AHA for each major activity, which identifies the steps, hazards, and control measures for each task. Also included will be applicable procedures to mitigate known risks or hazards, such as emergency equipment or supplies required to be available on site based on the field activities taking place and potential releases to the environment.

### **4.1.8 Support Activities**

Field work associated with support activities include the use of marine vessels for surveying and collecting samples (i.e., sediment, fish, water column); divers for underwater inspection and video, barge mounted drill rigs for core samples, cutting packaging, handling and/or transporting samples, equipment and supplies, electrofishing and working on bridges.

## **Hazards**

The hazards associated with these activities can be physical, biological, and environmental.

Physical hazards include but are not limited to:

- Being caught in/between/under equipment or materials;
- Being struck by tools/equipment/materials;
- Coming into contact with contaminated sediment (for in-river work below Lock 7) or hazardous materials;
- Drowning;
- Electrical shock;
- Fall from elevation;
- Fatigue;
- Fires;



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- Lifting or carrying heavy materials;
- Pulling or pushing objects and materials;
- Slips/trips/falls on same elevation surfaces;
- Vehicle/train incidents; and
- Marine vessel incidents.

Biological hazards include exposure to dead animals, organic wastes, and contaminated soil and water that can harbor parasites and pathogens. Environmental hazards include exposure to poisonous vegetation, insects, animals, rodents, heat, cold, ultra-violet radiation, noise, and lightning.

Manual materials handling and manual project site preparation may cause blisters, sore muscles, and joint and skeletal injuries; these activities may also present eye, overhead, contusion, and laceration hazards. The work area may present slip, trip, and fall hazards from scattered debris and irregular walking surfaces. Work in close proximity to the river presents the possibility of drowning. Rainy weather may cause wet, muddy, slick walking surfaces, and unstable soil. Freezing weather hazards include frozen, slick, and irregular walking surfaces.

## Control Measures

In accordance with Section 5 in the contractor HASP, a hazard/risk/exposure assessment will be provided for each major activity that will take place. Section 6 of the contractor HASP provides the AHA for each major activity, which identifies the steps, hazards, and control measures for each task. Also included will be applicable procedures to mitigate known risks or hazards, such as emergency equipment or supplies required to be available on site based on the field activities taking place and potential releases to the environment. Section 4.3 presents safe work practices for working on and adjacent to the river. Control measures for boating safety are presented in Sections 4.3 and 8.6, and those for diving safety are presented in Section 4.15 and Appendix C.

## 4.2 GENERAL HAZARDS AND CONTROL MEASURES

General safety and health hazards are associated with the field activities of the RA work plan and support activities. As per Sections 5 and 6 of the contractor RA HASP, contractors are required to conduct an AHA for all aspects of their work. The AHA consists of the following three steps:

- Identify the task and break it down into steps.
- Identify the hazards associated with each step.
- Identify the specific hazard control measure used for each step in accordance with the order-of-precedence method of control.

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Below are some sample questions to aid the contractor in completing AHAs. This list is not comprehensive because each portion of the project (i.e., construction, processing/operations, dredging) has its own requirements and environmental conditions. The person developing the AHA should also consider taking photographs of the work area for a more detailed analysis of the work environment.

- Are materials on the ground/floor that could trip a worker?
- Is lighting adequate?
- Are there any live electrical hazards at the jobsite?
- Do any tools, including hand tools, machines, and equipment need repair?
- Is there excessive noise in the work area that could hinder worker communication and increase the risk of hearing loss?
- Is fire protection equipment readily accessible and have employees been trained to use it?
- Are emergency exits clearly marked?
- Are operators required to have a certificate or a license?
- Are trucks or motorized vehicles equipped with brakes, overhead guards, backup signals, horns, steering gear, and identification, as necessary?
- Are employees who operate vehicles and equipment trained and authorized?
- Are employees wearing the PPE required for the jobs they perform?
- Have any employees complained of headaches, breathing problems, dizziness, or strong odors?
- Is ventilation adequate?
- Does the job involve entry into a confined space?
- Are permits required for hot work, confined space work, or similar work?
- Are workers wearing clothing or jewelry that could get caught in machinery?
- Are workers provided and trained in the use of personal protective equipment appropriate to activities, e.g., hard hats, sturdy footwear, eye protection, hearing protection, etc.?
- Are there fixed objects such as sharp machine edges that could cause injury?
- Can workers get caught in or between machinery?
- Can reaching over moving machinery or materials injure workers?
- Is a worker in an off-balance position at any time?
- Is a worker's position in relation to a machine or equipment potentially dangerous?

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- Is a worker required to make movements that could cause hand or foot injury, repetitive motion injuries, or strain from lifting?
- Can an object come loose and strike the worker?
- Do suspended loads or potential energy — compressed springs, hydraulics or jacks — pose hazards to workers?
- Are there guardrails in place to prevent a fall from one level to another?
- Can a worker be injured by lifting or carrying heavy objects?
- Do environmental hazards — dust, chemicals, radiation, welding rays, heat or excessive noise — result from performing a job or activity?
- Are work positions, machinery, pits or holes, and hazardous operations adequately guarded?
- Are lockout procedures for machinery deactivation used during maintenance procedures?
- Is the work flow improperly organized (is a worker required to make movements that are too rapid)?
- How are dust and chemicals dispersed in the air?
- What are the sources of noise, radiation, heat, and cold?
- Will a worker come in contact with sharp surfaces?
- Are there guards in place to prevent an employee from reaching into moving machinery?

In addition, the contractor shall use the following list as a guide in determining the construction activity hazards analyses for various high-hazard operations and critical tasks.

- **Pre-mobilization inspection.** Conduct an initial site inspection for prejob planning. The inspection should cover potential exposures such as the location of electrical lines, underground utilities, nearby structures, traffic conditions, site security needs, public exposures general liability, and other potential exposures.
- **Water, wastewater, and marine work.** Analyze work adjacent to, in, or over water (including lakes, canals, dams, treatment plants, water tanks, clarifiers, and reservoirs) for hazards.
- **Traffic controls.** Plan the traffic controls for delivery of equipment or materials as well as any equipment operations. Control measures include warning signs, flagmen, traffic stoppage and control, and unloading procedures.
- **Material storage.** Consider where materials and equipment will be stored on site. Implement measures to protect against vandalism and theft of tools, equipment, or

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materials. Also consider the hazards that may exist for workers when they are storing or retrieving those materials.

- **Material handling.** Consider the size and weight of loads, the equipment to be used, how the equipment is set up and protected, and safety and maintenance inspections of material handling and rigging equipment. Also consider employee training in the use of the equipment or personal body mechanics when engaged in manual material handling activities.
- **Heavy equipment controls.** Evaluate the use of heavy equipment in operations such as site clearing, grading, and excavation or lifting. Controls should include equipment alarms, use of qualified operators, preuse inspections, and any specific OSHA regulatory requirements.
- **Fall protection.** Safety harnesses and secured safety lanyards or retractable lifelines must be used when working from unguarded work surfaces where falls greater than 6 feet/1.8m present a hazard. (NOTE: Site requirements may limit this potential fall length to 4 feet/1.2m). Lanyards or retractable lifelines must be secured to separate lifelines and independent connection points capable of withstanding the load of a potential fall.
- **Steel erection.** Subcontractors erecting steel must comply with applicable regulations of OSHA 1926.750 and the Steel Erection Negotiated Rule Advisory Committee (SENRAC).
- **Personal protective equipment.** Consider operations where PPE is required and the type of PPE required, e.g., eye, head, foot, respiratory, hearing and hand protection, and types of special protective clothing.
- **Portable hand and power tools.** Evaluate the tools to be used and the ways that workers are protected from the hazards associated with the use of tools. Consider tool maintenance requirements; electrical requirements; the use of ground fault circuit interrupters, grounding, extension cords, and tool inspection procedures; and employee training and PPE requirements.
- **On-site traffic.** Internal traffic control plans should include ways to restrict the number of vehicles on site, the flow of vehicles through the site, haul roads, speed controls, subcontractor employee parking areas, merging of site traffic with local vehicle traffic, pedestrian controls in traffic zones, access by emergency and rescue vehicles, and operator controls.
- **Employee training.** Always review the safety training needs of employees. Training should include initial site safety orientations and chemical hazard communication training. Some operations (e.g., excavation, blasting, scaffold erection, tunneling, confined space, operating heavy equipment, and working in highly hazardous plant process operations) may require special training that should be checked and evaluated.

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- **Confined spaces.** Confined space work requires special consideration, evaluation, and controls. Each space should be reviewed for regulatory compliance.
- **Crane operations.** Consider special requirements for operations, maintenance, and heavy lifting operation. All lifts must be planned in accordance with the limitations of cranes being used.
- **Excavations and trenching.** These activities require complete analysis of existing underground exposures, soils, sloping and shoring methods, equipment, and engineering if depth of trench or excavations exceeds four feet. An AHA is recommended for all trenching operations.
- **Concrete formwork and placement.** Adequate access and egress to elevated concrete work is essential to the safe and quality placement of concrete work. Work involving concrete should consider protective measures such as staging, platforms, handrails, and other passive forms of employee protection.
- **Process safety management.** At process sites where highly hazardous chemicals are stored or used, comply with special considerations and process safety management OSHA regulations.
- **Mechanical, electrical, and piping.** Evaluate all work associated with the installation, repair, and maintenance of mechanical, piping and electrical work for interferences, LOTO, line break procedures, and applicable customer requirements.
- **Hazard communication.** A site-specific hazard communication plan is required to be developed by the contractor. A copy of a material safety data sheet (MSDS) for each chemical brought to the site will be maintained by the Contractor with a copy sent to the CM. Containers will meet the National Fire Protection Association (NFPA) standards for storage. Labels on containers will be visible and readable.

Other requirements during RA activities include the following:

- Alcoholic beverages, recreational drugs, and people under the influence of these substances are not permitted on site.
- Weapons and firearms are strictly prohibited.
- No food or drink will be allowed in the construction work area except in the designated eating area.
- Music radios/headsets are prohibited.
- No cameras or video equipment are permitted on site except as necessary to document the progress of the work and as may be allowed under the specific site security guidelines.
- Smoking is not permitted in any building (including the building footprint and roof). Smoking is allowed in designated areas only.

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- Horseplay and fighting is prohibited.
- Barricaded or roped off areas are considered danger zones and should be respected as such. Admittance to such areas is prohibited without authorization.
- Protect floor openings by providing adequate barricades and secured covers. All covers must be painted with high visibility paint or shall be marked with the word “HOLE” or COVER” to provide warning of the hazard.
- No one will be allowed to enter the site without proper identification. All trade workers, vendors, and visitors must comply with the CM’s badge and access program.
- Do not prop open exit doors.
- Throwing or dropping materials from one level to another is prohibited.
- No toxic chemicals or other types of pollutants may be disposed of in the on-site sewerage systems, either storm or sanitary.
- All gas cans and other liquid chemicals must remain in secondary containment devices.
- No riding in the back of pick-up trucks.
- Park in designated contractor-parking areas. The driver of any motor vehicle on company property is responsible for its safe condition and use. The vehicle owner must promptly correct any malfunction of brakes, lights, horn, or exhaust system. The driver is required to have a valid driver’s license and the vehicle must have a valid license plate. All traffic rules must be obeyed, and pedestrians have the right of way at the site.
- All deliveries and use of special equipment will be through areas designated by the CM. The CM will designate staging and storage areas for construction use. All contractors must schedule and coordinate deliveries in order to minimize the necessity of storing materials prior to installation.
- Talking on cell phones or using music headsets while operating project equipment is prohibited.

### **4.3 WATER SAFETY**

Contractor personnel working over, adjacent, or near water, or where the danger of drowning exists, must wear a USCG-approved Commercial Type I, II, or III personal flotation device (PFD). Other Types of USCG-approved PFDs must be approved by the CM prior to use. Each PFD shall be worn with an attachable emergency whistle and a water activated light attached to the PFD. Self inflating PFDs will not be allowed on the project.

Prior to and after each use, the PFD must be inspected for defects that would alter their strength and buoyancy. Defective units must be removed from service. Ring buoys with at least

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90 feet of line must be provided and readily available for emergency rescue operations. Distance from ring buoys may not exceed 200 feet. Some means of rescue (e.g., a ring buoy or boat) must be immediately available at locations where personnel are working over or adjacent to water.

The operator/skipper of each boat must complete a USCG boating safety training course prior to conducting work on the river. Each operator/skipper must demonstrate proficiency in the following subject areas: proper operation of a boat; boat and safety equipment inspections; content and frequency of equipment safety inspections; proper use of on-board safety equipment, including fire extinguisher, radio or cellular phone, flares, horn, etc.; proper procedures on the completion and filing of a float plan; appropriate boating “rules-of-the-road;” emergency procedures in the event of capsizing or being thrown overboard; and different types of PFDs and their proper inspection and use.

Prior to each day or shift of operations, a boat inspection must be conducted by the boat operator/skipper. This inspection must be conducted in accordance with accepted USCG and any applicable state boating safety inspection procedures. The inspection must verify that necessary safety equipment is aboard, functioning properly, and all members of the crew are aware of proper procedures that are to be followed upon the water. In addition, this information must be reviewed during the daily toolbox safety meeting to confirm that the procedures have been followed and all crew members are satisfied as to its completion.

It will be the responsibility of the site supervisor to verify that daily boat/equipment inspections are completed and documented, and daily toolbox safety meetings are conducted.

## **4.4 LOCKOUT/TAGOUT PROCEDURES**

The LOTO standard applies, but is not limited to, activities that are performed on a machine, a piece of equipment, a process, or circuit. Primary, secondary, stored, and single-source energy sources require a lockout when performing servicing and/or maintenance activities. Primary energy sources are the main energy sources such as electricity, gas, fluids, etc., provided to machines, equipment, processes, and circuits. Shut down machinery with moving parts or process equipment in service before adjustments or repairs. GE’s LOTO procedures must be followed. See GE EHS Requirements in Appendix B.

If shutdown is not feasible, a risk assessment must be used. The risk assessment explores the safest conditions possible for individual work assignments. Risk assessment establishes safe practices and alternative methods to reduce the possibility of injury when normal LOTO procedures cannot be applied. A task hazard analysis (mitigation plan) and written procedures specific for the job must be completed and reviewed with the CM prior to start.

Never remove warning or danger tags or locks on any apparatus, valves, or switches unless you have been instructed to do so, and then only by the persons who attached them.

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Contractors who are involved with equipment/systems and are potentially exposed must implement procedures that provide protection equal to or better than the GE LOTO program. LOTO programs for outside services or contractors must be reviewed by authorized CM personnel.

The contractor supervisor must be made aware of the overall LOTO procedure and informed of the equipment specific procedure by the CM.

Contractors must place their own locks and tags (one lock, one key, one person) and verify LOTO by try-out. As a best practice, the CM may perform the LOTO step-by-step process. The contractor will then be required to attach and secure their individual LOTO locks and red tags to the same energy-isolating devices that the CM has locked out and validate zero energy by try-out.

All contractor workers involved in a LOTO operation must have documentation of LOTO training. This documentation must be available for audit at the work site.

## 4.5 FIRE PREVENTION/HOT WORK PROCEDURES

Smoking will only be allowed in designated areas. The CM will review contractor requests for specified smoking areas. Contractor will be responsible for providing fire extinguisher, sand pail, and overall housekeeping and maintenance of their smoking area.

Use only approved cleaning agents — never gasoline or flammable liquids. Gasoline and similar flammable liquids must be stored only in approved safety containers and in areas free of burning hazards. Keep all heat sources from flammable liquids, gases, or other combustible materials. Open fires are strictly prohibited.

Every hot work operation must have a properly trained and equipped fire watch with appropriate fire extinguishers for the specific hazard in the work area. The fire watch must remain in the work area for at least 30 minutes after the hot work activity is completed.

To avoid accidental displacement, keep compressed gas cylinders standing and securely tied off, whether empty or full. Make sure valve protection caps are on when cylinders are not in use. The valve shall be closed on all empty cylinders.

When moving cylinders by crane or derrick; a cradle, boat, or suitable platform shall be used. Slings or hooks shall not be used.

When cylinders are not in use, they must be secured and capped. If cylinders are not used within a 24-hour period, they are considered to be in storage, and must be secured, capped, and separated. Separate oxygen and fuel gas cylinders by a minimum of 20 feet or a 5-foot high, ½-hour fire-rated barrier. In lieu of removing the cylinders for storage as noted above, a gas cylinder cart with an engineered steel fire barrier (where as the steel barrier has been engineered



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specifically to meet a ½-hour fire resistance rating and to prevent a fire in one cylinder from spreading to the other cylinder on the cart, and the barrier is also depicted as meeting the standard's height requirement of at least 5 feet high) would be acceptable in order to comply with §1926.350(a)(10).

It will be necessary to perform hot work such as welding, cutting, and grinding at various times during the project. Before any hot work can be performed, certain precautions must be taken and conditions met to determine that hot work efforts can be performed safely. The following are required:

- An initial site survey must be made by the contractor to determine that the area is free of flammable and combustible materials.
- Good housekeeping practices must be maintained at all sites that require hot work.
- Adequate fire extinguishing equipment must be in place and readily accessible at all hot work locations, and employees must be properly trained in the use of such equipment.
- Contractor will request a hot work permit, See Attachment D, to be issued by CM. The request must be made at least four hours before beginning work.
- A firewatch must be provided as necessary and remain in place for 30 minutes after completion of work when conditions warrant and are so specified on the hot work permit. The firewatch must be trained to use the required fire extinguisher and hose, and be familiar with the position's responsibilities.

### **4.6 CONFINED SPACE PROCEDURES**

A confined space is an enclosed area that has each of the following four characteristics:

- 1) Large enough and so configured that a worker can bodily enter and perform assigned work;
- 2) Has limited means for worker entry and exit due to the number, size, or location of openings;
- 3) Is not designed for continuous worker occupancy; and
- 4) Contains or may contain a serious safety or health hazard.

Such hazards include currently or potentially hazardous atmospheres, potential worker entrapment (from inwardly converging walls or downward sloping floor), or potential worker engulfed by stored materials. Examples of confined spaces include tanks, vessels, pits, sewers, pipelines, boilers, and utility vaults.

Entry into a confined space shall be conducted only if necessary to do assigned work. Whenever possible, assigned work shall be completed from outside the space.

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Entry into a confined space is prohibited until atmospheric testing of the space and applicable entry procedures have been documented and permits completed. See Attachment E for confined space entry permit.

All contractor entrants and attendants must have documentation of confined space entry/attendant training. Additional respiratory protection training and documentation will be required (if respiratory protection is needed). This documentation must be available for audit at the work site.

All entrants and attendants must be informed of the entry procedures and mitigation plan prior to the entry. The use of appropriate retrieval equipment or other approved means is required for all confined space entries. The number of entrants must be equal to the number attendants and to the number of retrieval devices available.

## 4.7 FALL PROTECTION PROCEDURES

All workers in an area exposed to a fall greater than six feet must use appropriate fall protection. Such protection includes:

- Guardrail systems;
- Safety net systems; and
- Personal fall arrest systems.

Other protection methods include:

- Hole covers;
- Positioning device systems;
- Equipment guards;
- Fences and barricades; and
- Warning line systems in combination with guardrail systems, safety net systems, personal fall arrest systems, or safety monitoring systems.

Fall protection is required but not limited to the following when a worker is exposed to a fall of six feet or more:

- Working on barges with exposed hoppers or perimeters;
- Performing steel erection work;
- Working on scaffolds;
- Unprotected sides and edges;
- Overhand bricklaying and related work;

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- Leading edges;
- Roofing work on low-slope roofs;
- Hoist areas;
- Steep roofs;
- Holes;
- Precast concrete erection;
- Formwork and reinforcing steel;
- Wall openings;
- Ramps, runways, and other walkways;
- Walking/working surfaces;
- Excavations;
- Aerial lifts;
- Dangerous equipment;
- Metal decking operations; and
- Erecting, dismantling, and working on scaffolds.

Trades people shall not stand on motors, pumps, conduits, mid or upper-rails of aerial or articulating lifts, or the like to gain access to elevated work. Use of safety monitor system (SMS), controlled access zone (CAZ), or controlled decking zone (CDZ) will not be accepted unless prior approval from GE's Environmental, Health and Safety (EHS) program manager has been received.

Working on a roof within six feet of the edge or a floor opening requires appropriate fall protection (guardrail systems, safety net systems, or personal fall arrest systems). Use of a safety monitor system or controlled access zone will not be accepted without prior approval from GE's EHS program manager.

A full-body safety harness must be worn at all times in articulating scissors and personnel lifts. Chains must be closed. Harnesses must be secured to an approved tie-off point when breaking the plain of the lift. Safety harnesses must be secured to an approved tie-off point in all aerial lifts. Establish a barricaded or roped off danger zone around lifts for falling objects.

Hoisting of personnel on a personnel platform by a crane or derrick is prohibited, except when the erection, use, and dismantling of conventional means of reaching the worksite, such as a personnel hoist, ladder, stairway, aerial lift, elevating work platform, or scaffold, would be more hazardous or is not possible because of structural design or worksite conditions. This type of operation must meet the requirements of OSHA 1926.550(g).

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Workers must wear a full-body safety harness with his/hers safety lanyard secured to a separate lifeline while working from swing scaffolds, boatswain's chairs, or other suspended work platforms where a fall hazard is present.

Contractor must develop a written fall protection program and communicate it to all affected employees. The program will contain the following elements:

- Hazard identification;
- Selection of fall hazard control;
- Equipment inspection and maintenance;
- Rescue and retrieval methods for employees involved in a fall; and
- Employee training.

Contractor must conduct a fall hazard assessment to address both routine ongoing activities and tasks as well temporary activities, which may take place during maintenance and construction. Control measures will be identified, implemented, and communicated by the contractor. Documentation of fall hazard control measures should be included in AHAs, safe work plans, or other operating procedures.

Contractor workers must be trained in the requirements of the fall protection program including use of fall protection equipment as appropriate. Contractors must inspect and maintain fall protection equipment in accordance with manufacturer's recommendations.

Barges or other marine equipment that are not fitted with guard rail systems shall meet applicable fall protection requirements.

## 4.8 CRANES, HOISTING, AND RIGGING

Never raise a load over people or occupied buildings. Tag lines must be used to control every load. Rigging operations utilizing chains is not permitted without prior approval from GE EHS program manager. Multiple-lift rigging is strictly prohibited. All materials shall be rigged to prevent unintentional displacement. Hooks with self-closing safety latches shall be used to prevent components from slipping out of the hook. Defective rigging equipment shall be tagged and removed from service.

Only qualified operators may operate power equipment. Seat belts must be worn where applicable.

Safe lifting procedures for cranes and hoists must be developed and documented. Crane and hoist operators and qualified riggers must conduct rigging equipment inspections prior to each use on each shift and as necessary during its use to ensure that it is safe.

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All operators of cranes and hoists should have received training that addresses safe operating practices for all crane types that they will be operating on site.

Preventative maintenance must be conducted on cranes and hoists in accordance with manufacturer's guidance or local regulatory requirements.

Contractors must submit copies of detailed and documented annual inspections conducted by qualified individuals.

Riding on hooks, headache balls, or slings of hoisting equipment is strictly prohibited.

## 4.9 SCAFFOLDING

All scaffolds must be inspected before use and must be designed for the safe working load. Only scaffold planking tested and approved to carry the load may be used. Scaffold planking must be secured by tying or cleats to prevent slipping. Mark scaffold planks (in most cases the manufacturer does this) and use only on scaffolds.

Handrails and toe boards shall be used on all scaffolds and the scaffold secured as required. Rolling tower scaffolds must be locked while the scaffold is in use. Tower must be free of personnel, material, and equipment before being moved. Rolling scaffolds are not to be moved from the top. Ladders must be used for accessing scaffolds. Climbing of bracing is prohibited.

Scaffold platforms 6 feet or more above any working surface must be equipped with a guardrail system – Top rails (42 inches plus or minus 3 inches), mid rails (midway between the top rail and the scaffold platform), and toe boards or personal fall arrest systems must be implemented.

No scaffold shall be erected, moved, dismantled, or altered except by trained and qualified personnel under the authority of the competent person. Personnel erecting or dismantling scaffolding must adhere to fall protection standards above 6 feet.

Abide by the scaffold tag system:

- *GREEN*—complete scaffold per required safety standards.
- *YELLOW*—conditional use — 100% fall protection required.
- *RED*—Scaffold not complete. Do Not Use.

Makeshift platforms, such as stacked materials, chairs, boxes, or drums shall not be used. Scaffolds shall be built to OSHA standards (1926.451).

Tubular welded frame scaffolds have additional special safety requirements: Scaffold legs shall be set on adjustable bases, plain bases, or other foundations adequate to support the maximum rated load. To prevent movement, the scaffold shall be secured to the building or

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structure at intervals not to exceed 30 feet horizontally and 26 feet vertically. All pins to secure diagonal braces and to prevent uplift shall be used. Outriggers and platforms below the working/walking level shall be fully planked. Outriggers shall be tied to the frame. Scaffolds may not be used as material hoist towers or for mounting derricks without first determining the loads and stress involved. All scaffolds shall be free of tools, trash, etc. before calling in for removal.

### **4.10 ELECTRICAL SAFETY**

Electrical equipment shall not be installed, repaired, or removed except by trained qualified electricians. Electrically operated equipment (stationary and portable) must be grounded.

When extension cords, power tools or equipment cords are frayed or worn, or when bare wire is showing, the equipment must be tagged and taken out of service. Do not use electrical tape on extension cords. Temporary cords should be supported a minimum of eight feet above the floor in egress walkways, corridors and areas requiring employee access. Temporary lighting must be guarded.

All 120-volt, single phase 15- and 20-ampere receptacle outlets on construction sites, which are not a part of the permanent wiring of the building or structure and are in use by employees, shall have approved ground fault circuit interruption (GFCI) for personnel protection. When using the permanent receptacles, GFCI devices must be installed on each extension cord prior to the source receptacle.

LOTO programs represent a lifesaving control. Compliance with GE's procedures is mandatory. Equipment-specific energy control procedures are required for all LOTO operations.

Extension cords must be at least 16-gauge heavy duty three-wire with a UL approved three prong grounded plug. 110-volt outlets on portable generators and welders shall be three-way (NEMA 5-15R) grounded to the frame. The power lead shall be connected through a GFCI.

### **4.11 HAND AND POWER TOOLS**

Defective tools and equipment must be taken out of service and shall be properly repaired before reuse. Machinery, tools (including portable grinders and buffers) and equipment with exposed gears, belts, power transmission, couplings, etc. shall not be operated without effective guards in place.

The use of gasoline and propane powered equipment in the building is strictly prohibited.

### **4.12 LADDER SAFETY**

The use of metal/aluminum and wooden ladders is prohibited. All ladders shall be heavy duty, industrial strength fiberglass/composite construction.

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Stepladders must be fully open. They cannot be used as straight ladders. Tie-off all straight and extension ladders to keep them secure. Straight and extension ladders must extend three feet beyond the top landing. The base of the ladder shall be set out at least one-fourth of the ladder height measured from bottom to point of bearing.

Any ladder found defective shall be removed from service and destroyed (vertically) or repaired to original specifications.

Do not place ladders in blind spots (doorways, driveways) or in egress ways unless properly barricaded or guarded.

### **4.13 HOUSEKEEPING**

Cleanliness and orderliness are the first fundamentals of good housekeeping. Contractors are responsible for cleaning up and removing hazardous and non-hazardous waste generated on site. Each contractor shall be responsible for maintaining work areas free from waste materials, debris, and rubbish. Work will not be considered complete until all waste materials are removed and the work area returned to a clean and orderly condition. Waste material must be disposed of off-site.

All protruding nails in form lumber, boards, etc., must be withdrawn or bent into the wood before the wood is stacked or piled.

Rags, packing materials, paper cups, and sawdust in saw areas must be collected daily and placed in proper containers.

All objects with sharp edges (scrap sheet metal, scrap glass, bottles, metal cans) shall be collected daily and placed in containers.

Avoid placing debris and other obstacles in roadways, walkways, aisles, and other travel routes.

Allow sufficient time at the end of each day for proper cleanup of the work area. Place all debris in proper refuse containers.

All stored material must be kept in an orderly manner at all times.

Provide a proper collection container and floor protection when using cutting oil, solder flux, hydraulic oil, and other fluids. Rags containing oil, hydraulic fluid or other combustible fluids shall not be placed in trash containers with the other wastes, shall not be placed in containers left inside buildings and shall be disposed of in accordance with applicable hazardous waste regulations. In the event of a large spill, immediately install acceptable containment barriers.

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## 4.14 STEEL ERECTION

The safety standards for structural steel erection will follow the OSHA regulations for Steel Erection Subpart R (1926.750-1926.761 inclusive of Appendices A-H) dated January 18, 2001 and revised on July 18, 2001 with the following exceptions and additions:

- All workers including connectors and deckers must be protected from falls at or greater than 6 feet (1.8m).
- Multiple lift rigging procedures (Christmas treeing) is strictly prohibited.
- The use of a CDZ is prohibited.

Cranes used in steel erection activities shall be visually inspected prior to each shift by a competent person. The inspection must include observation for deficiencies during operation. The inspection must be written and a copy submitted to the CM daily. Deficiencies constituting a hazard require that the hoisting equipment be removed from service until the deficiency is corrected.

At the end of the shift or when environmental or jobsite conditions require, metal decking must be secured against displacement. Metal decking must be laid tightly and immediately secured upon placement to prevent accidental movement or displacement.

Wire mesh, exterior plywood, or equivalent must be installed around columns where planks or metal decking do not fit tightly. The materials used must provide fall protection for personnel and prevent objects from falling through.

All columns must be anchored by a minimum of four anchor bolts. Anchor bolts should not be repaired, replaced, or field modified without the approval of the project structural engineer of record.

## 4.15 DIVING SAFETY

A *Diving Safety Manual* is provided in Appendix C. The manual presents guidelines covering all diving operations specific to the project, including criteria for diver training and authorization, safe diving procedures, equipment specifications, procedures for emergency care, recompression, and evacuation. The manual includes:

- Safety procedures and checklists for diving operations;
- Assignments and responsibilities of the dive team members;
- Equipment procedures and checklists; and
- Emergency procedures.



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Each contractor involved in diving operations will need to include a *Diving Safety Manual* that meets OSHA regulations and American Academy of Underwater Sciences (AAUS) standards in their contractor Safety Plan.

## 4.15.1 General

General diving safety requirements are summarized below:

- All diving activities must be conducted with two comparably equipped scuba divers in the water in constant communication;
- All diving will be from boats;
- No night diving will occur;
- All diving will be conducted with scuba equipment. No diving will be conducted at depths greater than 35 feet;
- No diving will be conducted in enclosed or physically confining spaces;
- No diving will be conducted against currents exceeding 1 knot unless line-tended;
- No diving will take place if surface visibility is less than 200 feet at that given location;
- The diver must terminate a scuba dive while there is still sufficient cylinder pressure remaining (generally, 500 pounds per square inch [psi]) to permit the diver to safely reach the surface, including required in-water decompression time, if applicable. For purposes of this project, in-water decompression is not likely due to the shallow depths at which work will be performed.

## 4.15.2 Training

Each scuba diver must possess a nationally recognized diving certificate. Each diver will be assigned tasks in accordance with their experience and training. Each diver must be trained, qualified, and authorized for the diving mode and specialized equipment being used, the diving activity to be performed, and the depths at which the dive is to be conducted.

Tasks may be assigned to an individual who has not previously performed the specific task, provided that these tasks are performed under the direct supervision of an experienced dive team member.

All dive team members must be trained in CPR and first aid (American Red Cross standard course or equivalent).

## 4.15.3 Dive Planning

Planning of each diving operation will include an assessment of the safety and health aspects of each task. Planning elements include:

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- Diving mode;
- Surface and underwater conditions and hazards;
- Breathing gas supply (including reserves);
- Thermal protection;
- Diving equipment and systems; and
- Dive team assignments and physical fitness of dive team members.

To minimize hazards to the dive team, diving operations must be coordinated with other activities in the vicinity that could potentially interfere with the diving operation.

### **4.15.4 Dive Site Preparation**

Appropriate protocols such as dive flagging will be used to alert boaters where diving operations are underway.

During the pre-dive briefing, all dive team members will receive a briefing by the Diving Safety Officer (DSO) on the following topics:

- Tasks to be undertaken;
- Safety procedures for the diving mode;
- Any unusual hazards or environmental conditions likely to affect the safety of the diving operation; and
- Any modifications to operating procedures necessitated by the specific diving operation.

Prior to making individual dive team member assignments, the DSO must inquire into each dive team member's current state of physical fitness, and indicate to the dive team member the procedure for reporting physical problems or adverse physiological effects during and after the dive.

### **4.15.5 Equipment Inspection**

The procedures listed below must be followed when conducting equipment inspection:

- Each diver must conduct a functional check of his/her diving equipment in the presence of the DSO. Each diver must verify that his/her equipment is in proper working order, and that the equipment is suitable and sufficient for the type of diving operation planned. The DSO must verify that the equipment check has been performed.
- Each diver must have a submersible pressure gauge for monitoring scuba cylinder pressure, capable of being monitored by the diver during the dive.

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- Each diver must have the capability of achieving and maintaining positive buoyancy on the surface.
- Each diver must have the capability to execute a controlled neutrally buoyant ascent, through the use of an approved buoyancy control device.
- The entire scuba apparatus for each diver must be inspected by the diver and DSO prior to the dive. Critical inspection points include the breathing gas supply system, masks, thermal protection, and weights.
- The proper function of the cylinder pressure gauge must be inspected by each scuba diver and verified by the DSO.

### **4.15.6 Water Entry and Exit**

The procedures listed below must be followed when entering and exiting the water:

- A means capable of supporting the diver will be provided for entering and exiting the water, unless the entry is in water of wading depth. The means provided for exiting the water must extend below the water surface.
- A means will be provided to assist an injured diver from the water.

### **4.15.7 Emergency Procedures**

The procedures listed below must be followed in the event of an emergency during underwater operations:

- A standby diver must be available any time a diver is in the water;
- Divers must be line-tended from the surface, or accompanied by another diver in the water in continuous visual contact during the diving operations;
- A diver-carried reserve breathing gas supply must be provided for each diver. The reserve must be either a manual reserve (J valve), or an independent reserve cylinder with a separate regulator or connected to the underwater breathing apparatus; and
- The valve of the reserve breathing gas supply must be in the closed position prior to the dive.

## **4.16 SOFT / HARD LINES**

High strength, lightweight soft lines shall be used in lieu of traditional heavy low strength soft lines.

Soft and hard lines (e.g. wire rope) shall be inspected as specified by the manufacturer, by a competent person, before use on each shift and as necessary during its use to ensure it is safe. When two or more wires are broken or rust or corrosion is found adjacent to a socket or end fitting, the wire rope shall be removed from service or re-socketed.

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Fiber rope shall not be used if it is frozen or if it has been subjected to acids or excessive heat. Fiber rope shall be protected from abrasion by padding where it is fastened or drawn over square corners or sharp edges or rough surfaces.

The use and maintenance of soft and hard lines shall be in accordance with recommendations of the manufacturer, and within the safe working load of the line. Lines, when not in use, shall be properly stored and maintained in a safe condition.

Safe handling procedures for soft and hard lines shall be developed by any contractor using lines to secure a marine vessel (e.g., barges, dredges, tug boat, etc). Contractor personnel shall receive documented training that will include, but is not limited to; hand protection, pinch points, properly securing lines to bollards and cleats, body and hand positioning when handling or releasing lines, lines under load or tension, line selection and inspection, line life factors, line working loads, broken lines, and wire rope clip spacing and orientation.

## 4.17 ENVIRONMENTAL HAZARDS

### 4.17.1 Heat Stress

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

#### **Hazards**

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

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

Cramps appear to be caused by the lack of water replenishment. Because sweat is a hypotonic solution (plus or minus 0.3% NaCl), excess salt can build up in the body if the water

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lost through sweating is not replaced. Thirst cannot be relied on as a guide to the need for water; instead, water must be taken every 15 to 20 minutes in hot environments.

Under extreme conditions, such as working for six to eight hours in heavy protective gear, a loss of sodium may occur. Drinking commercially available carbohydrate electrolyte replacement liquids can be effective in minimizing physiological disturbances during recovery. Their use should be evaluated by Contractor's SSO/SSHO.

*Heat exhaustion* occurs from increased stress on various body organs due to inadequate blood circulation, cardiovascular insufficiency, or dehydration. Signs and symptoms include pale, cool, and moist skin; heavy sweating; dizziness; nausea; headache; vertigo; weakness; thirst; and giddiness. Fortunately, this condition responds readily to prompt treatment.

Heat exhaustion should not be dismissed lightly, however, for several reasons. One is that the fainting associated with heat exhaustion can be dangerous because the victim may be operating machinery or controlling an operation that should not be left unattended; moreover, the victim may be injured when he or she faints. Also, the signs and symptoms seen in heat exhaustion are similar to those of heat stroke, which is a medical emergency.

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

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

Heat stroke is a medical emergency. The primary signs and symptoms of heat stroke are confusion; irrational behavior; loss of consciousness; convulsions; a lack of sweating (usually); hot, dry skin; and an abnormally high body temperature, e.g., a rectal temperature of 105.8 degrees Fahrenheit (°F). If body temperature is too high, it causes death. The elevated metabolic temperatures caused by a combination of workload and environmental heat load, both of which contribute to heat stroke, are also highly variable and difficult to predict.

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

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

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

## Control Measures

Heat stress monitoring and work rest cycle implementation should commence when the ambient adjusted temperature exceeds 72°F. A minimum work rest regimen and procedures for calculating ambient adjusted temperature are described in Table 1, below.

**TABLE 1 – WORK/REST SCHEDULE**

Adjusted Temperature <sup>b</sup>	Work-Rest Regimen Normal Work Ensemble <sup>c</sup>	Work-Rest Regimen Impermeable Ensemble
90°F (32.2°C) or above	After each 45 minutes of work	After each 15 minutes of work
87.5° to 90°F (30.8° to 32.2°C)	After each 60 minutes of work	After each 30 minutes of work
82.5° to 87.5°F (28. 1° to 30.8°C)	After each 90 minutes of work	After each 60 minutes of work
77.5° to 82.5°F (25.3° to 28.1°C)	After each 120 minutes of work	After each 90 minutes of work
72.5° to 77.5°F (30.8° to 32.2°C)	After each 150 minutes of work	After each 120 minutes of work

Notes:

- For work levels of 250 kilocalories/hour (light-moderate type of work)
- Calculate the adjusted air temperature (ta adj) by using this equation:  $ta\ adj\ ^\circ F = ta\ ^\circ F + (13 \times \% \text{ sunshine})$ . Measure air temperature (ta) with a standard mercury-in-glass thermometer, with the bulb shielded from radiant heat. Estimate percent sunshine by judging what percent time the sun is not covered by clouds that are thick enough to produce a shadow. (100% sunshine = no cloud cover and a sharp, distinct shadow; 0% sunshine = no shadows.)
- A normal work ensemble consists of cotton coveralls or other cotton clothing with long sleeves and pants.
- The information presented above was generated using the information provided Table 8-10 of the *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*, National Institute for Occupational Safety and Health (NIOSH), OSHA, USCG, and USEPA (86-116, October 1985).

To determine if the work rest cycles are adequate for the personnel and specific site conditions, additional monitoring of individual heart rates will be conducted during the rest cycle. To check the heart rate, count the radial pulse for 30 seconds at the beginning of the rest period. If the heart rate exceeds 110 beats per minute, shorten the next work period by one third and maintain the same rest period.

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

- Site workers will be encouraged to drink plenty of water and/or electrolyte replacement fluids throughout the day. Their use should be evaluated by Contractor's SSO/SSHO.
- On-site drinking water will be kept cool (50°F to 60°F).
- A work regimen that will provide adequate rest periods for cooling down will be established, as required.
- All personnel will be advised of the dangers and symptoms of heat stroke, heat exhaustion, and heat cramps.
- Cooling devices, such as vortex tubes or cooling vests, should be used when personnel must wear impermeable clothing in conditions of extreme heat.
- Site personnel should be instructed to monitor themselves and co-workers for signs of heat stress and to take additional breaks as necessary.
- A shaded rest area must be provided. All breaks should take place in the shaded rest area.
- Site personnel must not be assigned to other tasks during breaks.
- Site personnel must remove impermeable garments during rest periods. This includes white Tyvek®-type garments.

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

### 4.17.2 Cold Stress

Cold stress normally occurs in temperatures at or below freezing, or under certain circumstances, in temperatures of 40°F.

#### **Hazards**

Extreme cold for a short time may cause severe injury to exposed body surfaces or result in profound generalized cooling, causing death. Areas of the body that have high surface area-to-volume ratio, such as fingers, toes, and ears, are the most susceptible. Two factors influence the development of a cold weather injury: ambient temperature and the velocity of the wind. For instance, 10°F with a wind of 15 miles per hour (mph) is equivalent in chilling effect to still air at 18°F. An equivalent chill temperature chart relating the actual dry bulb temperature and wind velocity is presented in Table 2, below.

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*Frostbite* is the generic term for a local injury resulting from cold. Several degrees of tissue damage are associated with frostbite. Frostbite of the extremities can be categorized into:

**TABLE 2 – WIND CHILL TEMPERATURE CHART**

Estimated Wind Speed (in mph)	Actual Temperature Reading (°F)											
	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
	Equivalent Chill Temperature (°F)											
Calm	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57	-68
10	40	28	16	4	-9	-24	-33	-46	-58	-70	-83	-95
15	36	22	9	-5	-18	-32	-45	-58	-72	-85	-99	-112
20	32	18	4	-10	-25	-39	-53	-67	-82	-96	-110	-121
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118	-133
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	-140
35	27	11	-4	-20	-35	-51	-67	-82	-98	-113	-129	-145
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116	-132	-148
(Wind speeds greater than 40 mph have little additional effect.)	LITTLE DANGER Maximum danger of false sense of security.				INCREASING DANGER Danger from freezing of exposed flesh within one minute.				GREAT DANGER Flesh may freeze within 30 seconds.			
Trench foot and immersion foot may occur at any point on this chart.												

Note: This chart was developed by the U.S. Army Research Institute of Environmental Medicine, Natick, MA (Source: ACGIH Threshold Limit Values for Chemical Substances and Physical Agents).

- *Frost Nip or Incipient Frostbite* — characterized by sudden blanching or whitening of skin.
- *Superficial Frostbite* — skin has a waxy or white appearance and is firm to the touch, but tissue beneath is resilient.
- *Deep Frostbite* — tissues are cold, pale, and solid; extremely serious injury.

*Systemic hypothermia* is caused by exposure to freezing or rapidly dropping temperature. It can be fatal. Its symptoms are usually exhibited in five stages:

- 1) Shivering;
- 2) Apathy, listlessness, sleepiness, and (sometimes) rapid cooling of the body to less than 95°F;
- 3) Unconsciousness, glassy stare, slow pulse, and slow respiratory rate;
- 4) Freezing of the extremities; and
- 5) Death.



# RA HEALTH AND SAFETY PLAN

Trauma sustained in freezing or sub-zero conditions requires special attention because an injured worker is predisposed to secondary cold injury. Special provisions must be made to prevent hypothermia and secondary freezing of damaged tissues in addition to providing for first-aid treatment. To avoid cold stress, site personnel must wear protective clothing appropriate for the level of cold and physical activity. In addition to protective clothing, preventive safe work practices, additional training, and warming regimens may be utilized to prevent cold stress.

## Control Measures

To prevent cold stress illnesses, follow the safety precautions listed below.

- Protective gloves are typically worn during field activities. These gloves offer some thermal protection. For air temperature of 0°F or less, mittens should be used to protect the hands. For exposed skin, continuous exposure should not be permitted when air speed and temperature results in a wind chill temperature of -25°F.
- At air temperatures of 36°F or less, field personnel who become immersed in water or whose clothing becomes wet must be immediately provided with a change of clothing and be treated for hypothermia.
- If work is done at normal temperature or in a hot environment before entering the cold, the field personnel must verify that their clothing is not wet due to perspiration. If wet, field personnel must change into dry clothes prior to entering the cold area.
- If the available clothing does not give adequate protection to prevent hypothermia or frostbite, work must be modified or suspended until adequate clothing is made available or until weather conditions improve.
- Field personnel handling evaporative liquid (e.g., gasoline, alcohol, or cleaning fluids) at air temperatures below 40°F must take special precaution to avoid soaking of clothing or gloves with the liquids because of the added danger of cold injury due to evaporative cooling.

In addition, the following safe work practices should be employed to prevent cold stress.

- All field personnel will be provided with adequate cold weather gear, including insulated coveralls, gloves or mittens, and cold weather boots. Warming facilities or equipment will be provided (e.g., heated car) and utilized by field personnel as needed. Personnel working on the river will wear a USCG-approved survival suit when the sum of the air temperature and water temperature is less than 90°F. If extremely cold or severe weather conditions are forecast, work activities should be postponed.
- Direct contact between bare skin and cold surfaces (less than 20°F) should be avoided. Metal tool handles and/or equipment controls should be covered by thermal insulating material.

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- For work performed in a wind chill temperature at or below 10°F, workers should be under constant protective observation (buddy system). The work rate should be established to prevent heavy sweating that will result in wet clothing. For heavy work, rest periods must be taken in heated shelters and workers should be provided with an opportunity to change into dry clothing if needed.
- Field personnel should be provided the opportunity to become accustomed to cold-weather working conditions and required protective clothing.
- Work should be arranged in such a way that sitting or standing still for long periods is minimized.
- During the warming regimen (rest period), field personnel should be encouraged to remove outer clothing to permit sweat evaporation or to change into dry work clothing. Dehydration, or loss of body fluids, occurs insidiously in the cold environment and may increase susceptibility to cold injury due to a significant change in blood flow to the extremities. Fluid replacement with warm, sweet drinks and soups is recommended. The intake of coffee should be limited because of diuretic and circulatory effects.

### 4.17.3. Biological Hazards

Portions of the field work will be conducted in grassy and wooded areas along the river. Numerous biological hazards may be present, including poison ivy, snakes, thorny bushes and trees, ticks, mosquitoes, and other pests.

#### 4.17.3.1 Tick-Borne Disease

The following tick-borne diseases may present hazards when conducting field work. These diseases are transmitted primarily by the deer tick, which is smaller and redder than the common wood tick. The disease may be transmitted by immature ticks, which are small and hard to see. The tick may be as small as a period on this page.

- *Lyme Disease* — The disease commonly occurs in New York State in the spring and summer and is transmitted by the bite of infected ticks. Symptoms of Lyme disease include a rash or a peculiar red spot, like a bull's eye, which expands outward in a circular manner. The victim may have headache, weakness, fever, a stiff neck, swelling and pain in the joints, and eventually, arthritis.
- *Erlichiosis* — The disease also commonly occurs in New York State in the summer and is transmitted by the bite of infected ticks. Symptoms of erlichiosis include muscle aches, joint aches, and flu-like symptoms, but there is typically no skin rash.
- *Rocky Mountain Spotted Fever (RMSF)* — This disease is transmitted via the bite of an infected tick. The tick must be attached four to six hours before the disease-causing organism (*Rickettsia rickettsii*) becomes reactivated and can infect humans.

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The primary symptom of RMSF is the sudden appearance of a moderate-to-high fever. The fever may persist for two to three weeks. The victim may also have a headache, deep muscle pain, and chills. A rash appears on the hands and feet on about the third day and eventually spreads to all parts of the body. For this reason, RMSF may be confused with measles or meningitis. The disease may cause death, if untreated, but if identified and treated promptly, death is uncommon.

### **Control Measures**

Tick repellent containing diethyltoluamide (DEET) should be used when working in tick-infested areas, and pant legs should be tucked into boots. In addition, workers should search the entire body every three or four hours for attached ticks. Ticks should be removed promptly and carefully without crushing, since crushing can squeeze the disease-causing organism into the skin. A gentle and steady pulling action should be used to avoid leaving the head or mouth parts in the skin. Hands should be protected with surgical gloves when removing ticks.

#### **4.17.3.2 Poisonous Plants**

##### **Hazards**

Poisonous plants may be present all along the river. Personnel should be alerted to their presence, and instructed on methods to prevent exposure.

##### **Control Measures**

The main control is to avoid contact with the plant, cover arms and hands, and frequently wash potentially exposed skin. Particular attention must be given to avoiding skin contact with objects or protective clothing that have touched the plants. Treat every surface that may have touched the plant as contaminated, and practice contamination avoidance. If skin contact is made, the area should be washed immediately with soap and water, and observed for signs of reddening.

#### **4.17.3.3 Snakes**

The possibility of encountering snakes exists, specifically for personnel working in grassy, wooded, and vegetated areas.

##### **Hazards**

Snake venoms are complex and include proteins, some of which have enzymatic activity. The effects produced by venoms include neurotoxic effects with sensory, motor, cardiac, and respiratory difficulties; cytotoxic effects on red blood cells, blood vessels, heart muscle, kidneys, and lungs; defects in coagulation; and effects from local release of substances by enzymatic actions. Other noticeable effects of venomous snake bites include swelling, edema, and pain

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around the bite, and the development of ecchymosis (the escape of blood into tissues from ruptured blood vessels).

### **Control Measures**

To minimize the threat of snake bites, all personnel walking through vegetated areas must be aware of the potential for encountering snakes and the need to avoid actions potentiating encounters, such as turning over logs, etc. If a snake bite occurs, an attempt should be made to safely kill the snake for identification. The victim must be transported to the nearest hospital within 30 minutes; first aid consists of applying a constriction band and washing the area around the wound to remove any unabsorbed venom.

#### **4.17.3.4 Spiders**

Personnel may encounter spiders during work activities along the river.

### **Hazards**

Two spiders are of concern, the black widow and the brown recluse. Both prefer dark sheltered areas such as basements, equipment sheds and enclosures, and around woodpiles or other scattered debris. The black widow is shiny black, approximately one inch long, and found throughout the United States. There is a distinctive red hourglass marking on the underside of the black widow's body. The bite of a black widow is seldom fatal to healthy adults, but effects include respiratory distress, nausea, vomiting, and muscle spasms. The brown recluse is smaller than the black widow and gets its name from its brown coloring and behavior. The brown recluse is more prevalent in the southern United States but may be found in New York State. The brown recluse has a distinctive violin shape on the top of its body. The bite of the brown recluse is painful and the bite site ulcerates and takes many weeks to heal completely.

### **Control Measures**

To minimize the threat of spider bites, all personnel walking through vegetated areas must be aware of the potential for encountering these arachnids. Personnel need to avoid actions that may result in encounters, such as turning over logs and placing hands in dark places such as behind equipment or in corners of equipment sheds or enclosures. If a spider bite occurs, the victim must be transported to the nearest hospital as soon as possible; first aid consists of applying ice packs and washing the area around the wound to remove any unabsorbed venom.

#### **4.17.3.5 Mosquitoes**

Personnel may be exposed to mosquitoes during work activities along the river.

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## Hazards

Typical exposure to mosquitoes does not present a significant hazard. However, if West Nile virus is prevalent in the area, mosquitoes can present a hazard and exposure to this virus is increased. West Nile virus results in flu-like symptoms and can be serious if not treated or in immune-compromised individuals. West Nile cases have been confirmed in New York State.

## Control Measures

To minimize the threat of mosquito bites, all personnel working outside must be aware of the potential for encountering mosquitoes and implement the basic precautions listed below:

- Avoid working at dawn or dusk when mosquitoes are most active.
- Prevent accumulation of standing water at the work site.
- Apply an insect repellent that contains DEET to exposed skin and clothing.
- Wear light colored clothes, preferably with long-sleeves and full-length pants.
- Do not touch any dead birds or animals.

If dead birds are detected near a particular work area, report to the local county health department. If flu-like symptoms are present, contact the site HSC for more information.

## **4.18 LIFTING SAFETY**

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

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

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

### 4.19 POLYCHLORINATED BIPHENYLS

#### Exposure Limits

The OSHA permissible exposure limit (PEL) is a time-weighted average (TWA) airborne concentration of 1,000 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) for PCBs containing 42% chlorine (average molecular formula of  $\text{C}_{12}\text{H}_7\text{Cl}_3$ ). The standard encompasses all physical forms of these compounds: aerosols, vapor, mist, sprays, and PCB-laden dust particles. The standard is based on an eight-hour work day, five days per week, with no weekend exposure. Contractors working more than a 40-hour work week are required to adjust the exposure level to match actual exposure hours.

Additionally, community exposure limits have been established in the QoLPS. Work activities such as sediment handling and processing may result in PCB-related impacts to air quality of the general public. The QoLPS for air quality includes standards and “concern levels” (at 80% of the standard levels) for total PCB concentrations in air during the remedial action. There are separate concern levels and standards for residential and commercial/industrial areas. They are:

- For residential areas, a concern level of  $0.08 \mu\text{g}/\text{m}^3$  and a standard of  $0.11 \mu\text{g}/\text{m}^3$ , both as 24-hour average PCB concentrations; and
- For commercial/industrial areas, a concern level of  $0.21 \mu\text{g}/\text{m}^3$  and a standard of  $0.26 \mu\text{g}/\text{m}^3$ , both as 24-hour average PCB concentrations.

Contractors are required to maintain general public emission levels at or below the concern level.

### 4.20 DRILLING OPERATIONS

Incidents using drilling equipment (i.e. barge-based or Geoprobe<sup>®</sup>) occur as a result of failing to adequately secure or position the drilling rig. Tools and equipment, such as elevators, cat lines, and wire rope, have the potential for striking, pinning, or cutting personnel. Geoprobe<sup>®</sup> equipment is hydraulically powered, and uses static force and dynamic percussion force to advance small-diameter sampling tools. The presence of overhead utilities and underground obstacles poses a hazard if boring equipment contacts them. As the hazards are similar to those encountered when using a conventional drill rig, the required control procedures are the same as a conventional rig and are included in the following sections.

- *Wire Rope* - Worn or frayed wire rope presents a laceration hazard if loose wires protrude from the main bundle.

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- *Cat Lines* - Cat lines are used on drilling rigs to hoist material. Accidents that occur during cat line operations may injure the employee doing the rigging, as well as injure the operator. Minimal hoisting control causes sudden and erratic load movements, which may result in hand and foot injuries.
- *Working Surfaces* - Slippery work surfaces can increase the likelihood of back injuries, overexertion injuries, slips, and falls.
- *Materials Handling* - The most common type of accident that occurs in material handling operations is the “caught between” situation when a load is being handled and a finger or toe gets caught between two objects. Rolling stock can shift and/or fall from a pipe rack or truck bed.

## Control Measures

All drillers must possess required state or local licenses to perform such work and receive site-specific training prior to beginning work. The operator is responsible for the safe operation of drilling equipment and adherence to the requirements of the RA HASP. The driller must verify that all safety equipment is in proper condition and is properly used. The members of the drill crew must follow all instructions of the driller, wear appropriate PPE, and be aware of all hazards and control procedures. The drill crew must participate in the daily safety meetings and be aware of all emergency procedures.

Under no circumstances will personnel be permitted to ride the traveling block or elevators, nor will the cat line be used as a personnel carrier.

- *Pre-Drilling Protocol* - Before land-based drilling activities commence, the existence and location of underground pipe, electrical equipment, and gas lines must be determined. An underground facilities protection organization (UFPO) must be contacted at least one week, but no more than two weeks, prior to subsurface activities. Arrange for telephone, electrical, cable television, and natural gas locators to mark out lines on site prior to conducting work. Provide the electric and natural gas locators with a site figure that shows the locations where drilling activities will be completed. Conduct a site walk with the locators to visually identify each location where drilling activities are to be completed. The Pre-Drilling/Subsurface Checklist for Intrusive Fieldwork (see Attachment G) must be used to document that nearby utilities have been marked on the ground, and that the drilling locations have been cleared. The completed Pre-Drilling/Subsurface Checklist for Intrusive Fieldwork must be present prior to commencement of any intrusive investigation.
- *Equipment Inspection* - Each day, prior to the start of work, the drill rig and associated equipment must be inspected by the driller and/or drill crew. The following items must be inspected:
  - Vehicle or derrick condition;

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- Proper storage of equipment;
  - Condition of all wire rope and hydraulic lines;
  - Fire extinguisher; and
  - First-aid kit.
- *Drill Rig Set Up* – For land-based operations, all well sites will be inspected by the driller prior to mobilizing the rig to verify a stable surface exists. This is especially important in areas where soft, unstable terrain is common. The drill rig must be properly blocked and leveled prior to raising the derrick. The leveling jacks must not be raised until the derrick is lowered. The rig must be moved only after the derrick has been lowered. When the ground surface is soft or otherwise unstable, wooden blocks, at least 24 inches by 24 inches and 4 inches to 8 inches thick, must be placed between the jack swivels and the ground. The emergency brake must be engaged, and the wheels that are on the ground must be chocked. For river-based operations, the drill rig must be properly secured to the barge.
  - *Overhead Electrical Clearances* - If drilling activities are conducted in the vicinity of overhead power lines, the power to the lines must be de-energized, tested de-energized, or marked up/guaranteed, or the equipment must be positioned such that no part, including derrick can come within the minimum clearances as outlined in the table below:

**Minimum Clearances**

<b>Nominal System Voltage</b>	<b>Minimum Required Clearance</b>
0-50kV	10 feet
51-100kV	12 feet
101-200kV	15 feet
201-300kV	20 feet
301-500kV	25 feet
501-750kV	35 feet
751-1,000kV	45 feet

When the drill rig is in transit, with the derrick lowered and have no load, the equipment clearance must be at least 4 feet for voltages less than 50kV, 10 feet for voltages of 50kV to 345kV, and 16 feet for voltages above 345kV.

- *Hoisting Operations* - Drillers should never engage the rotary clutch without watching the rotary table, and confirming that it is clear of personnel and equipment. Other safety procedures concerning hoisting operations include:



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- Unless the draw works is equipped with an automatic feed control, the brake should not be left unattended without first being tied down.
- Auger strings or casing should be picked up slowly.
- During instances of unusual loading of the derrick or mast, such as when making an unusually hard pull, only the driller should be on the rig floor; no one else should be on the rig or derrick.
- The brakes on the draw works of the drill rig should be tested by the driller each day. The brakes should be thoroughly inspected by a competent individual each week.
- A hoisting line with a load imposed should not be permitted to be in direct contact with any derrick member or stationary equipment, unless it has been specifically designed for line contact.
- Workers should never stand near the borehole whenever any wire line device is being run.
- Hoisting control stations should be kept clean and controls labeled as to their functions.
- *Cat Line Operations* - Only experienced workers will be allowed to operate the cathead controls. The kill switch must be clearly labeled and operational prior to operation of the cat line. The cathead area must be kept free of obstructions and entanglements.

The operator should not use more wraps than necessary to pick up the load. More than one layer of wrapping is not permitted.

Personnel should not stand near, step over, or go under a cable or cat line that is under tension.

- Employees or subcontractors rigging loads on cat lines must:
  - Keep out from under the load;
  - Keep fingers and feet where they will not be crushed;
  - Be sure to signal clearly when the load is being picked up;
  - Use standard visual signals only and not depend on shouting to co-workers for communication; and
  - Make sure the load is properly rigged, since a sudden jerk in the cat line will shift or drop the load.
- *Wire Rope* - When two wires are broken or rust or corrosion is found adjacent to a socket or end fitting, the wire rope must be removed from service or resocketed.

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Special attention must be given to the inspection of end fittings on boom support, pendants, and guy ropes. Other safety procedures when using wire rope include:

- Wire rope removed from service due to defects must be cut up or plainly marked as being unfit for further use as rigging.
- Wire rope clips attached with U-bolts must have the U-bolts on the dead or short end of the rope (i.e. “never saddle a dead horse”); the clip nuts must be re-tightened immediately after initial load carrying use and at frequent intervals thereafter.
- When a wedge socket fastening is used, the dead or short end of the wire rope must have a clip attached to it or looped back and secured to it by a clip; the clip must not be attached directly to the live end.
- Protruding ends of strands in splices on slings and bridles must be covered or blunted.
- Except for eye splices in the ends of wires and for endless wire rope slings, wire rope used in hoisting, lowering, or pulling loads, must consist of one continuous piece without knot or splice.
- An eye splice made in any wire rope must have not less than five full tucks.
- Wire rope must not be secured by knots. Wire rope clips must not be used to splice rope.
- Eyes in wire rope bridles, slings, or bull wires must not be formed by wire clips or knots.
- *Auger Handling* - Auger sections must be transported by cart or carried by two persons. Individuals should not carry auger sections without assistance. Other safety precautions when handling augers include:
  - Workers should not be permitted on top of the load during loading, unloading, or transferring of rolling stock.
  - When equipment is being hoisted, personnel should not stand where the bottom end of the equipment could whip and strike them.
  - Augers stored in racks, on catwalks, flatbed trucks or barges should be secured to prevent rolling.

## 4.21 ELECTROFISHING

The use of electrofishing equipment involves potential hazards related to the high voltage output. Because water is an excellent conductor of electricity, the operator of the electrofishing equipment must observe certain precautions to avoid injury.

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The electrofisher operates by sending current through the cathode, through the water, and to the anode. The equipment operator must become part of the circuit to be shocked. Touching the cathode and anode simultaneously would complete the circuit and result in a severe electric shock. Operators are not permitted to touch the electrodes.

Symptoms of electric shock range from muscle contraction (unable to let go), potential lung paralysis, ventricular fibrillation, heart paralysis, severe burns, and death.

### Control Measures

The following general safety procedures apply to all types of electrofishers, and should be observed at all times.

- Use electrical lineman gloves of at least 1,000-volt rating. If the gloves become very wet inside, stop electrofishing and dry them thoroughly.
- Remove wristwatch, rings, and other metal jewelry that is not protected by an insulated material.
- Use only dip nets with insulated or non-conductive handles.
- Make all electrical connections before turning on the power.
- Be sure that all personnel are aware that electrofishing is going to begin and that they are clear of electrodes before turning on the power.
- Be sure that no animals (i.e., livestock, dogs, etc.) are in the water near the sampling locations.
- The equipment must include a switch that keeps the circuit open unless actively and continuously closed. The operator also will have access to an emergency shut-off switch.
- Operate the equipment within acceptable power ranges to prevent overloading the equipment and minimize the potential of fire hazard.
- During electrofishing, the high voltage flashing light and/or audible tone generator should be working.
- Do not touch people, equipment, or metal objects with the anode or cathode probes/surfaces.
- Wear polarized sunglasses to detect sub-surface hazards and obstacles.
- Turn the power off immediately if a problem occurs and also when the unit is not in use.

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## Additional Control Measures for Backpack Electrofishers

The following safety procedures, including the previously listed general procedures, should be followed at all times when using backpack electrofishers.

- Use water-tight wading hip boots or chest waders. If the waders or boots become wet inside, stop electrofishing and dry them thoroughly.
- Operate slowly and carefully to prevent tripping on objects in the stream.
- Sampling must cease if persons, pets, or livestock are observed in the water or on shore within 12 meters of the electrofishing unit.
- To prevent overloading the unit, do not touch the cathode with the anode.
- Check that the mercury tilt switch shuts off the power when the unit is tipped more than 45° from vertical.
- Backpack electrofishers add a burden to the user, requiring careful body positioning to avoid back strain.

## 4.22 WORKING ON A BRIDGE

Whenever possible, sampling will be performed from a boat. If sampling from a bridge is required, roadway traffic avoidance will be accomplished by following these procedures:

- Check with the local traffic control department (police/public works) to determine if a stationed uniformed police officer is necessary;
- If possible, schedule work for off-peak traffic hours;
- Personnel must utilize PPE, including an orange traffic safety vest, safety cones, and “men working” signs;
- If a sidewalk is not present, then personnel must park the vehicle on the shoulder of the road with the emergency flashers on; the shoulder must be at least 6 feet wide and the wheels of the vehicle must not extend over the white lines on the roadway. Additionally, all personnel must conduct work on the opposite side of the vehicle from oncoming traffic (i.e., personnel are protected by the vehicle); and
- Work will only be conducted during daylight at bridge locations without sidewalks, and will not be conducted if slippery road conditions exist or if snow plows could potentially be in operation.

River traffic avoidance will be accomplished by following these procedures:

- During the navigation season, an easily visible floating buoy (i.e. orange) will be attached to the cable used to suspend all equipment from the bridge. This buoy will

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be attached using a sliding harness, allowing the buoy to float at the surface while the sampler is submerged.

- Prior to lowering any equipment, a visual observation will be performed to confirm the lack of boat traffic in the vicinity of the bridge.

Water safety and fall protection will be accomplished by following these procedures:

- All personnel must wear a USCG-approved PFD whenever working on or near the water, except when adequate fall protection exists on bridges (42" high top rail and mid-rail).
- Work must be conducted so that both feet of the personnel are on the base of the bridge, shoulder of the road, or sidewalk (i.e., not standing on the railing) with the center of gravity lower than the bridge railing. Additionally, a personal fall arrest system must be used if there is no guardrail at least 42 inches high.
- A functioning cellular phone must be present at the site at all times.

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## SECTION 5

### PERSONAL PROTECTIVE EQUIPMENT

#### 5.1 LEVELS OF PROTECTION

PPE is required to safeguard project personnel from various hazards. Varying levels of protection may be required depending on the degree of physical hazard and the potential for exposure to PCB contaminated sediment.

PPE shall be worn at all times on the site, including travel within the site when starting or ending shifts.

- Hard hats are required at all times in the work area areas (i.e., construction, processing/operations, dredging, wharf, marine vessels). The following color code system for hard hats shall be implemented: White hard hats shall be worn by all GE, CM, Engineer of Record, and contractor personnel. Yellow hard hats shall be worn by all visitors. Red hard hats shall be worn by any personnel (except safety) with CPR/first aid certification. Green hard hats shall be worn by all safety personnel. Blue hard hats shall be worn by any new employee for the first 30 days. Cowboy hard hats are not permitted. Hard hats must be worn in the forward direction, unless the hard hat has a swivel suspension and is American National Standards Institute (ANSI) approved to be worn in the reverse direction.
- Appropriate eye and face protection that complies with ANSI Z87 shall be worn at all times. Safety glasses with side shields are required as a minimum.
- Sensible and safe work clothing/shoes must be worn. This means the wearing of shirts with a minimum four-inch sleeve. Shorts, cutoffs, sleeveless shirts, tank tops, sneakers, and running shoes are strictly prohibited.
- No canvas or leather sneakers (even if equipped with steel toe) or sandals will be worn. All construction boots or shoes designed to accommodate laces must be fully laced.
- Appropriate hearing protection shall be worn in work areas where levels exceed established standards.
- Suitable gloves must be worn to protect the hands from injury as appropriate for the work to be performed.
- Approved respirators must be used when excessive dust, mist, fumes, gases, or other atmospheric impurities are present.
- Self inflating PFDs will not be allowed on the project.

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- Full-body safety harnesses and secured safety lanyards or retractable lifelines must be used when working from unguarded work surfaces where falls greater than six feet present a hazard. (NOTE: Site requirements may limit this potential fall length to four feet). Lanyards or retractable lifelines must be secured to separate lifelines and independent connection points capable of withstanding the load of a potential fall.
- Proper personal protective equipment must be worn for welding and burning. Welding screens must be used when welding operations are in the vicinity of other employees.
- Electric insulating protective equipment, such as rubber gloves, blankets, hoses, boots, etc. shall be inspected before use.

In accordance with Section 5 in the contractor HASP, a hazard/risk/exposure assessment will be provided for each major activity that will take place. Section 6 of the contractor HASP provides the AHA for each major activity, which identifies the steps, hazards, and control measures for each task. The required PPE is listed on each AHA, either in the main header as minimum required PPE and under control measures for task specific PPE (e.g., goggles).

## 5.2 LEVEL D PROTECTION

The minimum level of protection that will be required of project personnel will be Level D, which will be worn when site activities present no potential for dermal contact with contaminated media, and no potential for inhalation exposure exists. The following equipment will be used for Level D:

- Work clothing as prescribed by weather conditions;
- Leather safety-toe shoes or boots, meeting ANSI Z41;
- Safety glasses with permanent side shields or goggles, meeting ANSI Z87;
- USCG-approved Commercial Type I, II, or III PFD when working over or near water (e.g., on a boat, barge, shoreline, dock, or bridge) and the potential for drowning exists. Each PFD shall be worn with an attachable emergency whistle and a water activated light attached to the PFD.;
- Hard hat, meeting ANSI Z89, when falling object hazards are present;
- Hearing protection (if noise levels exceed 85 decibels on the a-scale (dBA), then hearing protection with a USEPA noise reduction ratio [NRR] of at least 20 dBA must be used);
- Gloves as appropriate for task (detail glove type for task in AHA); and
- Lighted reflective light-emitting diode (LED) illuminated safety vests shall be required for all personnel working near roadways, railways or moving vehicles, including heavy operating equipment, if working before dawn, after dusk or during

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reduced visibility (i.e. fog, overcast skies, etc). High visibility reflective safety vests or other suitable garments approved by the CM shall be worn by all other personnel that are not working near roadways, railways, or moving vehicles.

## 5.2.1 Modified Level D Protection

Modified Level D PPE will be used when airborne particulate matter is not present at levels of concern, but site activities present an increased potential for contact with contaminated sediment. Modified Level D protection consists of Level D PPE in addition to the following:

- Nitrile gloves worn over nitrile surgical gloves;
- Latex / polyvinyl chloride (PVC) over boots when contact with contaminated sediment is anticipated;
- Tyvek<sup>®</sup> suit when body contact with contaminated sediment is anticipated; and
- Polyethylene-coated Tyvek<sup>®</sup> suit or raingear when body contact with wet sediment or liquid contaminants is anticipated.

## 5.2.2 Level C Protection

Level C protection will be required when the airborne concentration of a chemical hazard reaches one-half of the OSHA PEL or American Conference of Governmental Industrial Hygienists (ACGIH) threshold limit value (TLV). Level C protection consists of Level D PPE in addition to the following:

- Latex/PVC over boots when contact with contaminated sediment is anticipated;
- Full-face, air-purifying respirator with combination organic vapor and high-efficiency particulate air (HEPA) cartridges; and
- Tyvek<sup>®</sup> suit or polyethylene-coated Tyvek<sup>®</sup> suit, with ankles and cuffs taped to boots and gloves.

## 5.3 SELECTION OF PPE

PPE will be selected based on the potential for contact with contaminated sediment materials, site conditions, air quality, and the judgment of the PSM, SSR, or site supervisor.

## 5.4 SITE RESPIRATORY PROTECTION PROGRAM

Each contractor HASP will provide its own written respiratory protection program in compliance with 29 CFR 1910.134, which will consist of the following (as a minimum):

- All on-site personnel who may use respiratory protection will have an assigned respirator.
- All on-site personnel who may use respiratory protection will have been fit tested and trained in the use of a full-face air-purifying respirator within the past 12 months.



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- All on-site personnel who may use respiratory protection must, within the past year, have been medically certified as being capable of wearing a respirator. Documentation of the medical certification must be provided to the PSM prior to commencement of site work.
- Respirators must be properly cleaned, maintained, stored, and National Institute for Occupational Safety and Health (NIOSH) approved.
- If air-purifying cartridge respirators are used, a calculation must be completed to determine the end of service life for the cartridge and establish a cartridge change-out schedule. Using breakthrough or changing cartridges at the end of each shift is not acceptable.
- All on-site personnel who may use respiratory protection must be clean-shaven. Mustaches and sideburns are permitted, but they must not touch the sealing surface of the respirator.
- Respirators will be inspected, and a negative pressure test performed prior to each use.
- After each use, the respirator will be wiped with a disinfectant, cleansing wipe. When used, the respirator will be thoroughly cleaned at the end of the work shift. The respirator will be stored in a clean plastic bag, away from direct sunlight in a clean, dry location, in a manner that will not distort the face piece.

## 5.5 USING PPE

Depending on the level of protection selected, specific donning and doffing procedures may be required. The procedures presented in this section are mandatory if Modified Level D or Level C PPE is used.

### 5.5.1 Donning Procedures

Use the following procedures when donning PPE:

- Remove bulky outerwear, remove street clothes, and store in clean location.
- Put on work clothes or coveralls.
- Put on the required chemical protective coveralls.
- Put on the required chemical protective boots or boot covers.
- Tape the legs of the coveralls to the boots with duct tape.
- Put on the required chemical protective gloves.
- Tape the wrists of the protective coveralls to the gloves.
- Don the required respirator and perform appropriate fit check (Level C).

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- Put hood or head covering over head and respirator straps and tape hood to face piece (Level C).
- Don remaining PPE, such as safety glasses or goggles and hard hat.

### 5.5.2 Doffing Procedures

Whenever a person leaves the EZ of a particular work area, the following decontamination sequence must be followed:

- Rinse contaminated materials from the boots or remove contaminated boot covers.
- Clean reusable protective equipment.
- Remove protective garments, equipment, and respirator (Level C). All disposable clothing should be placed in plastic bags, which are labeled with contaminated waste labels.
- Wash hands, face, and neck (or shower if necessary).
- Proceed to clean area and dress in clean clothing.
- Clean and disinfect respirator for next use.

All disposable equipment, garments, and PPE must be bagged in plastic bags and labeled for disposal. See Section 9, Decontamination, for detailed information on decontamination stations.

### 5.5.3 Selection Matrix

The level of PPE selected will be based on air monitoring of the work environment and an assessment of the potential for skin contact with contaminated media. The PPE selection matrix is presented in Table 3 below.

**TABLE 3 – PPE SELECTION MATRIX**

<b>Task</b>	<b>Anticipated Level of PPE for Task Initiation</b>
Facility Site Work Construction	Level D
Rail Yard Construction	Level D
Rail Yard Operations	Modified Level D
Processing Facility Construction	Level D
Processing Facility Operations	Modified Level D
Dredging Operations	Modified Level D
Habitat Construction	Modified Level D
Support Activities	Modified Level D
Decontamination/Equipment Cleaning Activities	Modified Level D

Note: Please refer to the *Diving Safety Manual* (Appendix C) for a description of scuba equipment to be used.

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## **SECTION 6**

### **AIR MONITORING AND ACTION LEVELS**

#### **6.1 AIR MONITORING**

Assessment and evaluation of field personnel exposures to airborne contaminants through real-time and integrated monitoring shall be performed by each contractor as per the contractor HASP, concurrent with activities which may possibly generate airborne contaminants approaching established exposure limits (PEL, ACGIH TLV, NIOSH TWA). PCBs are the primary contaminant of concern on the project; however, other contaminants (e.g., metals) may be encountered in the course of river dredging. The sediment coring program has also identified metals (Cr, Cd, As, Hg) from an upstream pigment plant. Therefore, the contractor must review all sediment data and address any appropriate controls in the development of the contractor HASP. The contractor HASP and air monitoring plan may have to be reevaluated should other discoveries be made. A discussion of potential air contaminants is presented in the following sections.

#### **6.2 POLYCHLORINATED BIPHENYLS**

PCBs have very high boiling points and exhibit low volatility. Site work will take place outdoors or indoors with adequate ventilation. There is very little potential for PCB vapor generation above the PEL, and very little potential for airborne particulate generation during project activities, as PCBs have a strong affinity for sediment and the sediment will be wet. If airborne particulates (e.g., dust) are generated during the dewatering process or transferring of coarse material to the staging area, dust suppression measures will be implemented by the contractor. Contractors will be required to closely monitor emission levels as community level exposure limits are much lower than employee limits. The contractor is responsible for maintaining community level exposure at or below the QoLPS limits.

#### **6.3 AIRBORNE PARTICULATES (DUST)**

Real-time aerosol monitors will be used by contractors to monitor the level of airborne particulates. Perimeter, point source, and personnel air monitoring will also be required.

#### **6.4 GASOLINE AND SOLVENTS**

Standard safety procedures will be followed when handling gasoline and solvents to minimize vapor generation and inhalation exposure. Safety containers will be capped and stored outside in a manner that provides adequate ventilation and minimizes the risks of release, fire, or explosion. Potential exposures are of very short duration.

# RA HEALTH AND SAFETY PLAN

## 6.5 HYDROGEN SULFIDE

Dredging in areas of heavy organic sediments may release hydrogen sulfide. The dredging contractor will be required to monitor hydrogen sulfide and combustible gasses with a combustible gas indicator with a hydrogen sulfide detector. Action levels for hydrogen sulfide will be established as per Section 6.7. Contractors will be required to closely monitor emission levels as community level exposure limits are much lower than employee limits. The contractor is responsible for maintaining community level exposure at or below the QoLPS limits.

## 6.6 RESPIRATORY HAZARD ASSESSMENT

The PSM will perform a respiratory hazard assessment, which will include a review of each contractor HASP and corresponding AHA.

## 6.7 ACTION LEVELS

When real-time air monitoring cannot be performed for all potential chemicals of concern, theoretical exposure limits based on a worst-case scenario shall be calculated using dust as an action level, which cannot exceed 1.0 milligram per square meter ( $\text{mg}/\text{m}^3$ ). Action levels may be adjusted based on the data obtained over the duration of the project.

When determining whether employees are approaching established exposure limits, exposures and corresponding PEL must be calculated based on the number of hours worked (i.e., 12 hours versus the traditional eight-hour PEL, TLV, or TWA).

When there is a difference between one or more published exposure limits for a chemical of concern (e.g., OSHA PEL and ACGIH TLV), the more conservative exposure limit will be used for determining an action level.

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## SECTION 7

### MEDICAL MONITORING

#### 7.1 MEDICAL SURVEILLANCE PROGRAM

All project personnel who work in areas that may result in the exposure to chemicals at or above the PEL or who wear a respirator for more than 30 days per year shall participate in a medical surveillance program in compliance with 29 CFR 1910.120(f). Copies of the documentation required as part of 29 CFR 1910.120(f) shall be provided by each contractor to the PSM.

##### 7.1.1 Pre-Placement Medical Examination

All project personnel operating motor vehicles or heavy equipment associated with the project, including dredge cranes and operating vehicles off-site for project purposes, shall pass a functional capacity examination (FCE) prior to starting work that shall include:

- 20/20 vision to perceive or recognize distances, depths, and peripheries;
- Audiogram results indicating the ability to hear audible instructions via two-way radio;
- Ability to move the head and neck sideways for increased peripheral vision; and
- Ability to ascend/descend fixed ladders and stairs.

All on-site personnel involved with lifting, carrying, pushing, or pulling equipment and materials that weigh up to 40 pounds shall have an FCE to confirm they are physically fit to perform their job.

All on-site personnel involved with dredging, processing, and handling PCB-impacted sediments shall have a baseline, annual and exit examinations in compliance with 29 CFR 1910.120(f) to identify any pre- or post-exposure medical conditions.

The examining physician shall provide the employee with a letter summarizing his findings and recommendations, confirming the worker's fitness for work and ability to wear a respirator.

#### 7.2 OTHER MEDICAL EXAMINATIONS

Each scuba diver must be certified by a licensed physician to be medically qualified for diving before diving. The medical examination must be documented and a written report prepared by the examining physician. The medical examination must contain the examining physician's opinion of the individual's fitness to dive, including any recommended restrictions or limitations. The report must be reviewed by the DSO

## **RA HEALTH AND SAFETY PLAN**

In addition to pre-employment, annual, and exit physicals, personnel may be examined:

- At employee request after known or suspected exposure to toxic or hazardous materials and
- At the discretion of the PSM, SSR, or occupational physician in anticipation of or after known or suspected exposure to toxic or hazardous materials.

### **7.3 MEDICAL RESTRICTION**

When the examining physician identifies a need to restrict work activity, the employee's supervisor must communicate the restriction to the employee and the site supervisor, who will communicate the information to the PSM. The terms of the restriction will be discussed with the employee and the supervisor.

Alternate, light-duty work will be made available to personnel whenever possible.

# RA HEALTH AND SAFETY PLAN

## SECTION 8

### PERSONNEL TRAINING

#### 8.1 GENERAL

Table 4 details all of the different training requirements for on site personnel.

**TABLE 4 – PERSONNEL TRAINING REQUIREMENTS**

Personnel / Type of Training	Project Orientation	Behavior -based Safety	HAZWOPER 40-hr	Zero Incident	CPR/ First Aid	OSHA 10-hr	Defensive Driving	Controlled Substance / Alcohol Abuse Awareness
Visitors (including regulatory personnel)	Yes	No	No (must be escorted by HAZWOPER trained personnel)	No	No	No	No	No
GE Site Project Personnel	Yes	Yes	Yes (for Processing, Dredging and Habitat Const.)	Yes	No	No	No	No
CM Site Project Personnel	Yes	Yes	Yes (for Processing, Dredging and Habitat Const.)	Yes	Yes (for Safety personnel)	Yes (for Safety personnel)	Yes (if driving for business)	Yes
Contractor Managers, Supervisors and Safety Personnel	Yes	Yes	Yes (for Processing, Dredging and Habitat Const.)	Yes	Yes	Yes	Yes (if driving for business)	Yes (biannually)
Contractor Field/Craft	Yes	Yes	Yes (for Processing, Dredging and Habitat Const.)	No	Yes (for SSR)	Yes (for SSR)	Yes (if driving for business)	No

All project personnel shall attend a site-specific project safety orientation upon hire that will review the Zero Incident management approach; the project team’s proactive approach to manage the interrelated areas of safety, health, environment, and risk management; and the project goal of zero accidents and zero injuries with work tasks designed to minimize or eliminate hazards to personnel, process, equipment, environment, and the general public. In addition, it will be reinforced that no individuals shall perform tasks that may endanger their own safety and health or that of others. In other words, all individuals are empowered to have “stop work authority”. Visitors will also be required to receive an abbreviated project safety orientation.

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The site-specific project safety orientation for all project personnel will also discuss behavior-based safety, the benefits of behavior-based safety, and how to conduct a worker safety observation and participate in a feedback session to identify positive and questionable behaviors.

All on-site personnel will receive training on the effects and consequences of controlled substance use on personal health, safety, and work environment.

All project personnel that drive any type of vehicle on or off the site for any purpose related to the project (other than driving to and from a place of residence for work) shall complete a full day (eight hours) hands-on defensive driving course and provide documentation.

All on-site personnel who work in areas that may result in the exposure to hazardous substances or health hazards must be trained in compliance with 29 CFR 1910.120 (HAZWOPER standard). Certification must be renewed on an annual basis by completing an eight-hour refresher.

## 8.2 40-HOUR OSHA HAZWOPER COURSE

The following is a list of the topics typically covered in the 40-hour HAZWOPER training:

- General safety procedures;
- Physical hazards (fall protection, noise, heat stress, cold stress);
- Names and job descriptions of key personnel responsible for site health and safety;
- Safety, health, and other hazards typically present at hazardous waste sites;
- Use, application, and limitations of PPE;
- Work practices by which project personnel can minimize risks from hazards;
- Safe use of engineering controls and equipment on site;
- Medical surveillance requirements;
- Recognition of symptoms and signs that might indicate overexposure to chemicals;
- Worker right-to-know (Hazard Communication, 29 CFR 1910.1200);
- Routes of exposure for chemicals of concern;
- Engineering controls and safe work practices;
- Components of a health and safety program and a site-specific HASP;
- Decontamination practices for personnel and equipment;
- Confined-space entry procedures; and
- General emergency response procedures.



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## 8.3 SUPERVISOR TRAINING

Management and supervisors must complete the following courses:

- Eight-hour HAZWOPER supervisor;
- Thirty-hour OSHA construction safety course;
- Behavior-based safety training;
- Controlled substance and alcohol awareness training on the manifestations and behavioral causes that may indicate controlled substance and alcohol use or abuse (required on at least a biannual basis); and
- CPR/first aid.

## 8.4 SITE-SPECIFIC TRAINING

A project orientation session covering site hazards, procedures, and all contents of the approved site-specific Phase 1 RA HASP must be received by all on-site personnel prior to commencement of work or entering the site. The orientation shall include a discussion of the chemical, physical, and biological hazards; names of personnel responsible for site safety and health; proper use of personal protective equipment; work practices to minimize risk from hazards; safe use of engineering controls and equipment; acute effects of compounds at the site; decontamination procedures; and emergency procedures.

### 8.4.1 Visitors

A visitor is an individual that is not permanently assigned to the project, has not received a project safety orientation or does not have the required training certifications to work on the site.

Visitors arriving on the site must be escorted at all times by the PSM, CM safety representative, or site supervisor, or must receive the site-specific project safety orientation and have the appropriate training certifications (e.g., HAZWOPER certification).

### 8.4.2 Safety “Toolbox” Meetings

Safety “toolbox” meetings discussed prior to each shift will cover the current weather and site conditions, incidents from the previous shift, safe or at-risk/questionable behaviors from the previous shift, work to be accomplished, anticipated hazards, engineering controls / work practices / PPE to protect against hazards and any additional safety topics. No work will be performed before the safety “toolbox” meeting has been held. The safety “toolbox” meeting must also be held prior to new tasks, and repeated if new hazards are encountered. Safety “toolbox” meetings shall be documented on the safety meeting sign-in sheet provided as Attachment C, or equivalent. All project personnel arriving on site after the safety “toolbox” meeting must review the contents of the meeting and sign the sheet.

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## 8.5 FIRST AID AND CPR

At least two employees current in first aid/CPR will be assigned to each work crew carrying out a specific field task and will be on the site during operations. These individuals must also receive training regarding the precautions and protective equipment necessary to protect against exposure to blood-borne pathogens.

## 8.6 BOAT OPERATORS

The operator/skipper of any boat (e.g., barge, tug, dredge, support vessel, etc.) must complete a USCG boating safety training course prior to conducting work on the river. Each operator/skipper must demonstrate proficiency in the following subject areas: proper operation of a boat; boat and safety equipment inspections; content and frequency of equipment safety inspections; proper use of on-board safety equipment, including fire extinguisher, radio or cellular phone, flares, and horn; proper procedures on the completion and filing of a float plan; appropriate boating “rules-of-the-road”; emergency procedures in the event of capsizing or being thrown overboard; and different types of PFDs and their proper inspection and use.

## 8.7 COMPETENT PERSON

Contractors are individually responsible for training their respective workers and for complying with all project requirements. Table 5 below provides some guidance on competent/qualified person, training, and AHA requirements for specific safety and health regulations.

**TABLE 5 - COMPETENT PERSON AND ACTIVITY HAZARDS ANALYSIS REQUIREMENTS**

<b>Safety and Health Requirement</b>	<b>OSHA Regulation</b>	<b>Competent/Qualified Person</b>	<b>Training Required</b>	<b>Written Plan and AHA Required</b>
General Safety and Health	1926.20	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Safety Training	1926.21	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Confined Spaces	1926.21, 1910.147	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Confined Space Permit System	See above	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
First Aid and Medical	1926.23, 50	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Fire Protection and prevention	1926.24, 150-155, 352	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Housekeeping	1926.25	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>
Illumination	1926.26, 56	<i>Recommended</i>	<i>N/A</i>	<i>N/A</i>
Sanitation	1926.27, 51	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>
Personal Protective Equipment	1926.28, 95-98, 100-107	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>

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Safety and Health Requirement	OSHA Regulation	Competent/ Qualified Person	Training Required	Written Plan and AHA Required
Acceptable Certifications	1926.29	Yes	Yes	Yes
Incorporation by Reference	1926.31	N/A	N/A	N/A
Emergency Employee Action Plans	1926.35	Recommended	Yes	Yes
Noise Exposure	1926.52	Yes	Yes	Yes
Radiation Protection	1926.53, 54	Yes	Yes	Yes
Gases, Vapors, Dusts, and Mists	1926.1926.55	Yes	Yes	Yes
Ventilation	1926.57, 353	Recommended	Yes	Yes
Hazard Communication	1926.59	Yes	Yes	Yes
Process Safety Management	1926.64 1910.119	Yes	Yes	Yes
Hazardous Waste Operations and Emergency Response	1926.65 1910.120	Yes	Yes	Yes
Accident Prevention Signs and Tags	1926.200	N/A	N/A	N/A
Signaling	1926.201	Recommended	N/A	Yes
Barricades	1926.202	N/A	N/A	N/A
Material Storage	1926.250	N/A	Yes	Yes
Rigging	1926.251	Yes	Yes	Yes
Waste Disposal	1926.252	Yes	Yes	Yes
Tools	1926.300-307	N/A	N/A	Yes
Gas Welding and Cutting	1926.350	Recommended	Yes	Yes
Arc Welding	1926.351	Recommended	Yes	Yes
Electrical	1926.400-415	Yes	Yes	Yes
General Electrical	1926.416	Yes	Yes	Yes
Lockout/Tagout	1926.417, 1910.147	Yes	Yes	Yes
Lockout/Tagout Permit System	See above	Yes	Yes	Yes
Maintenance of Electrical Equipment	1926.431	Yes	Yes	Yes
Environmental Deterioration of Electrical Equipment	1926.432	Yes	Yes	Yes
Batteries/Battery Charging Equipment	1926.441	N/A	Yes	Yes
Scaffolding	1926.450-454	Yes	Yes	Yes
Aerial Lifts	1926.453	Yes	Yes	Yes
Fall Protection	1926.500-503	Yes	Yes	Yes
Cranes, Derricks, Hoists, Elevators, and Conveyors	1926.550	Yes	Yes	Yes

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Safety and Health Requirement	OSHA Regulation	Competent/ Qualified Person	Training Required	Written Plan and AHA Required
Motor Vehicles, Mechanized Equipment	1926.600-603	Yes	Yes	Yes
Powered Industrial Trucks (forklifts)	1910.178	Yes	Yes	Yes
Site Clearing	1926.604	N/A	Yes	Yes
Marine Operations and Equipment	1926.606	Yes	Yes	Yes
Excavations	1926.650-652	Yes	Yes	Yes
Excavation Permit	N/A	Yes	Yes	Yes
Concrete and Masonry Construction	1926.700-706	Yes	Yes	Yes
Steel Erection	1926.750-761 and SENRAC	Yes	Yes	Yes
Underground Construction	1926.800	Yes	Yes	Yes
Caissons	1926.801	Yes	Yes	Yes
Cofferdams	1926.802	Yes	Yes	Yes
Compressed Air	1926.803	Yes	Yes	Yes
Demolition	1926.850-860 inclusive	Yes	Yes	Yes
Power Transmission and Distribution	1926.950-960 inclusive	Yes	Yes	Yes
Rollover Protective Structures; Overhead Protection	1926.1000-1003 inclusive	N/A	N/A	Yes
Stairways and Ladders Scope	1926.1050	N/A	Yes	Yes
S/L General Requirements	1926.1051	Yes	Yes	Yes
Stairways	1926.1052	<i>Recommended</i>	Yes	N/A
Ladders	1926.1053	Yes	Yes	Yes
Ladder/Stair Training	1926.1060	Yes	Yes	Yes
Diving Scope	1926.1071-1072	Yes	Yes	Yes
Dive Team Quals	1926.1076	Yes	Yes	Yes
Dive Safe Practices Manual	1926.1080	Yes	Yes	Yes
Pre-dive Procedures	1926.1081	Yes	Yes	Yes
Procedures During Dive	1926.1082	Yes	Yes	Yes
Post Dive Procedures	1926.1083	Yes	Yes	Yes
SCUBA Diving	1926.1084	Yes	Yes	Yes
Surface-Supplied Air Diving	1926.1085	Yes	Yes	Yes
Mixed-gas Diving	1926.1086	Yes	Yes	Yes

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<b>Safety and Health Requirement</b>	<b>OSHA Regulation</b>	<b>Competent/ Qualified Person</b>	<b>Training Required</b>	<b>Written Plan and AHA Required</b>
Liveboating	1926.1087	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Diving Equipment	1926.1090	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Diving Recordkeeping Requirements	1926.1092	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Internal Traffic Control	N/A	<i>N/A</i>	<i>Yes</i>	<i>Yes</i>
Traffic Movement Restriction Times	N/A	<i>N/A</i>	<i>Yes</i>	<i>Yes</i>
Line Breaking	1910.119 and 1926.54	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Major Material Movements	N/A	<i>N/A</i>	<i>Yes</i>	<i>Yes</i>
Right-of-way Restrictions	N/A	<i>N/A</i>	<i>Yes</i>	<i>Yes</i>

# RA HEALTH AND SAFETY PLAN

## SECTION 9

### DECONTAMINATION

#### 9.1 CONTAMINATION CONTROL ZONES

Contamination control zones must be defined and maintained in each potentially contaminated work area to prevent the spread of contamination and to prevent unauthorized people from entering potentially hazardous areas.

##### 9.1.1 Exclusion Zone

An EZ may consist of a specific work area, or may be an entire area of potential contamination. All personnel entering an EZ must use the required PPE, and must have the appropriate training and medical clearance. The EZ is the defined area where there is a possible respiratory and/or contact health hazard. Cones, caution tape, or a site diagram may be used to identify the location of each EZ.

##### 9.1.2 Contamination Reduction Zone

A CRZ or transition area will be established as needed to perform decontamination of personnel and equipment. All personnel entering or leaving the EZ will pass through this area to prevent any cross-contamination. Tools, equipment, and machinery will be decontaminated in a specific location. The decontamination of all personnel will be performed on site adjacent to the EZ. Personal protective outer garments and respiratory protection will be removed in the CRZ and prepared for cleaning or disposal. This zone is the only appropriate corridor between the EZ and the SZ.

##### 9.1.3 Support Zone

The SZ is a clean area outside the CRZ to prevent employee exposure to hazardous substances. Eating and drinking will be permitted in the SZ only after proper decontamination. Smoking may be permitted in designated areas of the SZ, subject to site requirements.

#### 9.2 PERSONNEL DECONTAMINATION

All personnel wearing Modified Level D or Level C PPE in an exclusion zone must undergo decontamination prior to entering a SZ in compliance with 29 CFR 1910.120(k). The personnel decontamination area will consist of the following stations at a minimum:

- *Station 1:* Personnel leaving the contaminated zone will remove the gross contamination from their outer clothing and boots.
- *Station 2:* Personnel will remove their outer garment and gloves and dispose of them in properly labeled containers. Personnel will then decontaminate their hard hats and

## RA HEALTH AND SAFETY PLAN

boots with an aqueous solution of detergent or other appropriate cleaning solution. These items will then be hand carried to the next station.

- *Station 3:* Personnel will thoroughly wash their hands and face before leaving the CRZ. Respirators will be sanitized and then placed in a clean plastic bag.

Personnel working on marine equipment shall decontaminate prior to accessing a support vessel for transportation to the support marina. Personnel shall wash hands, face, and other exposed skin areas prior to work breaks and eating.

No work clothing, shoes, or boots that have come into contact with contaminated sediment shall be worn or carried out of the project area unless they have been decontaminated.

### 9.3 EQUIPMENT DECONTAMINATION

All vehicles and equipment that have entered a potentially contaminated area will be visually inspected and, if necessary, decontaminated prior to leaving the area. If the visible level of vehicle contamination is low decontamination may be limited to rinsing tires and wheel wells with water. If the vehicle has visible gross contamination, steam cleaning or pressure washing may be required. Rinsate from all decontamination activities will be collected or contained for proper treatment and/or disposal.

All barges and associated marine equipment shall be decontaminated of any visible sediment before being sent to the working wharf for repairs and/or maintenance.

#### 9.3.1 PPE Decontamination

Where and whenever possible, single-use, external protective clothing must be used for work within the EZ or CRZ. This protective clothing must be disposed of in properly labeled containers. Reusable protective clothing will be rinsed at the site with detergent and water. The rinsate will be collected or contained for proper treatment and/or disposal.

When removed from the CRZ, the respirator will be thoroughly cleaned with soap and water. The respirator face piece, straps, valves, and covers must be thoroughly cleaned at the end of each work shift and ready for use prior to the next shift. Respirator parts may be disinfected with a solution of bleach and water or by using a spray disinfectant.

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## SECTION 10

### EMERGENCY RESPONSE

#### 10.1 GENERAL

This section presents emergency response procedures, including specific fire and spill response protocols, along with information pertaining to medical and first aid emergencies and injury, illness, and near-miss reporting requirements.

Each work area will be evaluated for the potential for fire, explosion, chemical release, or other emergency. An evacuation route from each specific work area must be identified prior to beginning work in the area.

Unusual events, activities, chemicals, and conditions must be reported to the site supervisor immediately.

#### 10.2 EMERGENCY RESPONSE

If an incident that requires emergency response occurs, the site supervisor must take the following steps:

- Evaluate the incident and assess the need for assistance and/or evacuation;
- Call for outside assistance as needed;
- Notify the PSM and appropriate SSR of the incident;
- Notify GE and its representatives of the incident; and
- Take appropriate measures to stabilize the incident scene and ensure that the situation will not affect other areas.

Periodic drills will be conducted involving project personnel and external emergency responders. Specific drill requirements and scheduling will be identified in the pre-planning process, and drills will be held at least annually. Drills will consist of a simulated fire, medical and water-based response, as well as a table-top drill. A formal critique and discussion will be conducted for each of the drills.

##### 10.2.1 Notifications

In the event of an incident that requires emergency response, project personnel will immediately notify 911 so that the proper emergency personnel can respond. Following the 911 call, a project-specific “Priority” will be issued to project personnel over the two-way radio. These priorities were developed with local emergency responders based on the expected capabilities of project personnel and external responders. The priorities are as follows:



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- **Priority 1** — Call “911”; external response required. These include the following types of incidents:
  - traumas (either with or without exposure) - e.g., fractures, open wounds, falls from elevation;
  - life-threatening incidents (either with or without exposure) - e.g., injured individual is unconscious, severely bleeding, not breathing or has chest pains;
  - chemical releases - e.g., a visible plume or exposure causing eye or throat irritation;
  - fires - either controllable or uncontrollable; and
  - sinking or capsized boats.
- **Priority 2** - Internal response with first aid supplies to provide basic life support, including minor medical injuries (e.g., abrasions, lacerations, eye irritations, etc.).
- **Priority 3** - Internal response with spill supplies, including liquid spills within a containment system or to the ground or water.
- **Priority 4** - Internal response with support boat/marine vessel.
- **Priority 5** - Call Canadian Pacific Railway. Off-site incidents involving rail cars will be the responsibility of the rail carrier, working with local emergency responders.

The same personnel that called the “Priority” will notify the Project Safety Manager, the appropriate area Safety Representative (i.e., facility construction, dredging or facility operations), and other project safety personnel. All will respond to the scene accordingly.

If needed, air horns strategically located throughout the facility and on each project vessel will initiate the evacuation signal - one long blast.

The Project Safety Manager or designee will act as the incident commander for project emergencies that are handled internally. Trained on-site personnel will use fire extinguishers for small fires, and first aid/CPR-trained personnel will provide treatment for non-life threatening injuries.

In the event of an emergency requiring external emergency response, the first responding agency’s lead officer will become the incident commander after he arrives on site. The Project Safety Manager will serve as liaison to the external incident commander, as appropriate.

Appropriate emergency response measures will immediately be taken by project personnel to assist those who have been injured and to protect others from unsafe conditions. These measures may include contacting the relevant authorities (depending on the nature of the emergency) and/or health care facilities (see emergency contact numbers listed in Section 10.3.6, Table 6. It may also involve moving individuals to a secure location, as appropriate. On-site

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first-aid to an injury or illness will be provided by trained personnel. External emergency responders will be responsible for providing advanced life support services.

If an incident involves a fire that cannot be controlled with an extinguisher, the work area and/or vessel will be evacuated immediately. The Project Safety Manager (or on-site designee) will promptly contact external fire department personnel whenever there is a fire, regardless of its intensity.

Upon the occurrence of any event during the performance of the work which requires reporting to the National Response Center (NRC) under Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), such reporting will be made by GE or their designee. GE will notify USEPA and New York State Department of Environmental Conservation (NYSDEC) of any incident that may present an immediate threat to public health or welfare or the environment, by immediately (upon obtaining knowledge of the incident) notifying USEPA's team leader, or, in the event of the unavailability of the team leader, the USEPA project coordinator or alternate USEPA project coordinator; and also notifying the NYSDEC project manager, or, in the event of the unavailability of the NYSDEC project manager, the Chief of NYSDEC's Hudson River Unit or the New York State Department of Health (NYSDOH) Bureau of Environmental Exposure Investigation.

If any action or occurrence during the performance of the work causes or threatens to cause a release of a hazardous substance that may present an immediate threat to public health or welfare or the environment, the USEPA and the NYSDEC will be notified by GE or its designee immediately on obtaining knowledge of such action or occurrence. Such notifications will be made to one of the USEPA project coordinators and to the NYSDEC Hudson River project manager (or, in the event of their unavailability, to their alternate contacts).

The following subsections present procedures for fire response and spill prevention/response.

## 10.2.2 Fire Response

All personnel are trained in the use of fire extinguishers during the Project Safety Orientation and instructed to use a fire extinguisher for incipient stage fires only.

In the event of a fire at the sediment processing facility, a telephone call will be made to 911 regardless of whether the PSM (or on-site designee) determines a need for external response. The arriving unit will report to the designated entry location and will be met by the PSM (or on-site designee) and briefed. The CM staff will provide the lead officer with facility-specific information and logistical support, as needed.

In the event of an incipient stage fire affecting river based operations, the dredging contractor's personnel will attempt to extinguish the fire with onboard equipment (typically fire

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extinguishers). If a fire cannot be extinguished by dredging personnel, then they will call 911 and follow emergency response procedures, including abandoning the vessel if necessary. The lead officer will respond to a designated location, will be met by the PSM (or on-site designee) and briefed. Based on the incident, the lead officer will deploy appropriate water rescue resources with the assistance of project personnel. The CM staff will assist external responders with operational support (e.g., stopping dock work and barge movement) and by providing assistance (e.g., boats, vehicles, PPE).

## 10.2.3 Spill Prevention/Response

In the event of a spill, response actions will be primarily guided by the spill prevention, control, and countermeasure (SPCC) plans prepared by the dredging contractor (for in-river activities) and the processing facility contractor (for incidents on the main site). As of the writing of this RA HASP, the contractors have not been selected and the SPCCs have not been written. For the purposes of this RA HASP, a general response approach has been summarized below.

In the event of an accidental release of a toxic or hazardous material, the employee observing the incident must immediately notify the site supervisor, and if possible, proceed to control the emergency situation.

When determining the possible hazards to human health and/or the environment that may result from the incident, the PSM must consider both the direct and indirect effects of the release, assess the possible effects of any toxic, irritating, or asphyxiating gases that are generated, and determine the effects of any hazardous run-off from water or chemical agents used to control fire and heat-induced explosions.

### 10.2.3.1 Spill Response Procedures – Processing Facility

There is less concern about spills at the processing facility because of the built-in collection, containment, and treatment system designed to effectively address dredged and processed materials. Nonetheless, a significant accident or spill of material could warrant immediate actions by the facility contractor to protect human health and safety, assess the severity of the event, and take appropriate mitigation measures, if needed. The event would be evaluated by the CM and contractor to determine its causes and future prevention, and proper project authorities would be notified of the event.

Generally, on-site spills from a project truck will be picked up and placed back in the truck, while spills during the process of loading rail cars will be picked up and placed into the rail car.

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## 10.2.3.2 Spill Response Procedures – In River Activities

All project vessels will be required to have USCG safety equipment, including ship-to-shore very-high-frequency (VHF) radios and cellular phones to alert the CM and local responders of a spill.

The responders' first priority will be to assess the safety, rescue, or medical needs of members of the public and workers immediately affected by the spill.

At the same time, the apparent scale and severity of the spill will be evaluated so that appropriate response actions can be taken. Notification to the CM will be promptly made. The CM will aid in summoning the contractor's spill response team or other support personnel. In all cases, the location and time of the spill, the vessels and people involved, and other important details will be conveyed to assist response actions and reporting.

Third, the spill will be contained and controlled. If the spill appears incidental (e.g., brief duration and of limited spatial extent), containment may not be necessary or feasible. If the spill is of a larger magnitude (larger quantity, longer duration or spatial extent), contingency measures will be implemented per the SPCC plan, once developed. These measures will include actions to contain and control the spill to the extent possible (e.g., safe, feasible, consistent with other project requirements), thereby stopping the spill, securing and stabilizing the immediate area, and taking steps to minimize the spread of the spill. Special consideration will be given to large spills that occur in portions of the river or canal that are known to be relatively free of PCBs or that have already been dredged and backfilled/capped in accordance with USEPA performance standards for residual sediments.

Fourth, the spill will be cleaned up or mitigated. A pre-planned course of action for the recovery of any spilled material containing PCBs will be implemented. As needed, appropriate, and feasible after a significant spill, the project team would promptly undertake one or more of the following actions:

- *No immediate direct action:* This may be appropriate for smaller spills that would not be expected to cause significant or detectable effects, or if the spill occurs in portions of the river that are targeted for dredging but have not yet been remediated.
- *Continue source control and containment and increase monitoring:* This may be appropriate for spills that are brief and quickly contained or that are not migrating; spill material sampling or additional monitoring would help determine effects of the spill (if any) and what next steps may be warranted to clean up or further mitigate the spill.
- *Isolate spill under clean backfill/capping material:* This may be appropriate for small or limited spills in portions of the river where sediments have already been dredged

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but not backfilled. The backfill/capping material could isolate the spill and mitigate transport and potential exposure to the water column and biota.

- *Remove spill during residuals dredging program:* This may be appropriate for larger spills in portions of the river where inventory dredging has already occurred. If sampling/monitoring of the spill area indicates unacceptable levels of PCB concentrations, then the material would be targeted and removed during residuals dredging.
- *Remove spill immediately:* This may be appropriate for larger spills that have the potential to cause exceedances at near- or far-field water monitoring stations, or for larger/longer spills that impact sediments outside the dredge areas or previously dredged and capped sediments in the river or Champlain Canal. If warranted by the severity of the spill, immediate action would be taken to remove the spill to prevent or stop exceedances and/or preserve the integrity of a remediated or non-dredged area.
- *Remove spill during demobilization:* This may be appropriate for incidental spills that unavoidably recur but because of their limited scale or location in active work areas, do not necessitate a response until after all work is completed at the site. For example, if a very small amount of material is infrequently but unavoidably lost during unloading at the processing facility wharf (even though systems are in place to prevent such losses), it may be most prudent to monitor the situation and then remediate the area after all active handling of PCB-containing sediments is complete and the processing facility is being decommissioned or restructured for some future alternative land use.

### 10.2.3.3 Spill Reporting Requirements

This section applies only to spills and releases within the sediment processing facility or on the river. Reporting and responding to off-site accidents involving a release from loaded rail cars are the responsibility of the rail carriers.

Federal and state laws and regulations define when a spill or release must be reported. Pursuant to its authority under the CERCLA, USEPA has developed a list of hazardous substances that, if released to the environment in an amount greater than a defined reportable quantity (RQ), must be reported. For example, in the case of PCBs, the person in charge of a facility must immediately report upon learning that one pound or more of PCBs has been released to the environment within a 24-hour period.

Under its authority granted by the Federal Water Pollution Control Act (FWPCA), USEPA has developed a similar list of reportable quantities of hazardous substances in the event of a release of hazardous substances to the navigable waters. As with the CERCLA list, these require reporting if an amount exceeding an RQ is spilled into the water. In addition, the Oil Pollution Act (OPA) requires notification if a sheen of oil is visible on the water.

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Under state law, NYSDEC has developed its own list of hazardous substances that, if released to the environment, must be reported. That law [6 NYCRR Part 595, 597] requires the reporting of releases above a defined RQ (in the case of PCBs, one pound or more) to NYSDEC immediately, but within two hours after the discharge. State law also requires reporting of releases involving less than the RQ if the release may result in fire, explosion, exceedance of air and water quality standards, or injury to the public.

In addition, Section 17-1743 of the NYSDEC Law requires that a person who stores more than 1,000 gallons of any liquid (including petroleum) must immediately report any release of the liquid to land or waters.

Finally, New York's Navigation Law requires any person responsible for causing a discharge of oil or other petroleum to land or water notify NYSDEC immediately, but within two hours after the discharge, unless: (1) the spill is less than 5 gallons; (2) the spill is contained; (3) the spill has not and will not reach the water or any land; and (4) the spill is cleaned up within two hours of discovery.

If the release or spill requires reporting under CERCLA, the FWPCA, or the OPA, a telephone call will be placed to the National Response Center. Additional reports are required by Paragraph 41 of the consent decree. Under that paragraph, if a release must be reported under CERCLA, then GE is also required, within 24 hours of obtaining knowledge of the onset of the event, to orally notify USEPA's team leader, Hudson River Team, Emergency and Remedial Response Division, USEPA Region 2; or, in the event that the team leader is not available, either the USEPA project coordinator or the alternate USEPA project coordinator). GE is also required to provide oral notification to the NYSDEC project manager, Hudson River PCBs Superfund Site; or, in the event of the unavailability of the NYSDEC project manager, to the chief of NYSDEC's Hudson River Unit and to the NYSDOH Bureau of Environmental Exposure Investigation.

At a minimum, personnel reporting a spill or release must provide the following information to the site supervisor (using the Incident/Near-Miss Investigation Report provided as Attachment F, or equivalent):

- Location of the release or threatened release;
- The material released or threatened to be released;
- The approximate quantity and concentration of the release or threatened; and
- Any other information as required for compliance with NRC or NYSDEC reporting requirements (NYSDEC, 1996).

The contractor's supervisor will then contact the CM and notify them of the incident. The CM's project manager will notify GE and its representatives of the incident and determine if reports to the NRC or NYSDEC are required.

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## 10.3 EMERGENCY INFORMATION

The means to summon local public response agencies such as police, fire, and ambulance will be reviewed in the project orientation. Emergency contacts are listed in Table 6. The following sub-sections provide information on medical emergencies and first aid while working at the site.

### 10.3.1 First Aid

First aid will be provided by trained personnel. Injuries and illnesses requiring medical treatment must be documented. The site supervisor must conduct an incident investigation as soon as emergency conditions no longer exist and first-aid and/or medical treatment has been administered. The report must be completed and submitted to the PSM and appropriate SSR within 24 hours after the incident.

If first-aid treatment is required, first-aid kits are kept at the CM office trailer and in each construction vehicle assigned to a supervisor. If treatment beyond first aid is required, the injured should be transported to the medical facility. If the injured is not ambulatory, or shows any sign of not being in a comfortable and stable condition for transport, then an ambulance/paramedic should be summoned. If there is any doubt as to the injured worker's condition, it is best to let the local paramedic or ambulance service examine and transport the worker.

#### 10.3.1.1 Emergency Care Steps

The steps listed below must be followed in the event of an injury at the site:

- *Survey the scene.* Determine if it is safe to proceed. Try to determine if the conditions that caused the incident are still a threat. Protect yourself from exposure before attempting to rescue the victim.
- *Do a primary survey of the victim.* Check for airway obstruction, breathing, and pulse. Assess likely routes of chemical exposure by examining the eyes, mouth, nose, and skin of the victim for symptoms.
- *Phone Emergency Medical Services (EMS).* Give the location, telephone number used, caller's name, what happened, number of victims, victims' condition, and help being given.
- *Maintain airway and perform rescue breathing as necessary.*
- *Perform CPR as necessary.*
- *Do a secondary survey of the victim.* Check vital signs and do a head-to-toe exam.
- *Treat other conditions as necessary.* If the victim can be moved, take the victim to a location away from the work area where EMS can gain access.

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## 10.3.1.2 Inhalation

Any employee complaining of symptoms of chemical overexposure will be removed from the work area and transported to the designated medical facility for examination and treatment.

## 10.3.1.3 Ingestion

Call EMS and consult a poison control center for advice. If available, refer to the MSDS for treatment information, if recommended. If unconscious, keep the victim on his or her side and clear the airway if vomiting occurs.

## 10.3.1.4 Skin Contact

Personnel who have had skin contact with contaminated sediment will, unless the contact is severe, proceed through the decontamination zone to the wash-up area. Personnel must remove any contaminated clothing and then flush the affected area with water for at least 15 minutes. The individual should be transported to the medical facility if showing any sign of skin reddening or irritation, or if requesting a medical examination.

## 10.3.1.5 Eye Contact

Field personnel who have had contaminated sediment splashed in their eyes or who have experienced eye irritation while in the contaminated zone must immediately proceed to the eyewash station set up in the decontamination zone. Do not decontaminate prior to using the eyewash. Remove whatever protective clothing is necessary to use the eyewash. Flush the eye with clean running water for at least 15 minutes. Arrange prompt transport to the designated medical facility.

## 10.3.2 Medical Emergency – Processing Facility

In the event of a medical emergency at the sediment processing facility, a telephone call will be made to 911 and the Emergency Care Steps in Section 10.3.1.1 will be followed until medical personnel arrive. The arriving unit will report to a designated entry location. The lead officer will be met by the PSM (or on-site designee) and briefed or will immediately receive injured personnel for evaluation and/or transport. In the event injured personnel cannot be moved, emergency personnel will be escorted to the incident location.

Emergency personnel will be provided with any site-specific PPE beyond their own response gear. Response personnel will have access to any on-site emergency response equipment, as needed. If the injured personnel cannot be decontaminated due to the possibility of causing further injury, the necessary PPE and supplies will be provided to protect emergency response personnel or equipment from decontamination.



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## 10.3.3 Medical Emergency – Wharf Area

Call will be made to 911. The lead officer will respond to the designated location and will be met by the PSM and briefed. Based on the incident, the lead officer will deploy appropriate water rescue resources with assistance from project personnel. Project personnel will assist external responders with operational support (e.g., stopping dock work and barge movement) and by providing assistance (e.g., boats, vehicles, PPE).

## 10.3.4 Medical Emergency – Dredging Areas

The dredging contractor will divide the Phase 1 dredging area into specific river control zones for emergency response and navigation control. A figure will be created by the contractor to define these control zones which will be included in the contractor's Worker HASP, to be attached in Appendix A.

In the event of an emergency, a call will be made to 911 and the designated control zone where the emergency has occurred will be identified. The lead officer will respond to the designated location. Injured personnel who are in a condition to be transported will be transferred by project vessel to a designated location. If injured personnel cannot be transported, the lead officer will go to the designated location to be greeted by the PSM and briefed. External emergency responders will be directed to the scene if using their own vessel. Response personnel will have access to project emergency equipment, including vessels, as needed. If the injured personnel cannot be decontaminated due to the possibility of causing further injury, the necessary PPE and supplies will be provided to protect emergency response personnel or equipment.

## 10.3.5 Water Emergency – Man Overboard

Call will be made to 911. Onboard personnel may attempt to rescue the overboard person, if it can be done safely. Arriving unit(s) will report to a designated entry location. The lead officer will be met by the PSM and briefed or will immediately receive injured personnel for evaluation and/or transport. Project support vessels, personnel, and/or equipment will be made available to external emergency responders, as well as any land-based logistics and support equipment.

## 10.3.6 Emergency Contacts

The means to summon local public response agencies such as police, fire, and ambulance will be reviewed in the project orientation. These potential agencies are identified in Table 6 below. A general map and directions to the Glens Falls, New York hospital from both the the Sediment Processing and Dewatering Facility and the West River Road Marine Staging Area are provided in Figure 5. Final turn-by-turn directions to hospitals will be provided once office addresses are established.

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**TABLE 6– EMERGENCY CONTACT INFORMATION**

*(in Alphabetical Order)*

<b>Emergency Contact</b>	<b>Contact Name</b>	<b>Emergency No.</b>	<b>Alternate No.</b>
Canadian Pacific Railway Police Communication Ctr.	N/A	800-716-9132	518-383-7200
Ft. Edward Police Department	Chief of Police Walter Sandford	911	518-747-6365 (station); 518-747-2782 (cell)
Ft. Edward Rescue Squad	Stewart Alheim	911	518-747-6198
Ft. Edward Fire Department	Chief Brian Brockway	911	518-747-8309 (station); 518-796-5467 (cell); 518-747-3948 (home)
GE	Operations Manager., Tim Kruppenbacher		518-746-5247 (office)
GE	Program Manager, John Haggard		518-862-2739 (office)
GE	EHS Leader, Robert Gibson		518-746-5253 (office) 518-527-3418 (cell)
Moreau Emergency Squad	Andre Delvaux	911	518-793-3011 (station); 518-791-2306 (cell); 518-793-2197 (home)
National Response Center and Terrorist Hotline	N/A	800-424-8802	N/A
New York State Canal Corporation	Director, Office of Policy Imp. and Planning John Callaghan Sgt. Mark Phillips	911	518-471-4220  800-635-8856 (office)
New York State Department of Environmental Conservation	Hudson River Project Manager Kevin Farrar	N/A	518-402-9784
New York State Department of Environmental Conservation	Hudson River Unit, Division of Environmental Remediation, William Daigle	N/A	518-402-9676
New York State Department of Health (Glens Falls)	Director Anita Gabalski	N/A	518-793-3893
New York State Police	Troop “G” Headquarters	N/A	518-783-3211
New York State Police	Troop “T” Headquarters	N/A	800-635-8856
New York State Spill Response Program	Coordinator Janet Crawford	N/A	800-457-7362
Parsons	Construction manager, Larry Hartman		(303) 668-3170

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<b>Emergency Contact</b>	<b>Contact Name</b>	<b>Emergency No.</b>	<b>Alternate No.</b>
Poison Control Center	N/A	800-336-6997	N/A
Saratoga County Office of Emergency Services	County Coordinator Mike McEvoy	N/A	518-885-2232 (station); 423-6600 (cell)
Saratoga County Sheriff	Sheriff James Bowen	911	518-885-2450
South Glen Falls Fire Company	Chief James Ryan	911	518-792-1674 (station); 798-4020; 792-1674; Tom Tracy 792-0510 (home)
U.S. Coast Guard (Station Burlington, VT)		911	802-951-6792
U.S. Environmental Protection Agency	Hudson Falls Field Office Director David King	N/A	518-747-4389
U.S. Environmental Protection Agency	Hudson River Team Leader Doug Garbarini	N/A	212-637-3952
Warren County Sheriff	Sheriff Larry Cleveland	911	518-761-6477
Washington County Department of Public Safety	Director William Cook	911	747-7520 (station); 361-5513 cell; 747-0472 (home)
Washington County Sheriff	Undersheriff Matthew Mabb	911	518-746-2475 (station); 744-5139 (cell); 747-0126 (home)

### 10.4 REPORTING INJURIES, ILLNESSES, AND NEAR-MISS INCIDENTS

All injuries and illnesses, however minor, will be reported to the site supervisor immediately. The site supervisor will complete an Incident/Near-Miss Investigation Report (Attachment F) and submit it to the PSM and the appropriate SSR within 24 hours.

Near-miss incidents are situations in which no injury or property damage occurred, but under slightly different circumstances an injury or property damage could have occurred. Near misses are caused by the same factors as injuries; therefore, they must be reported on the Incident/Near-Miss Investigation Report (Attachment F) and investigated in the same manner.

# **RA HEALTH AND SAFETY PLAN**

## **SECTION 11**

### **AUDITS AND CORRECTIVE ACTION**

#### **11.1 FORMAL SITE AUDIT**

The field audit protocol is designed to identify and correct unsafe behaviors, acts, or conditions in each contractor's scope of work. The CM will conduct site audits regularly. Items found to be out of compliance must be assigned corrective action and the corrective action tracked to completion. The PSM maintains the original audit documentation on file. Contractors are required to complete their own weekly formal audit and submit a copy to the CM.

#### **11.2 DAILY SITE WALK CHECKLIST**

The CM's project personnel conduct a daily safety site walk to identify problem areas. Items found to be out of compliance must be assigned corrective action and the corrective action tracked to completion. Contractors are required to document their daily checklist inspection and submit to the CM.

#### **11.3 ENFORCEMENT**

CM and contractors enforce all applicable requirements of OSHA 1910 and 1926 as well as contract requirements. Contractor will have written progressive disciplinary systems available for review in the respective contractor HASP.

#### **11.4 NOTICE OF VIOLATION**

The project has a formal notice of violation (NOV) of safety and health regulations program to ensure that violations are issued in an imminent danger situation or when the contractor repeatedly fails to comply with safety and health requirements.

The NOV documents poor performance and requires a response from contractor senior management. The notice contains five distinct levels of discipline, from submission of a recovery plan to contract termination.

1. Contractor is notified of the violation and should take corrective action to prevent a reoccurrence. The corrective action shall be documented to the CM representative immediately.
2. Contractor must submit a plan for compliance to CM within two days of receipt of a formal letter. The compliance plan must include the means of compliance and the date that the requirements for compliance will be completed. Once compliance has been achieved, a follow-up letter must be sent to the CM.

## RA HEALTH AND SAFETY PLAN

3. Contractor is required to review the stated procedures with the CM. Work may not commence on the site until the review is complete and the contractor responds formally that the procedure is understood and will comply.
4. Contractor is required to review the stated procedures with CM. Work may not commence on the site until the review is complete, and contractor **must** confirm formally the disciplinary action to be taken against the supervisor and employees.
5. All work on the site will stop until the CM reviews all the facts with the subcontractor and determines whether the contract between the parties will be terminated.

# RA HEALTH AND SAFETY PLAN

## SECTION 12

### REFERENCES

- BBL. 2003. *Habitat Delineation and Assessment Work Plan (HDA Work Plan)* - Hudson River PCBs Superfund Site. Prepared for General Electric Company, Albany, NY.
- BBL. 2006. Phase 1 *Final Design Report (FDR)*. Hudson River PCBs Superfund Site. Prepared for General Electric Company, Albany, NY. March, 2006.
- ESI/QEA, 2002. *Sediment Sampling and Analysis Program*. Prepared for General Electric Company, Albany, NY. October 1, 2002
- NIOSH, OSHA, USCG, and USEPA. 1985. *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*. 86116.
- NYSDEC. 1996. *Technical Field Guidance: Spill Reporting and Initial Notification Requirements*. May 1, 1996.
- OSHA. 2005. *Title 29 of the Code of Federal Regulations (CFR), Parts 1910 and 1926*.
- Parsons. 2006. *Remedial Action Community Health and Safety Plan (CHASP)*. Hudson River PCBs Superfund Site. Prepared for General Electric Company, Albany, NY. March, 2006.
- QEA, 2003. *Hudson River Baseline Monitoring Scoping Document*. Prepared for General Electric Company, Albany, NY. August, 2003
- URS, 2003. *Cultural and Archaeological Resources Assessment Work Plan for the Hudson River PCBs Superfund Site (CARA Work Plan)*. Prepared for General Electric Company, Albany, NY. August, 2003.
- USEPA. 2000. *Hudson River PCBs Reassessment RI/FS Phase 3 Report: Feasibility Study (FS)*. New York, NY.
- USEPA. 2002. *Hudson River PCBs Site - Record of Decision and Responsiveness Summary (ROD)*. New York, NY.
- USEPA/GE. 2002. Administrative Order on Consent for Hudson River Sediment Sampling (Index No. CERCLA-02-2002-2023) (Sediment Sampling AOC). Effective Date July 26, 2002.

## RA HEALTH AND SAFETY PLAN

USEPA/GE. 2003. Administrative Order on Consent for Hudson River Remedial Design and Cost Recovery (Index No. CERCLA-02-2003-2027) (RD AOC). Effective Date August 18, 2003.

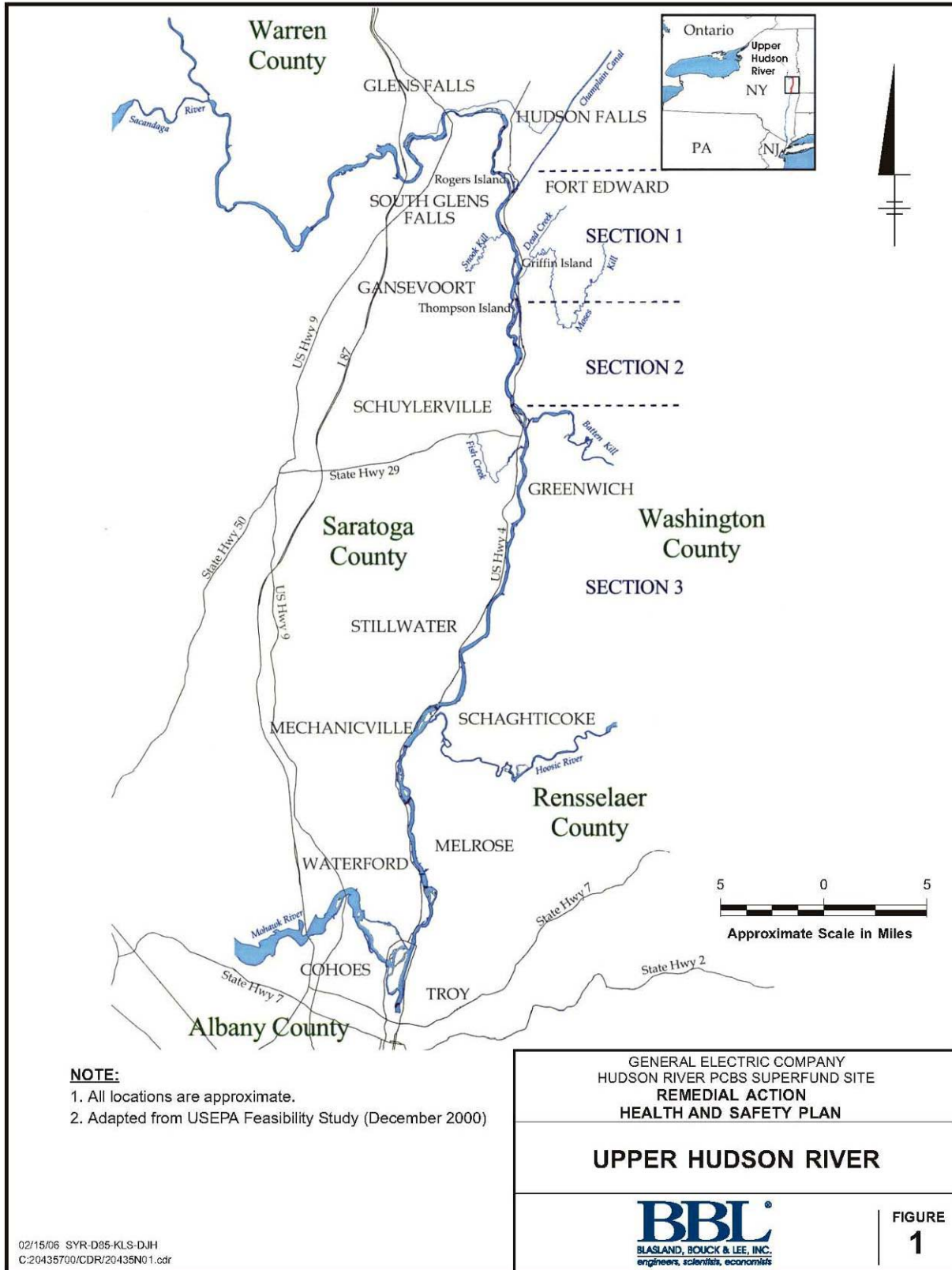
USEPA/GE. October 2005. Consent Decree in *United States v. General Electric Company*, Civil Action No. 1:05-cv-1270, lodged in United States District Court for the Northern District of New York, October 6, 2005. Final judgment entered November 2, 2006.

# RA HEALTH AND SAFETY PLAN

## FIGURES



# RA HEALTH AND SAFETY PLAN

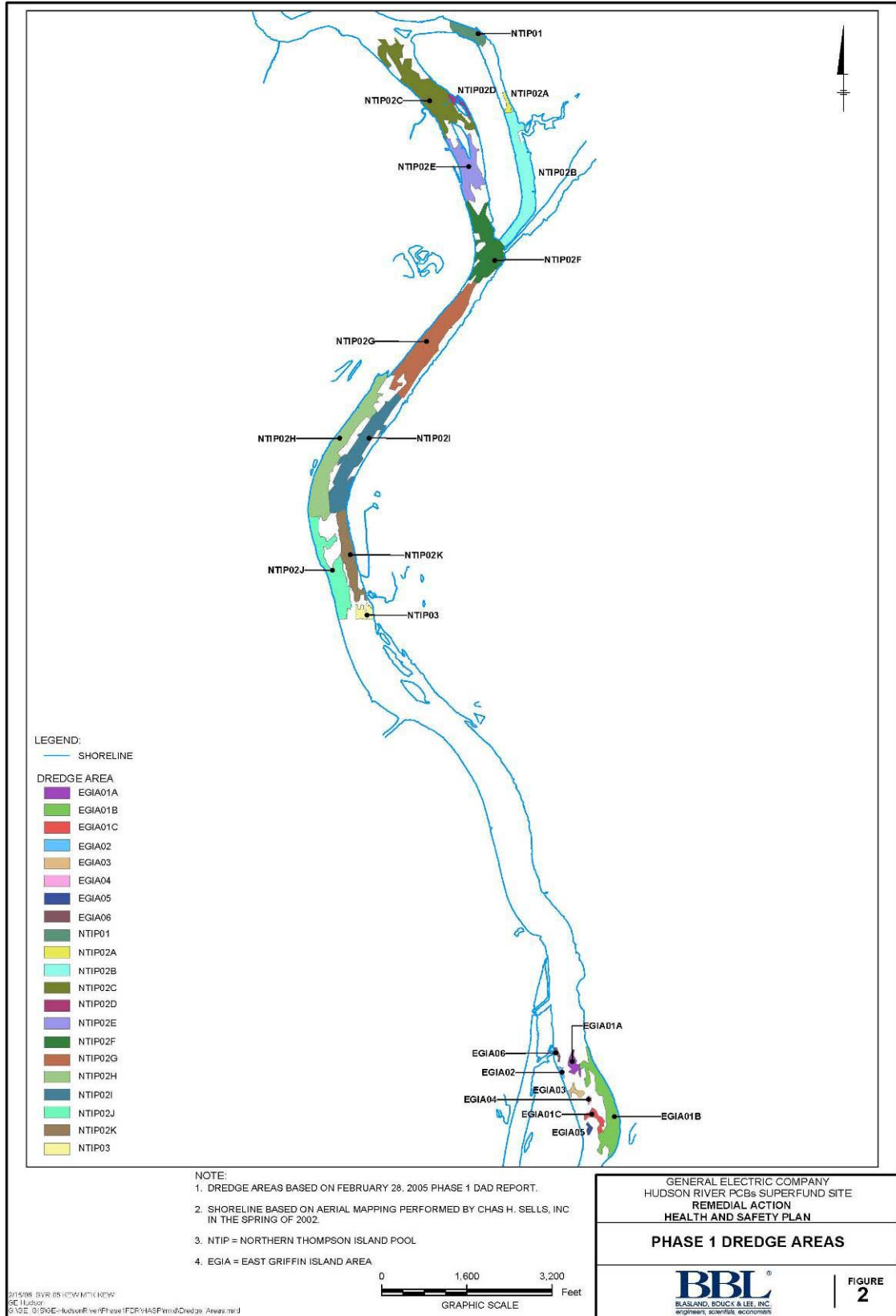


**NOTE:**  
 1. All locations are approximate.  
 2. Adapted from USEPA Feasibility Study (December 2000)

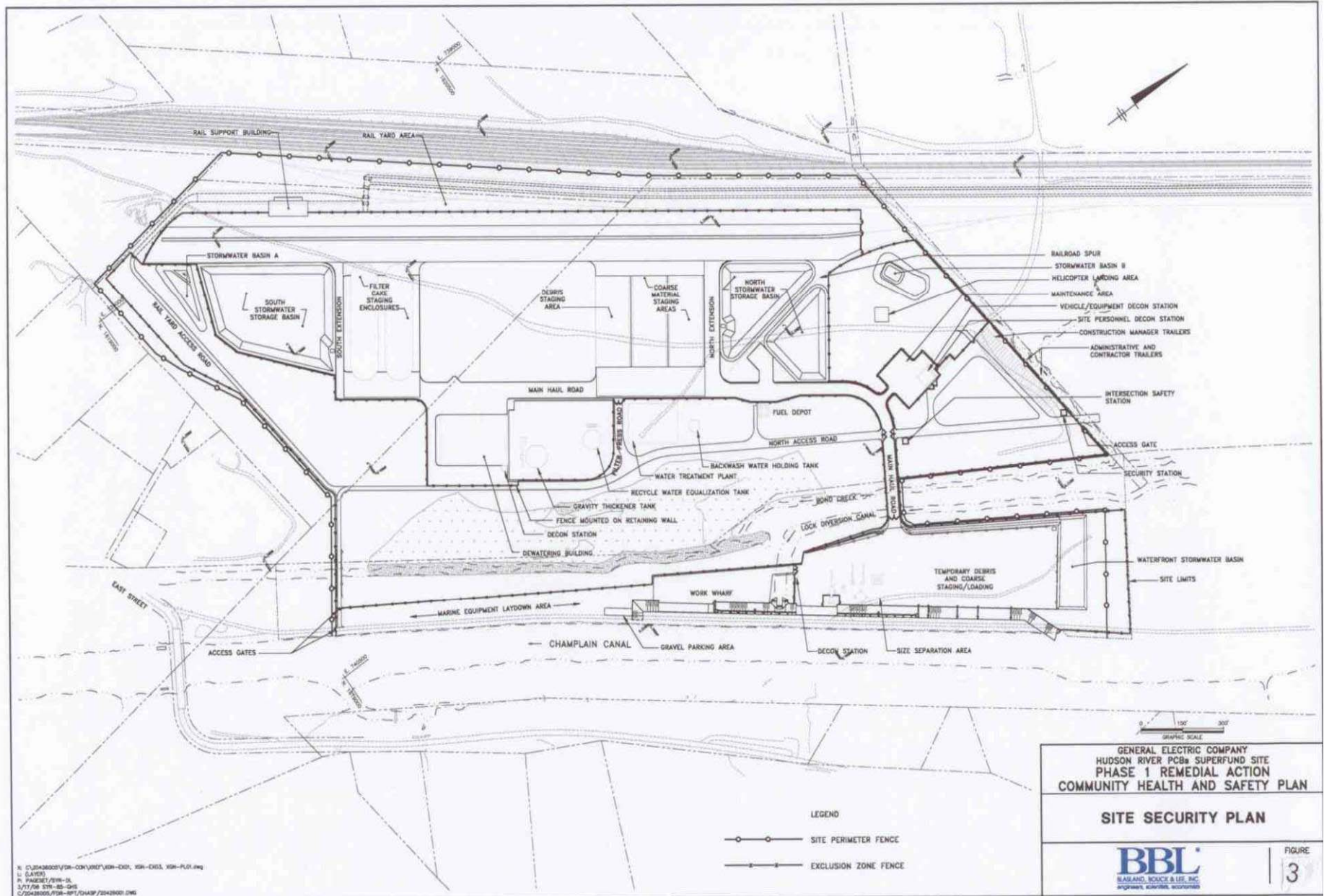
GENERAL ELECTRIC COMPANY HUDSON RIVER PCBs SUPERFUND SITE REMEDIAL ACTION HEALTH AND SAFETY PLAN	
<b>UPPER HUDSON RIVER</b>	
	<b>FIGURE 1</b>

02/15/06 SYR-D85-KLS-DJH  
 C:20435700/CDR/20435N01.cdr

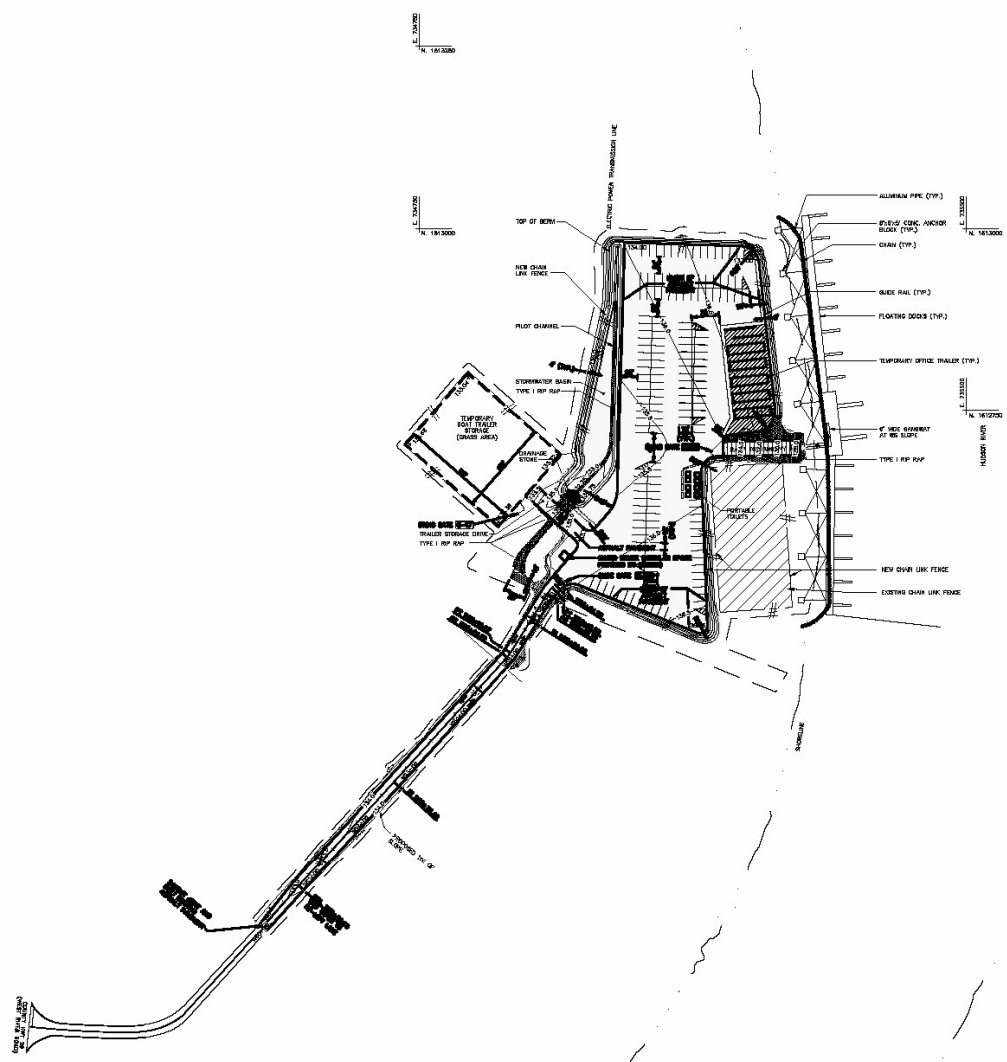
# RA HEALTH AND SAFETY PLAN



# RA HEALTH AND SAFETY PLAN



# RA HEALTH AND SAFETY PLAN



**LEGEND:**

 CULTURAL AND ARCHEOLOGICAL SENSITIVE AREA

**SOURCE:**

BASE MAP DRAWING SUPPLIED BY BLASLAND, BOUCK & LEE, INC.



SCALE: 1"=150'

**FIGURE 4**

GENERAL ELECTRIC COMPANY  
HUDSON RIVER PCBs SUPERFUND SITE  
REMEDIAL ACTION WORK PLAN FOR PHASE 1  
FACILITY SITE WORK CONSTRUCTION

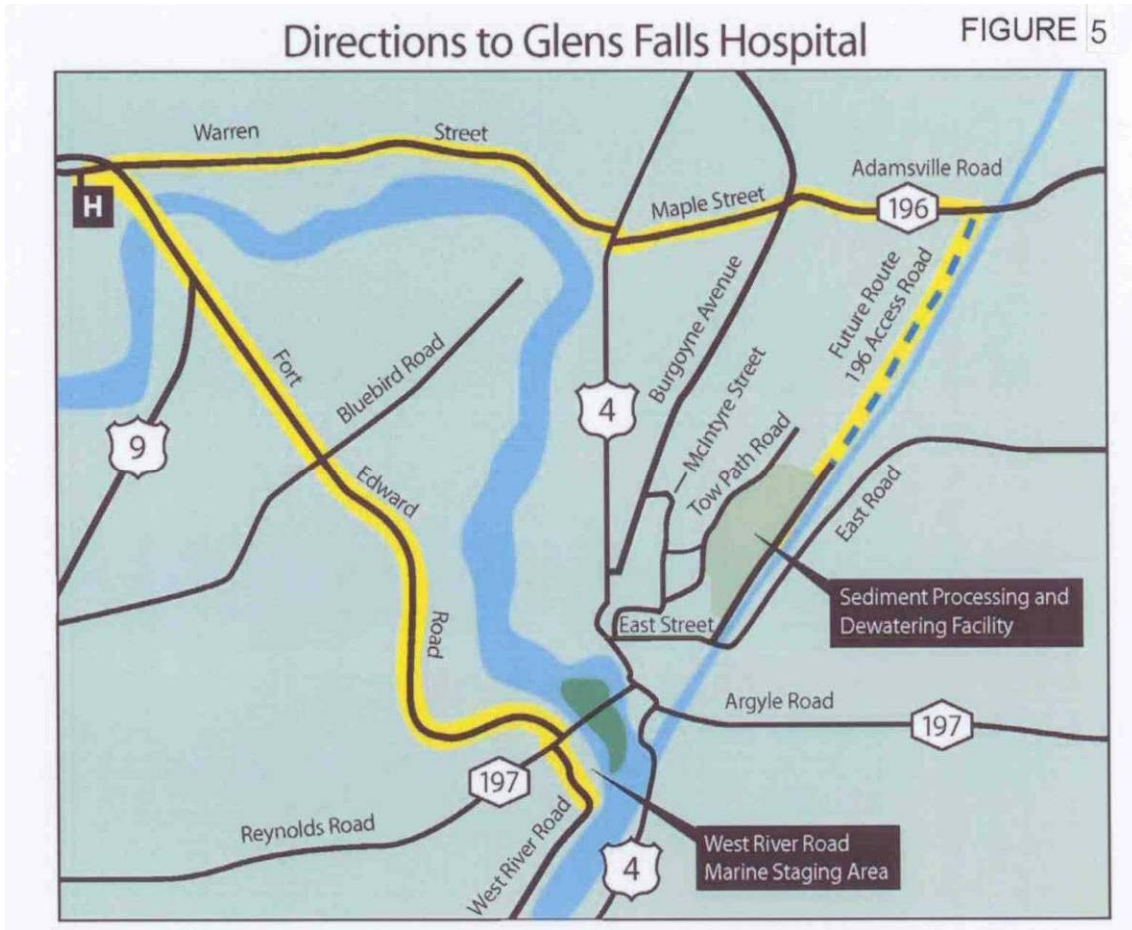
**WORK SUPPORT MARINA SITE PLAN**



GE COMPANY - PARSONS PROJECT OFFICE, BUILDING 40-1,  
381 BROADWAY FT. EDWARD, NY 12828

442209.04012 \*\* 442209CC02(REVA).DWG \*\* STEVE \*\* 01/10/07 \*\* 09:01:39

# RA HEALTH AND SAFETY PLAN



## DIRECTIONS FROM THE SEDIMENT PROCESSING AND DEWATERING FACILITY

1. From **ACCESS ROAD**, turn **L** onto **ROUTE 196** - go a few miles,
2. Turn **R** on **MAIN STREET [US-4]** - go **0.1 mi**
3. Bear **L** to follow **US-4 NORTH** - go **0.1 mi**
4. Continue of **PARK PL** - go **0.1 mile**
5. Bear **R** on **RIVER STREET (RTE 254)** - go **0.7 mi**
6. Continue to follow **RTE 254** - go **0.6 mi**
7. **RTE 254** becomes **LOW WARREN STREET** - go **0.6 mi**
8. **LOWER WARREN STREET** becomes **WARREN STREET (RT-32)** - go **1.3 mi**
9. Bear **L** on **HUDSON AVE** - go **0.2 mi**
10. Turn **L** on **SCHOOL STREET** - go **0.1 mi**
11. Turn **R** on **PARK STREET** - go **0.1 mi**
12. Arrive at **HOSPITAL - 100 PARK STREET, GLENS FALLS** on the **L**

## DIRECTIONS FROM THE WEST RIVER ROAD MARINE STAGING AREA

1. Start at **MARINE STAGING AREA**,
2. Turn **R** on **W RIVER RD** - go **0.2 mi**
3. Turn **R** on **Reynolds RD [ RT-197]** - go **0.1 mi**
4. Turn **L** on **FORT EDWARD RD** - go **3.0 mi**
5. Continue to follow **CR-28** - go **0.8 mi**
6. Continue on **MAIN ST [US9]** - go **0.5 mi**
7. Continue to follow **US-9** - go **0.3 mi**
8. Turn **L** on **PARK ST** - go **0.2 mi**
9. Arrive at **HOSPITAL - 100 PARK STREET, GLENS FALLS** on the **L**

# **RA HEALTH AND SAFETY PLAN**

## **ATTACHMENT A**

### **SITE SAFETY PERSONNEL TELEPHONE NUMBERS**

# RA HEALTH AND SAFETY PLAN

## ATTACHMENT A

### SITE SAFETY PERSONNEL TELEPHONE NUMBERS

<b>Project Role</b>	<b>Relevant Activities</b>	<b>Telephone Numbers</b>
<b>Safety Manager (for CM)</b>		
Gregory H. Beck, CSP	All RA activities	Office: (732) 537-3502
<b>GE Environmental, Health and Safety Leader (for GE)</b>		
Robert Gibson	All RA activities	Office: (518) 862-2736 / (518) 746-5253
<b>Construction Safety Representative (for CM)</b>		
TBD	Facility Site Work, Rail Yard, and Processing Facility Construction	TBD
<b>Processing Safety Representative (for CM)</b>		
TBD	Processing Facility Operations	TBD
<b>Dredging Safety Representative (for CM)</b>		
TBD	Dredging Operations	TBD

# **RA HEALTH AND SAFETY PLAN**

## **ATTACHMENT B**

### **HEALTH AND SAFETY PLAN ACKNOWLEDGMENT**



# RA HEALTH AND SAFETY PLAN

## ATTACHMENT B

### Site-Specific Health and Safety Plan (HASP)

#### Acknowledgement

I hereby confirm that site-specific health and safety training has been conducted by the site health and safety officer, which included:

- Names of personnel responsible for site safety and health
- Safety, health, and other hazards at the site
- Proper use of personal protective equipment
- Work practices by which the employee can minimize risk from hazards
- Safe use of engineering controls and equipment on the site
- Acute effects of compounds at the site
- Decontamination procedures

For the following project:

_____ (Project Title)	_____ (Project Number)	_____ (City, State)	
Name (print)	Signature	Company	Date
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

# **RA HEALTH AND SAFETY PLAN**

## **ATTACHMENT C**

### **SAFETY TOOLBOX MEETING LOG**

# RA HEALTH AND SAFETY PLAN

## SAFETY TOOLBOX MEETING LOG

Safety Meeting Presenter: \_\_\_\_\_ Date: \_\_\_\_\_

### Current Weather Conditions:

Temperature (°F) = \_\_\_\_\_ Wind Direction = \_\_\_\_\_ Wind Speed = \_\_\_\_\_

Clear - Sunny – Cloudy – Rain - Snow      Forecast = \_\_\_\_\_

### Current Site Conditions (circle as appropriate):

Dry - Wet - Muddy - Frozen - Snow Covered - Other (describe) \_\_\_\_\_

1. Near-Miss, Incidents or Injuries to report from Previous Day Activities: No  Yes  - explain below:

\_\_\_\_\_

2. Safe and/or At-Risk Observations from Previous Day Activities: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3. Activities Taking Place Today: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

4. Anticipated Hazards: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

5. Engineering Controls-Work Practices-PPE to Protect Against Hazards: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

6. Additional Safety Topic or Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

# RA HEALTH AND SAFETY PLAN

PRINTED NAME	SIGNATURE	COMPANY	LAST 4 DIGITS OF SS #

# **RA HEALTH AND SAFETY PLAN**

## **ATTACHMENT D HOT WORK PERMIT**

# RA HEALTH AND SAFETY PLAN

## Attachment D

### Hot Work Permit

This permit becomes void:

- (1) At the end of the shift or
- (2) Whenever conditions change significantly or
- (3) On any emergency signal.

PERMIT NO. \_\_\_\_\_

DATE: \_\_\_\_\_ SHIFT: \_\_\_\_\_

BUILDING: \_\_\_\_\_ AREA: \_\_\_\_\_

NATURE OF WORK: \_\_\_\_\_

SPECIAL PRECAUTIONS: \_\_\_\_\_

IS FIRE WATCH REQUIRED?: \_\_\_\_\_

ADDITIONAL PERMIT REQUIRED?: (i.e., confined space) \_\_\_\_\_

#### STEP 2 (See reverse side for Step 1)

The location where this work is to be done has been examined, necessary precautions taken, and permission is granted for this work. (See other side)

Permit expires: \_\_\_\_\_ Signed: \_\_\_\_\_  
(SSHO)

Time started: \_\_\_\_\_ Completed: \_\_\_\_\_

#### STEP 3 FINAL CHECKUP

Work area and all adjacent areas to which sparks and heat might have spread (including floors above and below and on opposite sides of walls) were inspected 30 minutes after the work was completed and were found firesafe.

Signed: \_\_\_\_\_  
(Supervisor or Fire Watcher)

# RA HEALTH AND SAFETY PLAN

## ATTENTION

### STEP 1

Before approving and cutting and welding permit, the supervisor shall inspect the work area and confirm that precautions have been taken to prevent fire in accordance with this manual.

## PRECAUTIONS

Sprinklers in service  
Cutting and welding equipment in good repair  
Personnel protective equipment available and in good condition

## WITHIN 35 FT OF WORK

Floors swept clean of combustibles  
Combustible floors wet down, covered with damp sand, metal or other shields  
No combustible material or flammable liquids  
Combustibles and flammable liquids protected with covers, guards or metal shields  
All wall and floor openings covered  
Covers suspended beneath work to collect sparks

## WORK ON WALLS OR CEILINGS

Construction noncombustible and without combustible covering  
Combustible moved away from opposite side of wall

## WORK ON ENCLOSED EQUIPMENT (Tanks, containers, ducts, dust collectors, etc.)

Equipment cleaned of all combustibles  
Containers purged of flammable vapors

## FIRE WATCH

To be provided during and 30 minutes after operation  
Supplied with extinguisher and small hose  
Trained in use of equipment and in sounding fire alarm  
Has necessary personnel protective equipment

## FINAL CHECKUP

To be made 30 minutes after completion of any operation unless fire watch is provided.

Signed: \_\_\_\_\_  
(Supervisor)

# **RA HEALTH AND SAFETY PLAN**

## **ATTACHMENT E**

### **CONFINED SPACE ENTRY PERMIT**



# RA HEALTH AND SAFETY PLAN

## Attachment E

### CONFINED SPACE ENTRY PERMIT

**Location of Space:** \_\_\_\_\_ **Date(s) of Entry:** \_\_\_\_\_  
**Description of Space:** \_\_\_\_\_  
**Purpose of Entry:** \_\_\_\_\_ **Duration of Entry:** \_\_\_\_\_  
 (hours/days)

**Authorized Entrants:** \_\_\_\_\_

**Entry Supervisor:** \_\_\_\_\_

**Attendant(s) Name(s):** \_\_\_\_\_

Date	Name	In:	Out:	In:	Out:	In:	Out:

**Hazards Expected:** \_\_\_\_\_

**Rescue Arrangements:**

- Entry:     Non-Entry:  
 Rescue Equipment:  
 Method to Contact Rescue  
 Team:

\*Mechanical devices will be required for non-entry retrievals greater than 5 vertical feet.

**Special Requirements:** \_\_\_\_\_

	REQ'D	IN PLACE		REQ'D	IN PLACE
Lockout – de-energize	<input type="checkbox"/>	<input type="checkbox"/>	Escape Harness / Wristlets	<input type="checkbox"/>	<input type="checkbox"/>
Line Broken – capped or blanked	<input type="checkbox"/>	<input type="checkbox"/>	Lifelines	<input type="checkbox"/>	<input type="checkbox"/>
Purge – flush and vent	<input type="checkbox"/>	<input type="checkbox"/>	Mechanical Retrieval	<input type="checkbox"/>	<input type="checkbox"/>
Ventilation	<input type="checkbox"/>	<input type="checkbox"/>	Fire Extinguishers	<input type="checkbox"/>	<input type="checkbox"/>
Secure Area	<input type="checkbox"/>	<input type="checkbox"/>	Low Voltage Lighting	<input type="checkbox"/>	<input type="checkbox"/>
Supplied air with SCBA	<input type="checkbox"/>	<input type="checkbox"/>	Other: _____	<input type="checkbox"/>	<input type="checkbox"/>

# RA HEALTH AND SAFETY PLAN

**Air Monitoring (record every 2 hours):**    Continuous    Periodic \_\_\_\_\_

Date	Time of Reading	% O <sub>2</sub>	% LEL	CO (ppm)	Other: _____	Other: _____
<b>Reference Limits</b>		19.5%-23.5%	Less than 10%	35 ppm (TWA) 200 ppm (C)		

*NOTE: Evacuate immediately if O<sub>2</sub> alarm sounds (less than 19.5% or more than 23.5%).*

Individual Performing Tests: \_\_\_\_\_  
(print) (signature)

Company: \_\_\_\_\_  
 Instruments Used: \_\_\_\_\_

**Entry Documentation and Equipment:** \_\_\_\_\_

<b>Training Completed:</b>	<input type="checkbox"/> Entry Supervisor		<input type="checkbox"/> Attendant	<input type="checkbox"/> Entrants
<b>Personal Protective Equipment:</b>	REQ'D	WORN	SPECIFY	
	<input type="checkbox"/>	<input type="checkbox"/>	Gloves:	
	<input type="checkbox"/>	<input type="checkbox"/>	Protective Clothing (coveralls):	
	<input type="checkbox"/>	<input type="checkbox"/>	Eye Protection:	
	<input type="checkbox"/>	<input type="checkbox"/>	Respirator:	
	<input type="checkbox"/>	<input type="checkbox"/>	Boots:	
<b>First Aid Equipment:</b>	<input type="checkbox"/>	<input type="checkbox"/>	Other:	
	<input type="checkbox"/>	<input type="checkbox"/>	First Aid Kit	
	<input type="checkbox"/>	<input type="checkbox"/>	Eye Wash	
	<input type="checkbox"/>	<input type="checkbox"/>	Other:	

I certify that all Parsons and regulatory requirements for confined space entry, including the special requirements listed on this form, have been met.

**Entry Supervisor**

**Permit Canceled (Entry Supervisor)**

\_\_\_\_\_  
*Print*

\_\_\_\_\_  
*Print*

\_\_\_\_\_  
*Sign* *Date*

\_\_\_\_\_  
*Sign* *Date*

# **RA HEALTH AND SAFETY PLAN**

## **ATTACHMENT F**

### **INCIDENT/NEAR-MISS INVESTIGATION REPORT**

## Attachment F INCIDENT/NEAR MISS INVESTIGATION REPORT

Date of Incident:		Client:		Client Contact:	
Project Name:			Project Location:		Project Manager:
Time of Incident:	Job/WBS:		Incident Reported by:		
Type of incident (check one): ? Near-miss incident ? Personal injury ? Property damage ? Environmental spill/release				Name of Company/Subcontractor:	
Name Of Individual(s) Involved:				Trade/Function:	
Was the individual involved with the incident performing their regular job? If "no", explain why:			Date of Site Safety Orientation:		Last Formal/Documented Safety Meeting Attended:
Description of incident according to the individual(s) involved or injured (including what happened and how the incident occurred):					
According to the individual(s) involved with the incident or injured, what could have been done differently to prevent this incident from occurring?  Why weren't these done prior to the incident?					
Describe any First Aid or Medical Treatment Provided On Site and/or at a Medical Facility.					
Did the Individual Return to Work by the next day?		Any Work Restrictions or Lost Time?		If "Yes", describe:	

**Complete the information below with an Investigation Team, if appropriate.**

Team Investigation – List the Possible Causes of the Incident Below (specify <b>Personal Factors</b> (1 = lack of skill/knowledge, 2 = following correct procedure takes more time, 3 = supervisor reinforces unsafe behavior, 4 = did it this way before without adverse consequences), <b>Job Factors</b> (5 = lack of or inadequate procedure, 6 = inadequate communication of expectations or procedure, 7 = inadequate tools or equipment) or <b>External Factors</b> ). 1. 2. 3. 4.		
For Each Possible Cause Listed Above, Reply "Why" or "Why not" the Cause Occurred. 1. 2. 3. 4.		
<b>Corrective Action(s) for Each Cause - List Person(s) Responsible and Target Date:</b> 1. 2. 3. 4.		
Investigation Team Members:		
Approval (Individual Involved/Injured):		Date:
Signature:		Date:
Supervisor Approval (Print Name):		Date:
Signature:		Date:

# **RA HEALTH AND SAFETY PLAN**

## **ATTACHMENT G**

### **PRE-DRILLING/SUBSURFACE CHECKLIST FOR INTRUSIVE FIELDWORK**

# RA HEALTH AND SAFETY PLAN

## PREDRILLING/SUBSURFACE CHECKLIST FOR INTRUSIVE FIELDWORK

Site Name: \_\_\_\_\_ Job Number: \_\_\_\_\_  
 Site Phone Number: \_\_\_\_\_  
 Site Address: \_\_\_\_\_ County: \_\_\_\_\_  
 Client Proj. Mgr.: \_\_\_\_\_ Phone: \_\_\_\_\_  
 Site Manager Contacted Date: \_\_\_\_\_ By: \_\_\_\_\_  
 Site Drawings (yes / no / NA) \_\_\_\_\_ (please attach) Historical Drawings (yes / no / NA) \_\_\_\_\_  
 Third Party Construction/Redevelopment Plans ( Yes/No/NA) \_\_\_\_\_

\*\*\*ATTACH SITE FIGURE WITH PROPOSED BORING LOCATIONS

Subcontractor's (drillers, concrete, etc...) Company \_\_\_\_\_  
 Subcontractor's Contact Person \_\_\_\_\_ Phone \_\_\_\_\_  
 Meeting / Start Date \_\_\_\_\_ Time \_\_\_\_\_

1) Health and Safety Signoff Form Completed? (Yes/No) Date \_\_\_\_\_

2) Utility Protection Services (Minimum 48 Hrs. Advance Notice, State Specific Notification Period Supercedes)  
 Called: Date \_\_\_\_\_ Time \_\_\_\_\_ Initials \_\_\_\_\_  
 Reference # \_\_\_\_\_  
 Proposed Drilling Locations Premarked for Locating Service. Y / N

3) Private or In-House Utility Locating Service Performed? Y / N \_\_\_\_\_  
 Called: Date \_\_\_\_\_ Time \_\_\_\_\_ Initials \_\_\_\_\_  
 Name of Locating Service: \_\_\_\_\_  
 Telephone #/ contact: \_\_\_\_\_  
 Name of Supplier Locating Technician: \_\_\_\_\_  
 Type of sensing equipment used: \_\_\_\_\_  
 Proposed Drilling Locations Premarked Y / N

4) Other Potential Underground Structures  
 Name of City Engineer/Utility Representative: \_\_\_\_\_  
 Telephone #: \_\_\_\_\_  
 Date Notified \_\_\_\_\_ Maps: Y / N  
 Cleared: Y / N

5) COMPLETED SITE WALKOVER W/ SITE MANAGER/DESIGNEE OR OWNER/TENANT REP. Y / N  
 Name of Site Manager: \_\_\_\_\_  
 Name of Property Owner/Tenant Representative: \_\_\_\_\_  
 Cleared: Yes / No  
 Building Utility Service Line Connections Identified: Y / N  
 (Hand sketch on site map w/proposed boring locations and most likely utility trench locations)

6) Utility Inventory: Y / N

Utility	Name	Depth (ft) (If Available)	Phone	Notified - Date	Marked
<u>Above Ground Services</u>					
Electric	_____	NA	_____	Y / N _____	Y / N
Telephone	_____	NA	_____	Y / N _____	Y / N
Cable	_____	NA	_____	Y / N _____	Y / N
Overhead Supports	_____	NA	_____	Y / N _____	Y / N
Traffic light cables	_____	NA	_____	Y / N _____	Y / N

# RA HEALTH AND SAFETY PLAN

## PREDRILLING/SUBSURFACE CHECKLIST FOR INTRUSIVE FIELDWORK

6) Utility Inventory Continued:

**Below Ground Services:**

Electric	_____	_____	_____	_____	Y / N _____	Y / N _____
Telephone	_____	_____	_____	_____	Y / N _____	Y / N _____
Cable	_____	_____	_____	_____	Y / N _____	Y / N _____
Gas	_____	_____	_____	_____	Y / N _____	Y / N _____
Water	_____	_____	_____	_____	Y / N _____	Y / N _____
UST System	_____	_____	_____	_____	Y / N _____	Y / N _____
Storm	_____	_____	_____	_____	Y / N _____	Y / N _____
Sanitary	_____	_____	_____	_____	Y / N _____	Y / N _____
Steam	_____	_____	_____	_____	Y / N _____	Y / N _____
Pipeline Companies	_____	_____	_____	_____	Y / N _____	Y / N _____

**Other:**

_____	_____	_____	_____	_____	Y / N _____	Y / N _____
_____	_____	_____	_____	_____	Y / N _____	Y / N _____
_____	_____	_____	_____	_____	Y / N _____	Y / N _____

7) Site-Specific Emergency Contingency Plan Incorporated in Health & Safety Plan Y / N

8) Drilling Locations Approved by Client Project Manager Named Above? Y / N

9) Signature of Parsons' Project Mgr. (required to begin fieldwork):

\_\_\_\_\_  
Name of Project Manager

\_\_\_\_\_  
Signature of Project Manager

\_\_\_\_\_  
Name of Parsons Field Personnel

\_\_\_\_\_  
Signature of Field Personnel

(This document to be included with the site H&S Plan and should be available upon request.)

**ADDITIONAL COMMENTS / NOTES:**

# **RA HEALTH AND SAFETY PLAN**

## **APPENDIX A**

### **CONTRACTOR HEALTH AND SAFETY PLANS**

CONTRACT 1 – D.A. COLLINS CONSTRUCTION CO., INC

CONTRACT 2 – RAILWORKS TRACK SERVICES, INC..



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**CONTRACTOR HEALTH AND SAFETY PLAN (HASP)**

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*Prepared For:*

**General Electric Company**

Hudson River Sediment Remediation Project.

381 Broadway, Building 40-2

Fort Edward, NY 12828

*Prepared By:*

D.A. Collins Construction Company, Inc.

238 Bay Street, P.O. Box 3202

Glens Falls, NY 12801

**REVIEWED AND APPROVED BY:**

Project Manager:

  
\_\_\_\_\_

1/24/07  
Date

Technical Manager:

  
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1/16/07  
Date

**January 16, 2007**

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**Contractor Health & Safety Plan (HASP)**

**1.0 RESPONSIBILITY/IDENTIFICATION OF KEY LINE PERSONNEL**

Contractor: D.A. Collins Construction Co., Inc.  
Address: 238 Bay Street – Glens Falls, NY 12801  
Telephone: 518-792-5864 Email: [jwalsh@dacollins.com](mailto:jwalsh@dacollins.com)  
Company Executive responsible for project: John Healy, Contact No. 518-664-9855  
V.P.

Manager/Superintendent: Kevin Chandler Contact No. 518-792-5864

Safety Representative/Manager: Dave Getman Contact No. 716-827-0700

Key Foreperson or forepersons: Contact No.  
Randy Rathburn 518-792-5864  
Eric Baker 518-792-5864  
Gary Hernigle 518-664-9855

Client Project Management POC: John Walsh Contact No. 518-792-5864

These personnel have the authority and responsibility for implementing the provisions of this program for:

<b><u>Project Site Location</u></b>	<b><u>On-site Contact No.</u></b>
Process Facility (construction)	TBD
Marina (construction)	TBD

All managers and supervisors are responsible for implementing and maintaining the Contractor HASP in their work areas and for answering worker questions about the Contractor HASP. A copy of this Contractor HASP is available from each manager and supervisor.

## **2.0 STATEMENT OF CONTRACTOR'S SAFETY AND HEALTH POLICY**

### **D.A. COLLINS CONSTRUCTION COMPANY, INC. MANAGEMENT COMMITMENT AND EMPLOYEE INVOLVEMENT**

**To: All D.A. Collins Construction Company, Inc., personnel, contractors, vendors, consultants and anyone else doing business with the above company or on our premises:**

We have developed a safety policy dealing with safe and healthful work and working conditions.

These are clearly stated so that all personnel with responsibility for the site understand that the safety and health of our employees is the top priority of **D.A. Collins Construction Company, Inc.**,

The goal of providing a safe workplace has been established for **D.A. Collins Construction Company, Inc.**, and our objectives for meeting that goal are outlined in the following Site Specific Safety Plan. It is the responsibility of all members of this company to understand the results desired and the measures planned for achieving them.

Top management has been assigned involvement in implementing the program so that they will understand that **D.A. Collins Construction Company, Inc.**, commitment to a safe workplace, is a serious one.

There are assignments of responsibilities for all aspects in the attached company Safety & Health Program, so that managers, supervisors and employees in all levels of the organization know what is expected of them.

**D.A. Collins Construction Company, Inc.**, is the authority to procure the necessary resources in order to carry out the objectives of our company's Safety & Health Program. We will hold managers, supervisors and employees accountable for meeting their responsibilities so those essential tasks will be performed.

An annual review of program operations to evaluate their success in meeting the goal and objective of our company will be held so that deficiencies can be identified and the program and/or objectives can be revised to correct the identified deficiencies.

**Contractor Health & Safety Plan (HASP)**

**3.0 IDENTIFICATION OF COMPETENT/QUALIFIED PERSONS**

Name	Job Title	CSP, CHST, OSHA 30-hr Construction Safety certification	CPR/FA certification expires	8-hr Defensive Driving course	Competent Person training (i.e. confined space, scaffold, excavation, etc)
John Walsh	Project Manager	OSHA 30-hr: 1/18/07	01/09		
Anthony Leerkes	Project Engineer	OSHA 30-hr: 1/18/07	01/09		
Rich Robinson	Job Engineer	OSHA 30-hr: 1/18/07	01/09		
Patrick Cummings	Job Engineer	OSHA 30-hr: 1/18/07	01/09		
Joe Stadelmeyer	Job Engineer	OSHA 30-hr: 1/18/07	01/09		Fall Protection - 3/03/06
Kevin Chandler	General Superintendent	OSHA 30-hr: 1/18/07	01/09		Excavation - 3/28/00, Fall Protection - 3/4/04, Scaffolding - 2/28/06
Gary Hernigle	Structural Superintendent	OSHA 30-hr: 1/18/07	01/09		Excavation - 3/03/06, Fall Protection - 3/06/96
Eric Baker	Earth Work Superintendent	OSHA 30-hr: 1/18/07	01/09		Excavation - 2/08/99, Fall Protection - 3/06/96
Randy Rathburn	Utilities Superintendent	OSHA 30-hr: 1/18/07			Excavation - 2/27/06, Fall Protection - 2/27/06, Scaffolding - 2/28/06, Confined Space - 2/27/06
Jim Meyers	Structural Superintendent	OSHA 30-hr:		-	Fall Protection - 3/06/96, Excavation - 3/04/05
Frank Staley	Structural Superintendent	OSHA 30-hr: 1/18/07			Fall Protection - 3/04/04, Excavation - 3/4/05, Confined Space - 3/01/06
David Getman	SSO	CSP	01/09		
Jim Lint	SSO	CHST & CSP 30 hr OSHA 2/27/07	01/09		

**Contractor Health & Safety Plan (HASP)**

Name	Job Title	CSP, CHST, OSHA 30-hr Construction Safety certification	CPR/FA certification expires	8-hr Defensive Driving course	Competent Person training (i.e. confined space, scaffold, excavation, etc)
Trena Hedges	SSR	30 hr OSHA 2/27/07	01/09	1/07	10 hr OSHA 2/06
James Moore	SSR	30 hr OSHA 2/27/07	01/09	11/06	10 hr OSHA 1/07
Nicholas Getty	SSR	30 hr OSHA 2/27/07	01/09	3/06	10 hr OSHA 11/04
Mark Dziarnowski	SSR	30 hr OSHA 4/05	01/09	2006	10 hr OSHA 2/04
Drew Hillery	SSR	30 hr OSHA GI Trainer 10/06	01/09	Safe Driver Instructor 11/05	
Ted Casey	SSR	30 hr OSHA Trainer 1/07	01/09		
Garret Schmidbauer	SSR	OSHA 30-hr: Trainer 2/05	01/09	N/A	Advanced Steel Erection 2/05
Jonathan Connors	SSR	30 hr OSHA	01/09		

- 30-hour OSHA Construction Safety certification – required for site supervisory personnel and SSRs.
- One Day (8-hours) Hands-on Defensive driving certification – required for personnel operating any type of vehicle on site, or for personnel operating motor vehicles off-site for project related purposes (other than driving to and from a place of residence for work).
- Excavation Competent Person certificate – required for daily inspections of excavations greater than 4 feet in depth, the adjacent areas, and protective systems for evidence of a situation that could result in possible cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions. An inspection shall be conducted by the competent person prior to the start of work and as needed throughout the shift. Inspections shall also be made after every rainstorm or other hazard increasing occurrence. These inspections are only required when employee exposure can be reasonably anticipated.
- Scaffold Competent Person certificate – required for personnel to inspect scaffolds and scaffold components for visible defects before each work shift, and after any occurrence which could affect a scaffold's structural integrity. Personnel shall also determine whether it is feasible or would pose a greater hazard to provide, and have employees use a safe means of access. This determination shall be based on site conditions and the type of scaffold being erected or dismantled.

## ***Contractor Health & Safety Plan (HASP)***

- CPR/First Aid certification – required for at least two individuals in each work area during every shift, including each individual barge/dredge. Where AEDs are required, at least two individuals must be trained in its use.
- Confined Space Entry (Supervisor) certificate – the employer shall ensure that each entry supervisor knows the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure. Verifies, by checking that the appropriate entries have been made on the permit, that all tests specified by the permit have been conducted and that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin. Terminates the entry and cancels the permit as necessary. Verifies that rescue services are available and that the means for summoning them are operable. Removes unauthorized individuals who enter or who attempt to enter the permit space during entry operations. Determines, whenever responsibility for a permit space entry operation is transferred and at intervals dictated by the hazards and operations performed within the space that entry operations remain consistent with terms of the entry permit and that acceptable entry conditions are maintained.

### **4.0 SCOPE OF WORK EVALUATION**

Facility Site Work consists of building the infrastructure for the processing facility. This work consists of but is not limited to: clearing and grubbing of the site, excavation and embankment to bring the site to grade. Construction of utilities including storm drainage, sanitary piping, potable water piping and electrical duct installation. Construction of storage handling foundations, site retaining walls and wharf structure for material transfer. Installation of a main access road consisting of approximately 2 miles of roadway as well as culverts and a temporary bridge at the Feeder Canal. Final site preparation of roadways and working surfaces by installing asphalt and concrete pavement, as well as fence and guiderail.

For this scope of work, there will be lower tier subcontractors. Each lower tier subcontractor shall complete a Contractor Safety Evaluation package for review and approval by the Construction Manager before being permitted to work on the project.

### **5.0 HAZARD/RISK/EXPOSURE ASSESSMENT**

All D.A. Collins employees and subcontractors involved with this project will be briefed on the hazards and risk associated with our activities. In addition, all subcontractors will comply with D.A. Collins' safety policies and this Contractor HASP. Major hazards or risks and exposures associated with the scope of work are listed below.

- Clear and grub – This task will involve working around mobile equipment. Hazardous activities include striking underground utilities, material falling from trucks during the loading process, backing over objects, damage caused to hoe, or the hoe tipping when struck by or swinging.
- Excavation and embankment – This task will potentially expose the workers to being struck by equipment, tipping over on slopes, and striking underground utilities.



## *Contractor Health & Safety Plan (HASP)*

- Trenching, backfilling and compaction – Hazards include coming in contact with underground utilities, water in trenches which could make trench walls unstable causing possible cave-ins, being pinched between the side of the trench and the compactor, and working around heavy, mobile equipment.
- Pipe installation – Hazardous activities include rigging failure, falling loads, and working around heavy equipment.
- Pile driving – Hazards include burning, arc flashes, shock, noise, overhead lifting, cranes tipping over, coming in contact with overhead power lines and/or underground utilities.
- On-river work – mooring and dock installation involve hazards of pile driving, as well as the potential for falling into water and drowning.
- Rock excavation – Contractor task hazards include noise from using a blaster, being struck by heavy equipment, and coming in contact with underground utilities.
- Precast manholes and structures – Construction hazards involve falling objects, being pinched between structure and side of trench box, being struck by equipment and contact with overhead wires.
- Concrete foundation construction – Personal hazards include coming in contact with moving equipment and overhead wires, cuts, concrete splatter and burns, electrical tools and energy, noise, lifting, and striking metal on metal.
- Reinforcing installation – Protection is needed from cuts, lifting, or being struck by forklifts/cranes.
- Geosynthetic fabric and liner installation – Equipment hazards include ATV use. This task will also expose the workers to back strain, muscle strain, burns, hand injuries.
- Bituminous pavement – Hazards involve hot asphalt, muscle strains from shoveling, loose material/equipment/spray cans falling into the paver, the body of the truck striking overhead wires, being caught between equipment or being run over.
- Portland cement pavement – Preventative measures need to be taken from back strain, dust/silica exposure, concrete splatter and burns, hand injuries, using electric tools, and tripping.
- Structural steel erection – Hazardous actions involve falling, lifting equipment failure or tipping, power/hand tools, being struck by equipment, being pinched, and coming in contact with overhead wires.
- Fencing – Protection is required from cuts, muscle strain, noise, underground utilities and air hose and fitting.
- Guide Rails – Coming in contact with underground utilities, back strain, hand injuries including pinching of the fingers, and being struck by mobile equipment are all hazards associated with this job task.
- Topsoil and seeding – Hazards connected to this job task include back strain, noise, working around mobile equipment and tipping of equipment.

## *Contractor Health & Safety Plan (HASP)*

### **6.0 CONTROL MEASURES/ACTIVITY HAZARD ANALYSIS**

An Activity Hazard Analysis (AHA) for each of the activities listed in Section 5.0 is provided in the Appendix.

### **7.0 CONTRACTOR PERIODIC SAFETY INSPECTIONS/AUDITS**

Periodic inspections to identify and evaluate on-going workplace hazards shall be performed by the following competent persons or observers in the following areas of our workplace:

<u>Competent Person/Observer</u>	<u>Area of Expertise/Responsibility</u>
Trena Hedges	Excavation, Scaffolding , Fall protection, Manlifts, Material Handling, Hazardous energy, Confined space
Mark Dziarnowski	Excavation, Scaffolding , Fall protection, Manlifts, Material Handling, Hazardous energy, Confined space
Nicholas Getty	Excavation, Scaffolding , Fall protection, Manlifts, Material Handling, Hazardous energy, Confined space
Garrett Schmidbauer	Excavation, Scaffolding , Fall protection, Manlifts, Material Handling, Hazardous energy, Confined space
Jon Connors	Excavation, Scaffolding , Fall protection, Manlifts, Material Handling, Hazardous energy, Confined space
David Getman	Excavation, Scaffolding , Fall protection, Manlifts, Material Handling, Hazardous energy, Confined space

Periodic inspections are performed according to the following schedule:

- Weekly
- When we initially established our Contractor HASP;
- When new substances, processes, procedures or equipment which present potential new hazards are introduced into our workplace;
- When new, previously unidentified hazards are recognized;
- When occupational injuries and illnesses occur;

## ***Contractor Health & Safety Plan (HASP)***

- When we hire and/or reassign permanent or intermittent workers to processes, operations, or tasks for which a hazard evaluation has not been previously conducted; and
- Whenever workplace conditions warrant an inspection.

Periodic inspections consist of identification and evaluation of workplace hazards.

### **8.0 CONTRACTOR RISK MITIGATION TWO-WEEK LOOK-AHEAD PLANNING SUBMISSION**

The Risk Mitigation Two-Week Look-Ahead Form in Appendix B is used to plan risk mitigation strategies at weekly progress meetings. Great Lakes Environmental & Safety Consultants will be responsible for preparation and submission.

### **9.0 COMPLIANCE REQUIREMENTS POLICY**

Management is responsible for ensuring that all safety and health policies and procedures are clearly communicated and understood by all employees. Managers and supervisors are expected to enforce the rules fairly and uniformly.

All employees are responsible for using safe work practices, for following all directives, policies and procedures, and for assisting in maintaining a safe work environment.

Our system of ensuring that all workers comply with the rules and maintain a safe work environment includes:

- Informing workers of the provisions of our Contractor HASP and the Master HASP;
- Evaluating the safety performance of all workers;
- Recognizing employees who perform safe and healthful work practices;
- Providing training to workers whose safety performance is deficient;
- Disciplining workers for failure to comply with safe and healthful work practices; and

### **10.0 WRITTEN PROGRESSIVE DISCIPLINARY PROGRAM**

The D. A. Collins Progressive Disciplinary program is included in Appendix C.

### **11.0 HAZARD CORRECTION POLICY**

Unsafe or unhealthy work conditions; practices or procedures shall be corrected in a timely manner based on the severity of the hazards. Hazards shall be corrected according to the following procedures:

- When observed or discovered;

## ***Contractor Health & Safety Plan (HASP)***

- When an imminent hazard exists which cannot be immediately abated without endangering employees or property, we will remove all exposed workers from the area except those necessary to correct the existing condition. Workers necessary to correct the hazardous condition shall be provided with the necessary protection; and
- All such actions taken and dates they are completed shall be documented on the appropriate forms.

### **12.0 TRAINING AND INSTRUCTION POLICY**

All workers, including managers and supervisors, shall have training and instruction on general and job-specific safety and health practices. Training and instruction shall be provided as follows:

- When the Contractor HASP is first established;
- To all new workers;
- To all workers given new job assignments for which training has not previously provided;
- Whenever new substances, processes, procedures or equipment are introduced to the workplace and represent a new hazard;
- Whenever the employer is made aware of a new or previously unrecognized hazard;
- To supervisors to familiarize them with the safety and health hazards to which workers under their immediate direction and control may be exposed; and
- To all workers with respect to hazards specific to each employee's job assignment.

Workplace safety and health practices for all locations include, but are not limited to, the following:

- Explanation of the employer's Contractor HASP, the Hudson River PCBs Superfund Site Remedial Action Health and Safety Plan (RA HASP) Phase 1 Facility Site Work Construction, emergency action plan and fire prevention plan, and measures for reporting any unsafe conditions, work practices, injuries and when additional instruction is needed.
- Use of appropriate clothing, including gloves, footwear, and personal protective equipment.
- Information about chemical hazards to which employees could be exposed and other hazard communication program information.
- Availability of toilet, hand-washing, and drinking water facilities.
- Provisions for medical services and first aid including emergency procedures.

In addition, we provide specific instructions to all workers regarding hazards unique to their job assignment, to the extent that such information was not already covered in other training.

### **13.0 PROJECT SITE EMPLOYEES ORIENTATION PROGRAM SUBJECTS**

As a condition of working on a remediation project involving the potential for exposure to hazardous substances and health hazards, our workers will receive information about the following subjects:

- Names of personnel responsible for site safety and health
- Reporting emergencies, incidents and unsafe conditions
- Emergency/evacuation plans
- Safety, health and other hazards at the site
- Review of all activities on site and related Activity Hazard Analyses (AHAs)
- Proper use of personal protective equipment
- Work practices by which a worker can minimize risk from hazards
- Safe use of engineering controls and equipment on site
- Acute effects of compounds at the site
- Decontamination procedures

In addition to the above-mentioned information, we also orient our employees on:

- Client and/or Construction Manager (CM) safety requirements
- The employer's code of safe practices – good housekeeping
- Road and highway safety practices – flagging, traffic control
- Heavy equipment operation – cranes, excavators, articulating dump trucks, etc
- Driver safety - defensive driving, operation of pick-up trucks and ATVs
- Ladder safety
- Fire prevention
- Cleaning, repairing, servicing and adjusting equipment and machinery
- Proper use of powered tools
- Guarding of belts and pulleys, gears and sprockets, and conveyor nip points
- Machine, machine parts, and prime movers guarding
- Lockout/tagout procedures
- Materials handling.
- Chainsaw and other power tool operation.
- Unsafe weather conditions – lightning, high winds
- Mobilization/demobilization – yard operations, running lines, etc.

## ***Contractor Health & Safety Plan (HASP)***

- Landing and loading areas - release of rigging, landing layout, moving vehicles and equipment, truck locating, loading and shipping
- Use of elevated platforms – condors, aerial lifts and scissor lifts
- Ergonomic hazards - proper lifting techniques
- Personal protective equipment
- Hazardous chemical exposures
- Hazard communication
- Scaffolds - safe use and erection/dismantling
- Physical hazards - heat and cold stress, noise, and ionizing and non-ionizing radiation
- Biological hazards – poisonous plants/vegetation, animals, bloodborne pathogens, etc.

### **14.0 EMPLOYEE COMMUNICATION SYSTEM AND POLICY**

We recognize that open, two-way communication between management and staff on health and safety issues is essential to an injury-free, productive workplace. The following system of communication is designed to facilitate a continuous flow of safety and health information between management and staff in a form that is readily understandable and consists of one or more of the following checked items:

- New worker orientation including a discussion of safety and health policies and procedures.
- Review of our Contractor HASP and the RA HASP.
- Workplace safety and health training programs.
- Regular weekly and daily safety meetings.
- Effective communication of safety and health concerns between workers and supervisors, including translation where appropriate.
- Posted or distributed safety information.
- A system for workers to anonymously inform management about workplace hazards.
- A labor/management safety and health committee that meets regularly, prepares written records of the safety and health committees meetings, reviews results of the periodic scheduled inspections, reviews investigations of accidents and exposures and makes suggestions to management for the prevention of future incidents, reviews investigations of alleged hazardous conditions, and submits recommendations to assist in the evaluation of employee safety suggestion.

### **15.0 RECORDKEEPING POLICY**

We have taken the following steps to document implementation of our Contractor HASP:

## ***Contractor Health & Safety Plan (HASP)***

- Records of hazard assessment inspections, including the persons conducting the inspection, the unsafe conditions and work practices that have been identified and the action taken to correct the identified unsafe conditions and work practices, are recorded on a hazard assessment and correction form
- Documentation of safety and health training for each worker, including the worker's name or other identifier, training dates, types of training, and training providers are recorded on a worker training and instruction form.
- Other records are retained as required by contract specifications or by local, state or federal (OSHA regulations). Where regulations do not specify the length of records retention, a period of three years after project completion will be used.

### **16.0 INCIDENT/NEAR-MISS INCIDENT INVESTIGATIONS POLICY**

All injuries and illnesses, however minor, will be reported to the site supervisor immediately. The site supervisor will complete an Incident/Near-Miss Investigation Report and submit it to the PSM and the appropriate SSR within 24 hours.

Near-miss incidents are situations in which no injury or property damage occurred, but under slightly different circumstances an injury or property damage could have occurred. Near misses are caused by the same factors as injuries; therefore, they must be reported on the Incident/Near-Miss Investigation Report and investigated in the same manner.

Procedures for investigating workplace incidents and near-miss incidents also include:

- Responding to the incident scene as soon as possible;
- Reporting incidents and near-miss incidents immediately to the appropriate CM point-of-contact
- Interviewing injured workers and witnesses;
- Examining the workplace for factors associated with the incident/near-miss incident;
- Determining the cause of the incident/near-miss incident;
- Taking corrective action to prevent the incident/near-miss incident from reoccurring;
- Recording the findings and corrective actions taken; and
- Post-accident substance abuse testing.

The Incident/Near Miss Investigation Report is included as Attachment 4.

### **17.0 EMERGENCY ACTION PLAN**

D.A. Collins will follow the alarm signal system established for the site for emergency and evacuation purposes and will relay this system to all visitors, employees, subcontractors and other authorized on-site personnel.

## ***Contractor Health & Safety Plan (HASP)***

Alarm signals will be transmitted using an air horn (i.e., fog horn) and bullhorn as needed. The following signals will be used;

Medical Emergency: 3 short, 1-second blasts followed by 3-second delay - repeated till no longer necessary.

Alert: A 5-second blast followed by a 10-second delay – repeated till no longer necessary.

Evacuation: Continuous blast – repeated till no longer necessary.

### **SITE EVACUATION PROCEDURES**

- a. In the event the work site must be evacuated the alarm signal will be given such that all affected individuals are notified of the need to exit immediately and appropriately.
- b. Evacuation will proceed along pre-established routes determined by the SSO/SSR and site manager. The evacuation route will be based on prevailing wind direction and the decontamination exit. Evacuation routes will be amended as determined by site activities.
- c. Initial and amended evacuation routes will be presented to site workers and visitors during the daily safety meetings.
- d. Each evacuation route will terminate in a pre-designated assembly area where workers and other on-site personnel will gather. Workers and other authorized site personnel will be assigned to an assembly area.
- e. Each assembly area will have an assigned emergency coordinator who will be responsible for identifying each person in the area. The coordinator will identify unaccounted for personnel who will then alert the site manager. This information will be passed on rescue or emergency response personnel.

### **18.0 SITE-SPECIFIC MEDICAL EMERGENCY PLAN**

This section describes the actions to be taken in event of personal injury and catastrophic event such as chemical release or fire.

In the event of a medical emergency, call **911**.

#### Emergency Call-out List

In the event of an emergency, medical or otherwise, the following D.A. Collins individuals are to be contacted:

<u>Name</u>	<u>Cell Phone #</u>	<u>Work Phone #</u>
Kevin Chandler; Manger/Superintendent		(518)792-5864
John Walsh; Project Manger		(518)792-5864
John Overhiser, Safety Director	(518) 857-9210	(518)580-0300



**Contractor Health & Safety Plan (HASP)**

**1. ROUTE TO THE HOSPITAL**

- a. Notify the hospital to determine if they can handle emergencies involving hazardous chemicals. The contact information is as follows:

**100 Park Street Glens Falls, New York 12801  
Info: (518) 926-1000**

- b. Post in conspicuous places in the Support Zone a map with written directions to the nearest hospital or emergency treatment facility. See Figure 5 below entitled “Directions to Glens Falls Hospital”.

**2. PERSONAL INJURY RESPONSE PLAN**

- a. In cases of personal injuries, the injured person or the crew personnel in charge will notify the SSO/SSR. The SSO/SSR will assess the seriousness of the injury, and give first aid treatment if advisable. Consult by telephone with a physician if necessary, and arrange for hospitalization if required.
- b. Wrap the injured person in blankets if soiled clothing cannot be removed for transportation to the hospital.
- c. Flush the personnel, including unauthorized personnel, having skin contact with chemically contaminated liquids or soils with water after any wet or soiled clothing has been removed. These personnel should be observed by the SSO/SSR 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 the consulting physician. All episodes of obvious chemical contamination will be reviewed by the SSO/SSR in order to determine whether changes are needed in work procedures.
- d. For first aid and non-serious injuries requiring medical attention, employees will go to:

<b>Non-Emergency Treatment Facilities</b>	<b>Address</b>	<b>Phone #</b>	<b>Alternate #</b>
Saratoga Care / Wilton Medical Arts	3040 Route 50 Saratoga Springs, NY 12866	518-580-2296	
Center for Occupational Health Glens Falls Hospital	2 Broad Street Plaza Glens Falls, NY 12801	518-926-2140	

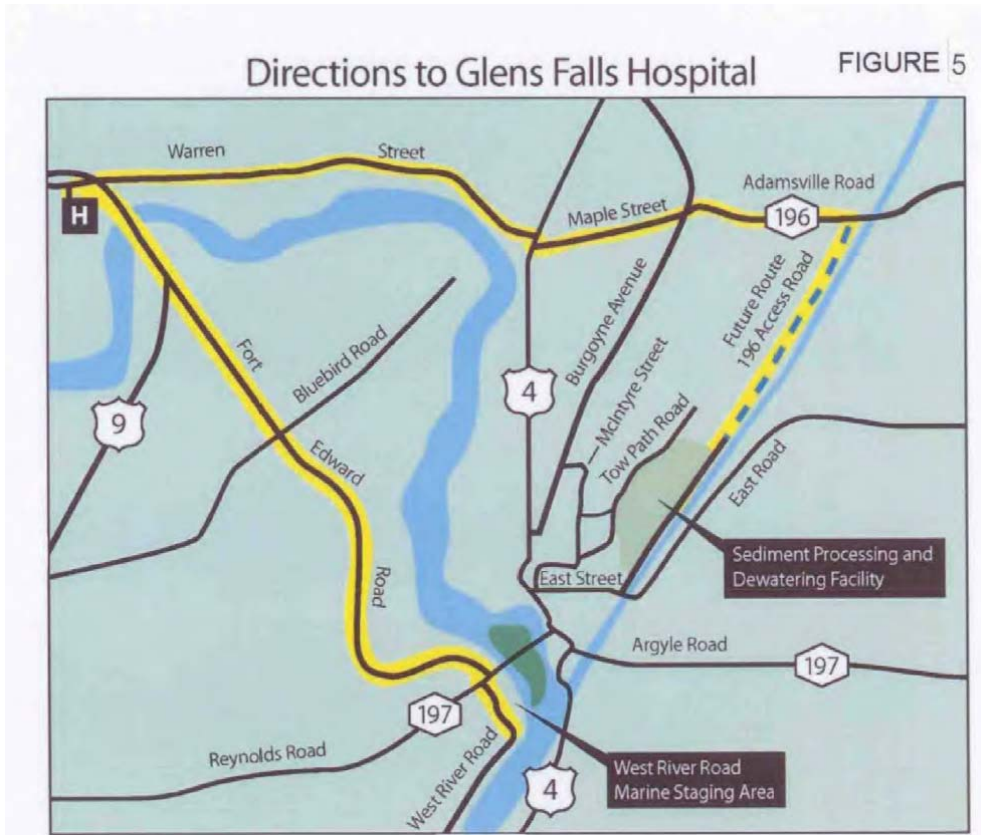
**3. EMERGENCY EQUIPMENT/FIRST AID REQUIREMENTS**

- a. D.A. Collins will maintain a fully-stocked first aid kit, including an AED, on site at all times. Furthermore, at least two individuals, trained in First Aid/ CPR will be present whenever work crews are on-site. All first aid kits will meet requirements of 29 CFR 1910.151.

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### Emergency Shower and Emergency Eye Wash

D.A. Collins will supply and maintain one portable eyewash/body wash facility 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.



## 19.0 HAZARD COMMUNICATION PROGRAM

Below is a list of the hazardous chemicals to be used on site. MSDS's for each chemical will be located at the job site trailer. Appendix E is the written Hazard Communication program.

### List of Hazardous Chemicals

- UNLEADED GASOLINE
- DIESEL
- MOTOR OIL
- HYDRAULIC OIL
- ANTIFREEZE
- GREASE
- PIPE JOINT COMPOUND
- FORM OIL
- CURING COMPOUND

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PORTLAND CEMENT  
PAINT, MARKING  
AIRTOOL OIL  
GROUT  
TWO CYCLE OIL  
ABRASIVE CUTTING WHEEL

Any additional chemicals used on site will be added to this list and the MSDS file.

### **20.0 WRITTEN TRENCHING AND SHORING PLAN**

Appendix F contains the written Trenching and Shoring Plan. All trenching and excavation operations deeper than 4 feet shall comply with OSHA Standard 29 CFR1926.652 under the direction of a “competent person.” Excavation competent person certificates shall be provided prior to excavation activities.

### **21.0 WRITTEN RESPIRATORY PROTECTION PROGRAM**

Not applicable

### **22.0 OTHER WRITTEN PROGRAMS**

(Other applicable written programs are included in Appendix G)

- JOBSITE BULLETIN BOARD CHECKLIST
- FIRE AND FIRE EXTINGUISHERS
- LOCKOUT/ TAGOUT PROGRAM
- MATERIAL HANDLING
- PERSONAL PROTECTIVE EQUIPMENT
- POISONOUS PLANTS
- RABIES
- TICK CARRIED DISEASE
- CONCRETE AND MASONRY
- FALL PROTECTION
- OVERHEAD WIRES/ UTILITIES SAFETY
- U.F.P.O.
- ACCIDENT REPORTS
- FIVE MINUTE HUDDLE

## *Contractor Health & Safety Plan (HASP)*

### **23.0 LIST OF ATTACHMENTS**

- Periodic Safety/Audit Inspection Record
- Accident Inspection Report Form
- Employee Orientation/Training Record
- Contractors Weekly Safety Planning Submission
- Appendix B - Risk Mitigation Two-Week Look-Ahead Form

**APPENDIX A**

**EMPLOYEE CERTIFICATIONS**

*Applicable Certificates will be provided in this appendix before construction begins.*

**APPENDIX B**

**RISK MITIGATION TWO-WEEK LOOK-AHEAD FORM**

**Risk Mitigation Two-Week Look-Ahead Form**

**Safety plan for  
week ending:** \_\_\_\_\_

**Contractor:** \_\_\_\_\_

**Project/  
Location:** \_\_\_\_\_

**Meeting date:** \_\_\_\_\_

**Plan  
Prepared by:** \_\_\_\_\_

**Dated:** \_\_\_\_\_

**Next Two Weeks Scope of Work:**

**Identified Risks/Exposures/Hazards:**

**Control Measures:**

**Additional Activity Hazards Analysis Required:**

**Subcontractors Mobilizing/Demobilizing:**

**Audit/Inspections Scheduled:**

**Competent Person Changes:**

**Planned Orientation/Training :**

**Recommendations/Comments/Concerns:**

**Note:** This information should be incorporated into the meeting minutes.

**APPENDIX C**

**D.A. COLLINS COMPANY**

**PROGRESSIVE DISCIPLINE PROGRAM**



**D.A. COLLINS COMPANY**

**PROGRESSIVE DISCIPLINE PROGRAM**

This program is designed to ensure full compliance with all company safety policies.

Safety related warnings do not have to be the same type of infraction. In fact, if an employee breaks any three safety rules within a six (6) month period, he or she will be dismissed.

The six-month clock begins the day you receive your first warning notice.

If you are dismissed, you may re-apply for employment six (6) months from the date that you were dismissed.

Any person participating in or allowing a work practice that is deemed to be imminent danger will be dismissed immediately.

Imminent danger is a situation or act that occurs which could result in death or serious injury.

**EXAMPLES OF IMMINENT DANGER:**

1. Working in an area where a fall hazard exists, such as working on a steel beam, without being tied off 100% of the time.
2. Working in a trench greater than 5 feet deep without a shoring system in place, such as a trench box, OR not having the excavation walls sloped or benched properly.

We feel this program will enable us to encourage safe behavior at all times.

**WHO CAN ISSUE A WARNING?**

Superintendents, foreman, or any member of the D.A. Collins Companies management team.

**WHAT IS A WARNING NOTICE?**

A warning notice is a written document that is issued to any employee who has violated a safety rule or practice.

In addition to violating our own safety rules, regulations and practices, other examples of violations that anyone will receive warning notices for could be as follows:

1. Substandard work
2. Tardiness
3. Conduct
4. Safety

## ***Contractor Health & Safety Plan (HASP)***

5. Absence
6. Attitude
7. Disobedience
8. Carelessness

A warning notice will indicate the following items regarding the violation:

1. Date of violation and date of warning notice
2. Time of violation
3. Location of the job, job name and/or job number where the violation took place
4. Number of violation (first, second or final termination)
5. Description of the violation along with the names of any witnesses to the violation
6. Signature of the person issuing the warning notice
7. Signature of the person receiving the warning notice
8. Signature of the safety director or person approving warning notice

### **WHO CAN RECEIVE A WARNING NOTICE?**

Anyone from the CEO to the hourly worker in the field, who is employed by the D.A. Collins Companies. There are no exceptions to the policy.

Everyone employed by these companies is expected to exercise and demonstrate the highest level of safety in the workplace at all times.

### **WHEN SHOULD A WARNING NOTICE BE ISSUED?**

Superintendents, foremen and management team members are directed to issue a warning notice whenever a violation of safety standard has been violated.

It is the people that demonstrate excellent safety practices in the workplace, and those that are able to discipline the people with less enthusiasm for the safe work practices that we want in charge of our jobs.

### **WARNING NOTICES ISSUED BY SUPERINTENDENTS AND FOREMEN:**

Superintendents and foremen are directed and expected to issue warning notices to any employee who is disregarding any safety rules.

All notices will be written and copies will go to:

1. The employee
2. The superintendent's file
3. The safety director

1<sup>st</sup> Notice: The first notice will be a written notice. The employee will then have to attend a meeting with the superintendent, foreman and/or the issuer of the notice to discuss the violation.

2<sup>nd</sup> Notice: The second notice will also be a written notice. The employee will attend a meeting with the foreman, superintendent, issuer of the warning notice, and safety director at the end of the day, to discuss the violation. The employee will receive the next day off without pay.

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3<sup>rd</sup> Notice: Termination of employment.

### **WARNING NOTICES ISSUED TO FOREMEN BY SUPERINTENDENTS:**

Superintendents are directed to write warning notices to Foremen, if they observe:

- a) A foreman allowing an employee to perform an unsafe act
- b) A foreman performing an unsafe act

All notices will be written and copies will go to the:

- 1. Foreman
- 2. Superintendent's file
- 3. Safety Director

1<sup>ST</sup> Notice: The first notice will be a written notice, followed by a meeting with the foreman, superintendent and/or issuer of the warning notice and safety director, at the end of the day.

2<sup>nd</sup> Notice: The second notice will also be a written notice. The foreman will attend a meeting with the superintendent and/or issuer of the warning notice, the safety director and the president of the company, to discuss the violation. They will then be given the next day off without pay.

3<sup>rd</sup> Notice: Termination of employment.

### **WARNING NOTICES ISSUED TO SUPERINTENDENTS BY FOREMEN, OTHER SUPERINTENDENTS OR ANY MEMBER OF THE D.A. COLLINS COMPANIES MANAGEMENT TEAMS:**

## ***Contractor Health & Safety Plan (HASP)***

Superintendents will be issued a warning notice for KNOWINGLY and WILLINGLY allowing an unsafe act to be performed by an employee or performing an unsafe act themselves.

All notices will be written and copies will go to:

- 1 The superintendents
- 2 The safety director
- 3 The president

1<sup>st</sup> Notice: The first warning notice will be a written notice. The superintendent will then have to attend a meeting with the issuer of the warning notice, and the safety director.

2<sup>nd</sup> Notice: The second warning notice will also be a written notice. The superintendent will promptly attend a meeting with the issuer of the warning notice, safety director and president. The superintendent will receive one day off without pay.

3<sup>rd</sup> Notice: Termination of employment.

The D.A. Collins Progressive Discipline Program has been designed to achieve an accident free work place and environment.

Safety is everybody's responsibility. Everyone must maintain a vigilant eye for unsafe conditions and work practices. Such situations should be reported to foremen, superintendents or safety director so that proper corrective action can be taken.

The safety rules we abide by are based on OSHA's Construction Industry Standards and MSHA's Mining Industry Standards. They are not intended to be an all-inclusive list, just some items that can be overlooked on jobsites.

The physical, emotional and economic impacts of a serious injury can be devastating. Therefore, it is paramount that efforts are made to eliminate such accidents in the workplace.

Our companies will perform their work in the safest manner possible consistent with good work practices which will protect the safety and health of its employees, and of all persons exposed to its operations, and will make every effort to prevent accidental losses to human life, equipment, plant and property.

We intend to take any and all necessary steps to carry out this responsibility. Each employee shares in this responsibility to the same extent he or she is involved in our work.

The general instructions and safe work practices we will abide by are made for each of you because it is up to you to follow them and make them work for your own safety and the safety of your fellow workers. Only by complete cooperation of all of us...management, supervision and workers can our effort be successful. The safety rules of this company will be strictly adhered to and enforced.

**APPENDIX D**

**FIRST AID CERTIFICATES**

*Applicable Certificates will be provided in this appendix before construction begins.*

**APPENDIX E**  
**HAZARD COMMUNICATION PROGRAM**

## Hazard Communication Program

### 1. GENERAL:

The purpose of this instruction is to ensure that D.A. Collins is in compliance with the OSHA Hazard Communication Standard (HCS).

The Safety Director, is the overall coordinator of the facility program acting as the representatives of D.A. Collins, who have overall responsibility.

In general, each employee in the facilities will be apprised of the substance of the HCS, the hazardous properties of chemicals they work with, and measures to take to protect themselves from these chemicals.

The OSHA Hazard Communication Standard is also known as the RIGHT TO KNOW LAW. It was created to reduce the number of chemically caused injuries and illnesses by providing employees with information about chemicals, gases and compounds that could cause injuries or illnesses. OSHA feels that if employees are informed of the hazards around them, they can participate in and support the rules and regulations instituted for their protection.

This Hazard Communication Standard requires that manufacturers and distributors of chemicals, gases and compounds provide their customers with detailed information as to the potential health and safety hazards of their product when used in manufacturing or the contracting environment. This Information is provided through the Material Safety Data Sheets and the product labels.

This standard requires employers to inform their employees who are exposed to harmful agents in the workplace of the potential health and safety hazards and to inform them of the precautions necessary to be taken to minimize the risk of accidents and illness due to exposure.

### 2. LIST OF HAZARDOUS CHEMICALS:

**A list of all hazardous chemicals used at the jobsite will be maintained and updated the list as necessary.** The hazardous chemical list will be updated upon receipt of hazardous chemicals at the job site. **The list of hazardous chemicals is maintained with the material safety data sheets.**

### 3. MATERIAL SAFETY DATA SHEETS:

Superintendents will maintain an MSDS file on every substance on the list of hazardous chemicals at their job sites. The MSDS will consist of a fully completed OSHA Form 174 or equivalent. MSDSs will be readily available for employee use, and will be located in the job office trailer.

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**Superintendents are responsible for acquiring and updating MSDSs**, will review each MSDS for accuracy and completeness, and will consult with The Safety Director if additional research is necessary. Whenever possible, the least hazardous substance will be procured. MSDSs that meet the requirements of HCS (HazComm Standard) must be fully completed and received at the facility either prior to, or at the time of receipt of the first shipment of any potentially hazardous chemical purchased from a vendor. It may be necessary to discontinue procurements from vendors failing to provide approved MSDSs in a timely manner. The MSDS is a form that provides more detailed information about a chemical than the label. It is located in the Jobsite office and is available for review. The MSDS must contain the following information.

- a. Identity of the chemical
- b. Physical and chemical characteristics of the hazardous chemical
- c. Known acute and chronic health effects and related health information
- d. Exposure limits
- e. Whether the chemical is a known carcinogen
- f. Precautionary measures
- g. Emergency and first aid procedures
- h. Identification of the organization responsible for preparing the M.S.D.S.

### **4. ADDITIONAL INFORMATION FOUND ON THE MSDSs:**

**Chemical Manufacturer's Name** - This will list the manufacturers name and address and an emergency phone number.

**Name of Product** - Generally the trade name that is given by the producer and is protected as a trademark.

**Chemical name** - lists the name of the chemical and is sometimes a trade secret if it is a trade secret the hazardous nature of the chemical must still be listed, both on the label and on the M.S.D.S.

**Health Hazard** - This section is a quick summary of the possible health hazards associated with exposure to the chemicals.

**Emergency First Aid** - This section explains which type first aid is to be applied in case of inhalation, absorption and ingestion.

## **FIRE AND EXPLOSION**

**Flash Point** - Minimum temperature at which a liquid gives off sufficient vapor to form, with air, an ignitable atmosphere.

**Extinguishing Agent** - This explains what type of extinguisher is to be used in case of fire. ABC-WATER-FOAM-OTHER.

**Reactivity** - Reactives are materials which can change violently when combined with certain other materials or conditions. There are few reactives that are used in the construction industry. But knowing of a hazard can help you when you do come into contact with water.

**Oxidizers** add oxygen to any situation where burning is occurring and make the fire more intense and more difficult to control. Some reactives explode or give off gas and heat in air or when contact with water is made.



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Many materials can act like reactives when mixed with incompatible materials. Acids and bases react strongly with each other, giving off heat, often enough to cause boiling and splattering of the mixture. The Materials Safety Data Sheets should tell you what materials may not be compatible with the chemical that you are working with and what other materials you should avoid.

**Protective Equipment** - This section will list what type of Personal Protection is required when working with these various chemical. (I.e. Hardhat, ear protection, eye protection and respiratory protection.)

**Handling and storage** - M.S.D.S. will tell you exactly where to store the material and how to handle it.

**Emergency leaks and spills** will be taken care of immediately and according to this section of the M.S.D.S.

### **5. LABELS AND OTHER FORMS OF WARNING:**

Superintendents are designated to ensure that all hazardous chemicals in the facility are property labeled. Labels should list at least the chemical identity, appropriate hazard warnings, physical and health warnings, and the name and address of the manufacturer, importer or other responsible party. The corresponding MSDS will be used to verify label information, storage information, list of basic protective equipment, emergency first aid procedures and Chemical Abstract Service number (CAS #).

Immediate use containers, small containers into which materials are drained for use on that shift by the employee drawing the material, do not require labeling. To meet the labeling requirements of HCS for other in-house containers, refer to the label supplied by the manufacturer. All in-house containers must be labeled with the identity of the product and the hazard warning.

### **6. TRAINING:**

Employees who work with or are potentially exposed to hazardous chemicals will receive initial training on the HCS and the safe use of those hazardous chemicals upon being hired. Additional training will be provided for employees whenever a new hazard is introduced into their work area. The superintendent or Safety Director will conduct the Hazard Communication Training.

The training elements will emphasize these elements:

- ⇒ a summary of the standard and this written program
- ⇒ hazardous chemical properties including visual appearance and odor and methods that can be used to detect the presence or release of hazardous chemicals;
- ⇒ physical and health hazards associated with potential exposure to workplace chemicals
- ⇒ procedures to protect against hazards, e.g., personal protective equipment, work practices and emergency procedures
- ⇒ hazardous chemical spill and leak procedures; and
- ⇒ where MSDSs are located, how to understand their content, and how employees may obtain and use the appropriate hazard information.

The Safety Director will monitor and maintain records of employee training and advise the facility managers and superintendents on training needs.

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### **7. CONTRACTOR EMPLOYERS**

D.A. Collins will advise outside contractors of any chemical hazards which may be encountered in the normal course of their work on the premises, provide copies of appropriate MSDSs for the contractors use.

#### **NON ROUTINE TASKS:**

Any superintendent or employee contemplating a non-routine task, e.g., boiler repair, etc., will ensure that employees are informed of chemical hazards associated with the performance of these tasks and appropriate protective measures. This will be accomplished by a meeting of supervisors and affected employees before such work is begun.

**APPENDIX F**  
**EXCAVATION & TRENCHING PROGRAM**

## **Excavation & Trenching**

### **1. PURPOSE**

This program outlines procedures and guidelines for the protection of employees working in and around excavations and trenches. This program requires compliance with OSHA Standards described in Subpart P (CFR 1926.650) for the construction industry.

Compliance is mandatory to ensure employee protection when working in or around excavations. The programs in this manual on confined space, hazard communication, lock-out/tag-out, respiratory protection, and any other safety programs or procedures deemed essential for employee protection, are to be used in conjunction with this program.

### **2. SCOPE**

This program pertains to all **company** projects that require any excavations or trenches.

### **3. REFERENCES**

- 29 CFR 1926.650, Subpart P - Excavations

### **4. RESPONSIBILITIES**

It is the responsibility of each superintendent and supervisor to implement and maintain the procedures and steps set forth in this program. Each employee involved with excavation and trenching work is responsible to comply with all applicable safety procedures and requirements of this program.

#### **a. Hazards**

One of the reasons the company requires a competent person on-site during excavation & trenching are the numerous potential hazardous that may be encountered or created. Hazards include:

Electrocution  
Gas Explosion  
Entrapment  
Struck by equipment  
Suffocation

#### **b. Hazard Controls**

Before any work is performed and before any employees enter the excavation, a number of items must be checked and insured:

- Before any excavation, underground installations must be determined. This can be accomplished by either contacting the local utility companies

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or the local "one-call" center for the area. All underground utility locations must be documented on the proper forms. All overhead hazards (surface encumbrances) that create a hazard to employees must be removed or supported to eliminate the hazard.

- If the excavation is to be over 20 feet deep, it must be designed by a registered professional engineer who is registered in the state where work will be performed.
- Adequate protective systems will be utilized to protect employees. This can be accomplished through sloping, shoring, or shielding.
- The worksite must be analyzed in order to design adequate protection systems and prevent cave-ins. There must also be an excavation safety plan developed to protect employees.
- Workers must be supplied with and wear any personal protective equipment deemed necessary to assure their protection.
- All spoil piles will be stored a minimum of four (4) feet from the sides of the excavation. The spoil pile must not block the safe means of egress.
- If a trench or excavation is 4 feet or deeper, stairways, ramps, or ladders will be used as a safe means of access and egress. For trenches, the employee must not have to travel any more than 25 feet of lateral travel to reach the stairway, ramp, or ladder.
- No employee will work in an excavation where water is accumulating unless adequate measures are used to protect the employees.
- A competent person will inspect all excavations and trenches daily, prior to employee exposure or entry, and after any rainfall, soil change, or any other time needed during the shift. The competent person must take prompt measures to eliminate any and all hazards.
- Excavations and trenches 4 feet or deeper that have the potential for toxic substances or hazardous atmospheres will be tested at least daily. If the atmosphere is inadequate, protective systems will be utilized.
- If work is in or around traffic, employees must be supplied with and wear orange reflective vests. Signs and barricades must be utilized to ensure the safety of employees, vehicular traffic, and pedestrians.

### **5. COMPETENT PERSON RESPONSIBILITIES**

The OSHA Standards require that the competent person must be capable of identifying existing and predictable hazards in the surroundings, or working conditions which are unsanitary, hazardous, or dangerous to employees, and have authorization to take prompt corrective measures to eliminate them and, if necessary, to stop the work.

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### **A competent person is required to:**

- Have a complete understanding of the applicable safety standards and any other data provided.
- Assure the proper locations of underground installations or utilities, and that the proper utility companies have been contacted.
- Conduct soil classification tests and reclassify soil after any condition changes.
- Determine adequate protective systems (sloping, shoring, or shielding systems) for employee protection.
- Conduct all air monitoring for potential hazardous atmospheres.
- Conduct daily and periodic inspections of excavations and trenches.
- Approve design of structural ramps, if used.

## **6. EXCAVATION SAFETY PLAN**

An excavation safety plan is required in written form. This plan is to be developed to the level necessary to insure complete compliance with the OSHA Excavation Safety Standard and state and local safety standards.

### **Excavation safety plan factors:**

- Utilization of the local one-call system
- Determination of locations of all underground utilities
- Consideration of confined space atmosphere potential
- Proper soil protection systems and personal protective equipment and clothing
- Determination of soil composition and classification
- Determination of surface and subsurface water
- Depth of excavation and length of time it will remain open
- Proper adherence to all OSHA Standards, this excavation and trenching safety program, and any other coinciding safety programs.

### ***Soil Test & Identification***

The competent person will classify the soil type in accordance with the definitions in Appendix A on the basis of at least one visual and one manual analysis. These tests should be run on freshly excavated samples from the excavation and are designed to determine stability based on a number of criteria: the cohesiveness, the presence of fissures, the presence and amount of water, the unconfined compressive strength, the duration of exposure, undermining, and the presence of layering, prior excavation and vibration.

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The cohesion tests are based on methods to determine the presence of clay. Clay, silt, and sand are size classifications, with clay being the smallest sized particles, silt intermediate and sand the largest. Clay minerals exhibit good cohesion and plasticity (can be molded). Sand exhibits no elasticity and virtually no cohesion unless surface wetting is present. The degree of cohesiveness and plasticity depend on the amounts of all three types and water.

When examining the soil, three questions must be asked: Is the sample granular or cohesive? Fissured or non-fissured? What is the unconfined compressive strength measured in TSF?

### **Methods of testing soils:**

- Thumb penetration test: The competent person attempts to penetrate a fresh sample with thumb pressure. If the sample can be dented, but penetrated only with great effort, it is Type A. If it can be penetrated several inches and molded by light pressure, it is Type C. Type B can be penetrated with effort and molded.

The competent person will perform several tests of the excavation to obtain consistent, supporting data along its depth and length. The soil is subject to change several times within the scope of an excavation and the moisture content will vary with weather and job conditions. The competent person must also determine the level of protection based on what conditions exist at the time of the test, and allow for changing conditions.

## **7. EXCAVATION PROTECTION SYSTEMS**

The three basic protective systems for excavations and trenches are sloping and benching systems, shoring, and shields.

The protective systems shall have the capacity to resist without failure all loads that are intended or could reasonably be expected to be applied to or transmitted to the system. Every employee in an excavation shall be protected from cave-ins by an adequate protective system.

- Exceptions to using protective system:
- Excavations are made entirely in stable rock
- Excavations are less than 5 feet deep and declared safe by a competent person

## **8. SLOPING AND BENCHING SYSTEMS**

There are four options for sloping:

- Slope to the angle required by the Standard for Type C, which is the most unstable soil type.

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The table provided in Appendix B of the Standard may be used to determine the maximum allowable angle (after determining the soil type).

- Tabulated data prepared by a registered professional engineer can be utilized.
- A registered professional engineer can design a sloping plan for a specific job.

Sloping and benching systems for excavations five (5) to twenty (20) feet in depth must be constructed under the instruction of a designated competent person.

Sloping and benching systems for excavations greater than twenty (20) feet must be designed and stamped by a registered professional engineer.

Sloping and benching specifications can be found in Appendix B of the OSHA Standard (Subpart P).

### **9. SHIELD SYSTEMS (Trench Boxes)**

Shielding is the third method of providing a safe workplace. Unlike sloping and shoring, shielding does not prevent a cave-in. Shields are designed to withstand the soil forces caused by a cave-in and protect the employees inside the structure. Most shields consist of two flat, parallel metal walls that are held apart by metal cross braces.

Shielding design and construction is not covered in the OSHA Standards. Shields must be certified in design by a registered professional engineer and must have either a registration plate on the shield or registration papers from the manufacturer on file at the jobsite office. **ANY REPAIRS OR MODIFICATIONS MUST BE APPROVED BY THE MANUFACTURER.**

#### **SAFETY PRECAUTIONS FOR SHIELD SYSTEMS**

- Shields must not have any lateral movement when installed.
- Employees will be protected from cave-ins when entering and exiting the shield (examples - ladder within the shield or a properly sloped ramp at the end).
- Employees are not allowed in the shield during installation, removal, or during any vertical movement.
- Shields can be 2 ft. above the bottom of an excavation if they are designed to resist loads at the full depth and if there are no indications of caving under or behind the shield.
- The shield must extend at least 18 inches above the point where proper sloping begins (the height of the shield must be greater than the depth of the excavation).



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- The open end of the shield must be protected from the exposed excavation wall. The wall must be sloped, shored, or shielded. Engineer designed end plates can be mounted on the ends of the shield to prevent cave-ins.

### **10. PERSONAL PROTECTIVE EQUIPMENT**

It is **company** policy to wear a hard hat, safety glasses, and work boots on the jobsite. Because of the hazards involved with excavations, other personal protective equipment may be necessary, depending on the potential hazards present (examples -goggles, gloves, and respiratory equipment).

### **11. INSPECTIONS**

Daily inspection of excavations, the adjacent areas and protective systems shall be made by the competent person for evidence of a situation that could result in a cave-in, indications of failure of protective systems, hazardous atmospheres or other hazardous conditions.

- All inspections shall be conducted by the competent person prior to the start of work and as needed throughout the shift.
- Inspections will be made after every rainstorm or any other increasing hazard.
- All documented inspections will be kept on file in the jobsite safety files and forwarded to the Safety Director weekly.
- A copy of the Daily Excavation Inspection form is located at the end of this program.

### **12. TRAINING**

The competent person(s) must be trained in accordance with the OSHA Excavation Standard, and all other programs that may apply (examples Hazard Communication, Confined Space, and Respiratory Protection), and must demonstrate a thorough understanding and knowledge of the programs and the hazards associated.

All other employees working in and around the excavation must be trained in the recognition of hazards associated with trenching and excavating.

**APPENDIX G**  
**OTHER WRITTEN PROGRAMS**

## **JOBSITE BULLETIN BOARD CHECKLIST**

Worker's Compensation form (C-105) Liberty Mutual Insurance: \_\_\_\_\_

Disability Form: : \_\_\_\_\_

Unemployment Insurance Form: \_\_\_\_\_

Statement of Rights (Form DB 271S) posted in English: \_\_\_\_\_ and Spanish: \_\_\_\_\_

Equal Opportunity-It's the Law: \_\_\_\_\_

Job Safety and Health Protection: \_\_\_\_\_

Race, Creed, Age, Color, Disability, National Origin, Sex or Marital Status: \_\_\_\_\_

Employee Polygraph Protection: \_\_\_\_\_

Minimum Wage Information: \_\_\_\_\_

You Have a Right to Know: \_\_\_\_\_

Form PW-200-Prevailing Wage Rates: \_\_\_\_\_ County of : \_\_\_\_\_

Statement of Policy: Anti Discrimination Policy signed by President of Company: \_\_\_\_\_

Sexual Harassment Policy signed by President of Company: \_\_\_\_\_

EEO in NY Public Contracts-Notice to Labor Unions or other Representatives: \_\_\_\_\_

Designation of Contractors/Subcontractor's Affirmative Action EEO Representative: \_\_\_\_\_

Stop Worker's Compensation Fraud Poster: \_\_\_\_\_

Dot jobs must also have:

USDOT Wage Rate Information, Federal Aid Highway Project (Form FHWS 1495): \_\_\_\_\_

US DOT FHA Forms FHWS 1022: Notice-False Statements are Illegal: \_\_\_\_\_

Other documents on site:

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Site Specific Emergency Plan and Emergency Numbers: \_\_\_\_\_

Emergency First Aid plan: \_\_\_\_\_

Emergency Action plan: \_\_\_\_\_

OSHA 300 Form: \_\_\_\_\_

Number of days worked without a lost time injury board: \_\_\_\_\_

Start date of this job: \_\_\_\_\_

Current Fire extinguishers: \_\_\_\_\_

Current First Aid kits: \_\_\_\_\_

Current Eye wash stations: \_\_\_\_\_

**IF YOU HAVE CORROSIVES OR CAUSTICS ON YOUR JOB, YOU HAVE TO HAVE A STAND UP EYE WASH UNIT CAPABLE OF AUTOMATICALLY FLUSHING THE EYES FOR 15 MINUTES. THE SMALL 4 OZ. AND 8 OZ. BOTTLES ARE ONLY GOOD FOR FLUSHING PARTICLES OUT OF THE EYES OR USING THEM UNTIL THEY CAN REACH THE 15 MINUTE STAND UP UNIT.**

## **FIRE AND FIRE EXTINGUISHERS**

A fire needs an oxidizer, fuel and an ignition source, all three must be present for a fire to occur. There are four different types of fires, they are as follows.

- a. Class A Fire: This consists of normal combustible materials such as paper, cloth, trash and wood. This can be an open flame.
- b. Class B Fire: Flammable liquids, gasoline, oil, paints, grease, or solvents.
- c. Class C Fire: Used on fires involving or surrounding electrical equipment. Never use water on an electrical fire!!!
- d. Class D Fire: Combustible Metals.

**\* Class ABC and BC fire extinguishers can be used on combination fires.**

### **1. EXTINGUISHER USE:**

- a. Pull the pin
- b. Stand about 8 feet from the fire.
- c. Aim carefully at the **BASE OF THE FIRE**.
- d. Squeeze the trigger.

Only work into the fire toward the rear, once flames have been extinguished completely. If the fire looks too big, or is getting out of control, evacuate the area and call the fire department immediately.

### **2. FIRE EXTINGUISHER PLACEMENT:**

**OUTSIDE STORAGE AREAS:** At least one portable fire extinguisher of not less than 20 B units shall be located not less than 25 feet, or more than 75 feet, from any flammable liquid storage area located outside.

Storage of containers (not more than 60 gallons each) shall not exceed 1,100 gallons in any one area.

Groups of containers shall be separated by a 5-foot clearance. Groups of containers shall not be nearer than 20 feet to any building. There shall be a 12 foot wide access way to permit approach of fire control apparatus.

The storage area shall be graded in a manner to divert possible spills away from buildings. Where protection of adjoining property or waterways is accomplished by retaining the liquid around the tank by means of a dike, the volume of the dikes area shall comply with the following requirements:

- a. The volumetric capacity of the diked area shall not be less than the greatest amount of liquid that can be released from the largest tank within the diked area, assuming a full tank.

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Storage areas shall be kept free of weeds, debris, and other combustible material not necessary to the storage.

**STORAGE AREAS CONTAINING MORE THAN 60 GALLONS OF COMBUSTIBLE OR FLAMMABLES:** At least one portable fire extinguisher, having a rating of not less than 20-B units, shall be located outside of, but not more than 10 feet from, the door opening into any room used for storage of flammable or combustible liquid. In every inside storage room, there shall be maintained one clear aisle at least 3 feet wide.

**Note:** Not more than 60 gallons of flammable or 120 gallons of combustible liquids shall be stored in any one storage cabinet. Containers over 30 gallons capacity shall not be stacked one upon the other.

At least one portable fire extinguisher having a rating of not less than 20 B:C units shall be mounted on all tank trucks or other vehicles used for transporting and/or dispensing flammable or combustible liquids.

### **3. OTHER:**

- a. **A fire extinguisher, rated not less than 10B, shall be provided within 50 feet of wherever more than 5 gallons of flammable or combustible liquids or 5 pounds of flammable gas are being used on the jobsite. This requirement does not apply to the integral fuel tanks on motor vehicles.**
- b. Suitable fire extinguishing equipment shall be maintained in the immediate work area.
- c. Fire watchers shall be required whenever welding or cutting is performed in locations where a fire might develop.
- d. Cutting or welding shall not be performed unless the atmosphere is non-flammable and unless combustibles are separated from or protected from fire hazards.
- e. Employees should know where fire extinguishers are located and know how to operate them.
- f. Only approved containers and portable tanks should be used for the storage and handling of flammable and combustible liquids.
- g. **One 2A rated fire extinguisher should be present for every 3,000 square feet of protected building area. Travel distance to the nearest fire extinguisher should not exceed 100'. One 55-gallon open drum of water with two fire pails may be substituted for a fire extinguisher having a 2A rating.**
- h. **Fire fighting equipment should be conspicuously located and a sign posted stating its location.**
- i. Materials should not be stored in front of fire extinguishers. Access to fire fighting equipment should be maintained at all times.
- j. Fire extinguishers will be inspected on a monthly basis and hydrostatically tested on an annual basis.

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- k. No more than 25 gallons of flammable or combustible liquids shall be stored in a room outside of an approved storage cabinet.
- l. Flammable liquids should be kept in closed containers when not actually in use.
- m. Conspicuous and legible signs prohibiting smoking should be posted in service and refueling areas.

## **LOCKOUT/TAGOUT PROGRAM**

### 1910.147 The control of hazardous energy (Lockout/Tagout)

#### 1. Scope:

This standard covers the servicing and maintenance of machines and equipment in which the unexpected energization or start up of the machines or equipment, or release of stored energy could cause injury to employees. This standard establishes minimum performance requirements for the control of such hazardous energy.

This standard does not cover the following:

- (A) Construction, agriculture and maritime employment;
- (B) Installations under the exclusive control of electric utilities for the purpose of power generation, transmission and distribution, including related equipment for communication or metering; and
- (C) Exposure to electrical hazards from work on, near, or with conductors or equipment in electric utilization installations, which is covered by subparts S of this part; and
- (D) Oil and gas well drilling and servicing.

#### 2. Application:

- a. This standard applies to the control of energy during servicing and/or maintenance of machines and equipment.
- b. Normal production operations are not covered by this standard (See subpart O of this part). Servicing and/or maintenance which takes place during normal production operations is covered by this standard only if:
  - (A) An employee is required to remove or bypass a guard or other safety device; or
  - (B) An employee is required to place any part of his or her body into an area on a machine or piece of equipment where work is actually performed upon the material being processed (point of operation) or where an associated danger zone exists during a machine operating cycle.

*NOTE: Exception to paragraph (a)(2)(ii): Minor tool changes and adjustments, and other minor servicing activities, which take place during normal production operations, are not covered by this standard if they are routine, repetitive, and integral to the use of the equipment for production, provided that the work is performed using alternative measures which provide effective protection (See Subpart O of this part)*



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### 3. Purpose:

This section requires employers to establish a program and utilize procedures for affixing appropriate lockout devices or tagout devices to energy isolating devices, and to otherwise disable machines or equipment not prevent unexpected energization, start-up or release of stored energy in order to prevent injury to employees.

When other standards in this part require the use of lockout or tagout, they shall be used and supplemented by the procedural and training requirements of this section.

This standard does not apply to the following:

- (A) Work on cord and plug connected electric equipment for which exposure to the hazards of unexpected energization or start up of the equipment from the energy source and by the plug being under the exclusive control of the employee performing the servicing or maintenance.
- (B) Hot tap operations involving transmission and distribution systems for substances such as gas, steam, water or petroleum products when they are performed on pressurized pipelines, are performed on pressurized pipelines, provided that the employer demonstrates that
  - (1) continuity of service is essential
  - (2) shutdown of the system is impractical and
  - (3) documented procedures are followed, and special equipment is used which will provide proven effective protection for employees.

#### (a) DEFINITIONS APPLICABLE TO THIS SECTION.

**Affected employee.** An employee whose job requires him/her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him/her to work in an area in which such servicing or maintenance is being performed.

**Authorized employee.** A person who locks out or tags out machines or equipment in order to perform servicing or maintenance on that machine or equipment. An affected employee becomes an authorized employee when that employee's duties include performing servicing or maintenance covered under this section.

**Capable of being locked out.** An energy isolating device is capable of being locked out if it has a hasp or other means of attachment to which or through which, a lock can be affixed, or it has a locking mechanism built into it. Other energy isolating devices are capable of being locked out, if lockout can be achieved without the need to dismantle, rebuild, or replace

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the energy-isolating device or permanently alter its energy control capability.

**Energized.** Connected to an energy source or containing residual or stored energy.

**Energy isolating device.** A mechanical device that physically prevents the transmission or release of energy, including but not limited to the following:

A manually operated electrical circuit breaker; a disconnect switch; a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors, and, in addition, no pole can be operated independently; a line valve; a block; and any similar device used to block or isolate energy. Push buttons, selector switches and other control circuit type devices are not energy isolating devices.

**Energy source:** Any source of electrical (when current runs through wires or cables), mechanical (stored or built up energy in springs), hydraulic (when a liquid moves through pipes or hoses), pneumatic (in the form of compressed air or pressurized steam or gas), chemical, thermal or other energy.

**Hot tap:** A procedure used in the repair, maintenance and services activities which involves welding on a piece of equipment (pipelines, vessels or tanks) under pressure), in order to install connections or appurtenances. It is commonly used to replace or add sections of pipeline without the interruption of service for air, gas, water, and steam and petrochemical distribution systems.

**Lockout:** The placement of a lockout device on an energy isolating device, in accordance with an established procedure, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

**Lockout device:** A device that utilizes a positive means such as a lock, either key or combination type, to hold an energy isolating device in a safe position and prevent the energizing of a machine or equipment. Included are blank flanges and bolted slip blinds.

**Normal production operations.** The utilization of a machine or equipment to perform its intended production function.

**Servicing and/or maintenance.** Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying and maintaining and/or servicing machines or equipment. These activities include lubrication, cleaning or unjamming of machines or equipment and

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making adjustments or tool changes, where the employee may be exposed to the unexpected energization or startup of the equipment or release of hazardous energy.

**Setting up.** Any work performed to prepare a machine or equipment to perform its normal production operation.

**Tagout:** The placement of a tagout device on an energy isolating device, in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

**Tagout device:** A prominent warning device, such as a tag and a means of attachment, which can be securely fastened to an energy isolating device in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

4. **Energy control program.** We have established a program consisting of energy control procedures, employee training and periodic inspections to ensure that before any employee performs any servicing or maintenance on a machine or equipment where the unexpected energizing, start up or release of stored energy could occur and cause injury, the machine or equipment shall be isolated from the energy source and rendered inoperative.
5. **Lockout/tagout.**
  - a. If an energy-isolating device is not capable of being locked out, our energy control program under paragraph (c)(1) of this section shall utilize a tagout system.
  - b. If an energy isolating device is capable of being locked out, our energy control program under paragraph (c) (1) of this section shall utilize lockout, unless the employer can demonstrate that the utilization of a tagout system will provide full employee protection as set forth in paragraph (c) (3) of this section.
  - c. After January 2, 1990, whenever replacement or major repair, renovation or modification of a machine or equipment is performed, and whenever new machines or equipment are installed, energy isolating devices for such machine or equipment shall be designed to accept a lockout device.
6. **Full employee protection.**
  - a. When a tagout device is used on an energy isolating device which is capable of being locked out, the tagout device shall be attached at the same location that the lockout device would have been attached, and the employer shall demonstrate that the tagout program will provide a level of safety equivalent to that obtained by using a lockout program.

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- b. In demonstrating that a level of safety is achieved in the tagout program which is equivalent to the level of safety obtained by using a lockout program, the employer shall demonstrate full compliance with all tagout related provisions of this standard together with such additional elements as are necessary to provide the equivalent safety available from the use of a lockout device. Additional means to be considered as part of the demonstration of full employee protection shall include the implementation of additional safety measures such as the removal of an isolating circuit element, blocking of a controlling switch, opening of an extra disconnecting device, or the removal of a valve handle to reduce the likelihood of inadvertent energization.

### 7. Energy control procedure.

- a. Procedures shall be developed, documented and utilized for the control of potentially hazardous energy when employees are engaged in the activities covered by this section.

NOTE: Exception: The employer need not document the required procedure for a particular machine or equipment, when all of the following elements exist:

- (A) The machine or equipment has not potential for stored or residual energy or re-accumulation of stored energy after shut down which could endanger employees;
  - (B) The machine or equipment has a single energy source which can be readily identified and isolated;
  - (C) The isolation and locking out of that energy source will completely de-energize or deactivate the machine or equipment;
  - (D) The machine or equipment is isolated from that energy source and locked out during servicing or maintenance
  - (E) A single lockout device will achieve a locked-out condition;
  - (F) The lockout device is under the exclusive control of the authorized employee performing the servicing or maintenance
  - (G) The servicing or maintenance does not create hazards for other employees
  - (H) The employer, in utilizing this exception, has had no accidents involving the unexpected activation or re-energization of the machine or equipment during servicing or maintenance
- b. The procedures shall clearly and specifically outline the scope, purpose, authorization, rules and techniques to be utilized for the control of hazardous energy, and the means to enforce compliance including, but not limited to, the following:
    - (A) A specific statement of the intended use of the procedure;
    - (B) Specific procedural steps for shutting down isolating blocking and securing machines or equipment to control hazardous energy;
    - (C) Specific procedural steps for the placement, removal and transfer of lockout devices or tagout devices and the responsibility for them; and

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(D) Specific requirements for testing a machine or equipment to determine and verify the effectiveness of lockout devices, tagout devices, and other energy control measures.

### 8. Protective materials and hardware.

a. Locks, tags, chains, wedges, key blocks, adapter pins, self-locking fasteners, or other hardware shall be provided by the employer for isolating, securing or blocking of machines or equipment from energy sources.

b. Lockout devices and tagout devices shall be singularly identified; shall be the only devices(s) used for controlling energy; shall not be used for other purposes; and shall meet the following requirements:

#### (A) Durable.

(1) Lockout and tagout devices shall be capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected.

(2) Tagout devices shall be constructed and printed so that exposure to weather conditions or wet and damp locations will not cause the tag to deteriorate or the message on the tag to become illegible.

(3) Tags shall not deteriorate when used in corrosive environments such as areas where acid and alkali chemicals are handled and stored.

#### (B) Standardized.

(1) Lockout and tagout devices shall be standardized within the facility in at least one of the following criteria: Color; shape; or size; and additionally, in the case of tagout devices, print and format shall be standardized.

#### (C) Substantial.

(1) Lockout devices. Lockout devices shall be substantial enough to prevent removal without the use of excessive force or unusual techniques; such as with the use of bolt cutters or other metal cutting tools.

(2) Tagout devices. Tagout devices, including and their means of attachment, shall be substantial enough to prevent inadvertent or accidental removal. Tagout device attachment means shall be of a non-reusable type, attachable by hand, self-locking, and non-releasable with a minimum unlocking strength of no less than 50 pounds and having the general design and basic characteristics of being at least equivalent to a one-piece, all-environment-tolerant nylon cable tie.

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(D) LOCKOUT DEVICES/TAGOUT DEVICES. Lockout devices and tagout devices shall indicate the identity of the employee applying the device(s).

- c. Tagout devices shall warn against hazardous conditions if the machine or equipment is energized and shall include a legend such as the following: “Do Not Start, Do Not Open, Do Not Close, Do Not Energize, Do Not Operate”.

### 9. Periodic Inspections.

- a. The employer shall conduct a periodic inspection of the energy control procedure at least annually to ensure that the procedure and the requirements of this standard are being followed.
  - (A) The periodic inspection shall be performed by an authorized employee other than the ones(s) utilizing the energy control procedure being inspected.
  - (B) The periodic inspection shall be conducted to correct any deviations or inadequacies identified.
  - (C) Where lockout is used for energy control, the periodic inspection shall include a review, between the inspector and each authorized employee of that employee’s responsibilities under the energy control procedure being inspected.
  - (D) Where tagout is used for energy control, the periodic inspection shall include a review, between the inspector and each authorized and affected employee, of that employee’s responsibilities under the energy control procedure being inspected, and the elements set forth in paragraph (c)(7)(ii) of this section.
- b. The employer shall certify that the periodic inspections have been performed. The certification shall identify the machine or equipment on which the energy control procedure was being utilized, the date of the inspection, the employees included in the inspection, and the person performing the inspection.

### 10. Training and communication.

- a. The employer shall provide training to ensure that the purpose and function of the energy control program are understood by employees and that the knowledge and skills required for the safe application, usage and removal of the energy controls are acquired by employees. The training shall include the following:
  - (A) Each authorized employee shall receive training in the recognition of applicable hazardous energy sources, the type and magnitude of the energy available in the workplace, and the methods and means necessary for energy isolation and control.
  - (B) Each affected employee shall be instructed in the purpose and use of the energy control procedure.

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- (C) All other employees whose work operations are or may be in an area where energy control procedures may be utilized, shall be instructed about the procedure, and about the prohibition relating to attempts to restart or reenergize machines or equipment which are locked out or tagged out.
  - b. When tagout systems are used, employees shall also be trained in the following limitations of tags:
    - (A) Tags are essentially warning devices affixed to energy isolating devices, and do not provide the physical restraint on those devices that is provided by a lock.
    - (B) When a tag is attached to an energy isolating means, it is not to be removed without authorization of the authorized person responsible for it, and it is never to be bypassed, ignored or otherwise defeated.
    - (C) Tags must be legible and understandable by all authorized employees, affected employees, and all other employees whose work operations are or may be in the area, in order to be effective.
    - (D) Tags and their means of attachment must be made of materials, which will withstand the environmental conditions encountered in the workplace.
    - (E) Tags may evoke a false sense of security, and their meaning needs to be understood as part of the overall energy control program.
    - (F) Tags must be securely attached to energy isolating devices so that they cannot inadvertently or accidentally detached during use.
  - c. Employee retraining.
    - (A) Retraining shall be provided for all authorized and affected employees whenever there is a change in their job assignments, a change in machines, equipment or process that presents a new hazard, or when there is a change in the energy control procedures.
    - (B) Additional retraining shall also be conducted whenever a periodic inspection under paragraph (c)(6) of this section reveals, or whenever the employer has reason to believe that there are deviations from or inadequacies in the employee's knowledge or use of the energy control procedures.
    - (C) The retraining shall re-establish employee proficiency and introduce new or revised control methods and procedures, as necessary.
  - d. The employer shall certify that employee training has been accomplished and is being kept up to date. The certification shall contain each employee's name and dates of training.
11. Energy isolation. Lockout or tagout shall be performed only by the authorized employees who are performing the servicing or maintenance.

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12. Notification of employees. Affected employees shall be notified by the employer or authorized employee of the application and removal of lockout devices or tagout devices. Notification shall be given before the controls and applied, and after they are removed from the machine or equipment.

The established procedures for the application of energy control (the lockout or tagout procedures) shall cover the following elements and actions and shall be done in the following sequence:

- a. *Preparation for shutdown.* Before an authorized or affected employee turns off a machine or equipment, the authorized employee shall have knowledge of the type and magnitude of the energy, the hazards of the energy to be controlled and the method or means to control the energy.
- b. *Machine or equipment shutdown.* The machine or equipment shall be turned off or shut down using the procedures established for the machine or equipment. An orderly shutdown must be utilized to avoid any additional or increased hazard(s) to employees as a result of the equipment stoppage.
- c. *Machine or equipment isolation.* All energy isolating devices that are needed to control the energy to the machine or equipment shall be physically located and operated in such a manner as to isolate the machine or equipment from the energy source(s).
- d. *Lockout/tagout device application.*
  - (i) Lockout or tagout devices shall be affixed to each energy-isolating device by authorized employees.
  - (ii) Lockout devices, where used shall be affixed in a manner to that will hold the energy isolating devices in a “safe” or “off” position.
  - (iii) Tagout devices, where used, shall be affixed in such a manner as will clearly indicate that the operation or movement of energy isolating devices from the “safe” or “off position is prohibited.
  - (A) Where tagout devices are used with energy isolating devices designed with the capability of being locked, the tag attachment shall be fastened at the same point at which the lock would have been attached.
  - (B) Where a tag cannot be affixed directly to the energy isolating device, the tag shall be located as close as safely possible to the device, in a position that will be immediately obvious to anyone attempting to operate the device.
- e. *Stored energy.*
  - (i) Following the application of lockout or tagout devices to energy isolating devices, all potentially hazardous stored or residual energy shall be relieved, disconnected, restrained and otherwise rendered safe.
  - (ii) If there is a possibility of re-accumulation of stored energy to a hazardous level, verification of isolation shall be continued until the servicing or maintenance is completed, or until the possibility of such accumulation no longer exists.



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- f. *Verification of isolation.* Prior to starting work on machines or equipment that have been locked out or tagged out, the authorized employee shall verify that isolation and de-energization of the machine or equipment have been accomplished.

Before lockout or tagout devices are removed and energy is restored to the machine or equipment, procedures shall be followed and actions taken by the authorized employee(s) to ensure the following:

- (1) *The machine or equipment.* The work area shall be inspected to ensure that nonessential items have been removed and to ensure that machine or equipment components are operationally intact.
- (2) *Employees.*
  - a. The work area shall be checked to ensure that all employees have been safely positioned or removed.
  - b. After lockout or tagout devices have been removed and before a machine or equipment is started, affected employees shall be notified that the lockout or tagout device(s) have been removed.
- (3) *Lockout and tagout devices removal.* Each lockout or tagout device shall be removed from each energy-isolating device by the employee who applied the device. *Exception to paragraph (e) (3):* When the authorized employee who applied the lockout or tagout device is not available to remove it, that device may be removed under the direction of the employer, provided that specific procedures and training for such removal have been developed, documented, and incorporated into the employer's energy control program. The employer shall demonstrate that the specific procedure provided equivalent safety to the removal of the device by the authorized employee who applied it. The specific procedure shall include at least the following elements:
  - a. Verification by the employer that the authorized employee who applied the device is not at the facility;
  - b. Making all reasonable efforts to contact the authorized employee to inform him/her that his/her lockout or tagout device has been removed; and
  - c. Ensuring that the authorized employee has this knowledge before he/she resumes work at that facility.
- (4) *Testing or positioning of machines, equipment or components thereof.* In situations in which lockout or tagout devices must be temporarily removed from the energy isolating device and the machine or equipment energized to test or position the machine, equipment or component thereof, the following sequence of actions shall be followed:
  - a. Clear the machine or equipment of tools and materials in accordance with paragraph (e)(1) of this section;
  - b. Remove employees from the machine or equipment area in accordance with paragraph (e) (2) of this section:

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- c. Remove the lockout or tagout devices as specified in paragraph (e)(3) of this section;
  - d. Energize and proceed with testing or positioning;
  - e. De-energize all systems and reapply energy control measures in accordance with paragraph (d) of this section to continue to servicing and/or maintenance.
- (5) *Outside personnel (contractors, etc.).*
- a. Whenever outside servicing personnel are to be engaged in activities covered by the scope and application of this standard, the on-site employer and the outside employer shall inform each other of their respective lockout or tagout procedures.
  - b. The on-site employer shall ensure that his/her employees understand and comply with the restrictions and prohibitions of the outside employer's energy control program.
- (6) *Group lockout or tagout.*
- a. When servicing and/or maintenance is performed by a crew, craft, department or other group, they shall utilize a procedure which affords the employees a level of protection equivalent to that provided by the implementation of a personal lockout or tagout device.
  - b. Group lockout or tagout devices shall be used in accordance with the procedures required by paragraph (c) (4) of this section including, but not necessarily limited to, the following specific requirements:
    - (A) Primary responsibility is vested in an authorized employee for a set number of employees working under the protection of a group lockout or tagout device (such as an operations lock):
    - (B) Provision for the authorized employee to ascertain the exposure status of individual group members with regard to the lockout or tagout of the machine or equipment and
    - (C) When more than one crew, craft, department, etc., is involved, assignment of overall job-associated lockout or tagout control responsibility to an authorized employee designed to coordinate affected work forces and ensure continuity of protection; and
    - (D) Each authorized employee shall affix a personal lockout or tagout device to the group lockout device, group lockbox, or comparable mechanism when he or she begins work, and shall remove those devices when he or she stops working on the machine or equipment being serviced or maintained.
- (7) *Shift or personnel changes.* Specific procedures shall be utilized during shift or personnel changes to ensure the continuity of lockout or tagout protection, including provision for the orderly transfer of lockout or tagout device protection between off-going and oncoming employees, to minimize exposure to hazards from the unexpected energization or start-up of the machine or equipment or the release of stored energy.

## **MATERIAL HANDLING**

This section is designed to detail the guidelines necessary to minimize accidents and injuries resulting from material handling practices. This section is intended to be consistent with O.S.H.A. regulations 20 CFR 1910.176 Subpart N, Handling Materials - General.

- (a) **Use of mechanical equipment.** Where mechanical handling equipment is used, sufficient safe clearances shall be allowed for aisles, at loading docks, through doorways and wherever turns or passage must be made. Aisles and passageways shall be kept clear and in good repair, with no obstruction across or in aisles that could create a hazard. Permanent aisles and passageways shall be appropriately marked.
- (b) **Secure storage.** Storage of material shall not create a hazard. Bags, containers, bundles, etc., stored in tiers shall be stacked, blocked, interlocked and limited in height so that they are stable and secure against sliding or collapse.
- (c) **Housekeeping.** Storage areas shall be kept free from accumulation of materials that constitute hazards from tripping, fire, explosion, or pest harborage. Vegetation control will be exercised when necessary.
- (d) **(Reserved).**
- (e) **Clearance limits.** Clearance signs to warn of clearance limits shall be provided.
- (f) **Rolling railroad cars.** Derail and/or bumper blocks shall be provided on spur railroad tracks where a rolling car could contact other cars being worked, enter a building, work or traffic area.
- (g) **Guarding.** Covers and/or guardrails shall be provided to protect personnel from the hazards of open pits, tanks, vats, ditches, etc.

## **PROPER LIFTING**

1. If a load is too heavy or bulky to carry, roll out or lift alone, ask for assistance.
2. Turn your whole body in the direction you wish to move, do not twist.
3. Always use proper lifting techniques:
  - Stand close to the load with your feet wide apart.
  - Squat down bending at the hips and knees.
  - As you grip the load, arch your back inward by pulling your shoulders back and sticking your chest out.
  - Be sure to keep the load close to your body. The closer the load is to your body, the less pressure it exerts on your back.
  - When you set the load down, squat, bending at hips and knees, keeping lower back arched in.

## **MECHANICAL EQUIPMENT**

A variety of types and sizes of mechanical equipment may be used by employees to handle materials. The following general rules apply to work around mechanical equipment:

1. Be aware of the equipment that is operating around you, the operator may be unable to see you.
2. Be aware of any objects that may be overhead at all times.

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3. When working around heavy equipment you should :

- a) Never walk under suspended loads.
- b) Never walk in front or back of moving heavy equipment unless you make direct eye contact with the operator and he stops the heavy equipment for you and motions for you to proceed.
- c) Always wear a hard hat and proper foot protection.
- d) Do not operate any heavy equipment unless you are fully qualified and authorized to do so.
- e) Be aware that the equipment can be the source of ignition for flammable or explosive materials.

4. Smaller equipment can also pose safety hazards. Remember these points when working around smaller items:

- 1) Be sure all machine guards are in place.
- 2) Use equipment at their recommended speeds and only for the jobs they were designed to do.
- 3) Always keep loose clothing and long hair away from moving parts.
- 4) Use only non sparking tools and be sure to ground equipment and containers when working in a flammable atmosphere.

## **PERSONAL PROTECTIVE EQUIPMENT**

### **EYE PROTECTION (29CFR 1926.102)**

1. Employees shall be provided with eye and face protection equipment when machines or operations present potential eye or face injury from physical, chemical or radiation agents, such as sawing, sandblasting, welding, cutting, striking metal or exposure to heavy dust.
2. Additional protection, such as face shields or goggles, shall be worn while performing high hazard tasks including grinding, chipping, jack-hammering, overhead drilling and working the caustics, such as handling acids or other corrosive or toxic liquids.
3. Gas and electric welding or cutting requires the use of burning goggles or a welder's hood with lenses having the proper color density.
4. Eye and face protection equipment required by this part shall meet the requirements specified in ANSI Z87.1-1968, Practice for Occupational and Educational Eye and Face Protection.
5. Employees whose vision requires the use of corrective lenses in spectacles, when required by this regulation to wear eye protection shall be protected by goggles or spectacles of one of the following types.
  - a) safety glasses, whose protective lenses provide optical correction;
  - b) goggles that can be worn over corrective spectacles without disturbing the adjustment of the spectacles.
  - c) goggles that incorporate corrective lenses mounted behind the protective lenses.

### **HARD HATS (29 CFR 1926.100)**

- Approved hardhats in good condition will be worn at all times during working hours, to protect employees from any possible danger of head injury from impact, falling or flying objects, or from electrical shock or burns. Hardhats are not to be worn backwards. Brims are to be in the front of the hard hat, and suspensions will not be reversed. Brims are made to deflect materials away from your eyes, and suspensions are designed to absorb the shock of an impact.
- Helmets for the head protection of employees exposed to high voltage electrical shock and burns shall meet the specifications contained in ANSI Z89.2-1971.
- Bump caps may be worn only by mechanics and welding personnel (when not welding and when not working on equipment in a quarry pit.) If they are welding, a welding helmet will be worn. If they are working in a quarry pit on equipment, a hard hat will be worn.
- Welding helmets are mandatory for all welders.
- Flaggers will wear hardhats at all times.
- Metal hardhats are prohibited.

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### **HEARING PROTECTION (29CFR 1926.101)**

1. Wherever it is not feasible to reduce the noise levels or duration of exposures to those specified in Table D-2, Permissible Noise Exposures, in 1926.52, ear protection devices shall be provided and used.
2. Ear protective devices inserted in the ear shall be fitted or determined individually by competent personnel.
3. Plain cotton is not an acceptable protective device.

### **SAFETY SHOES/BOOTS (29 CFR 1926.96)**

1. Approved safety shoes in good condition will be worn at all times. They shall meet the requirements and specifications in American National Standard for Men's Safety Toe Footwear, Z41.1-1967.
2. Steel toed shoes are required for any quarry employee by Federal regulations.
3. Employees working on International Paper, Finch Pruyn, Niagara Mohawk or other private projects shall be required to wear steel toes shoes. No exceptions.
4. Work shoes with run down heels or torn soles are hard on the feet and cause falls. Keep your work shoes in good condition at all times.
5. Rubber boots will be worn when working in concrete or water.

### **WORK GLOVES/HAND PROTECTION**

1. Work gloves in good condition and suitable for the task to be performed, will be worn to protect your hands from rough, splintered or sharp objects, or when the work subjects hands to lacerations, punctures, burns or electrical shock.
2. Be sure the gloves you wear are designed to protect you against the particular hazard you face and determine how long they can be worn and whether they can be reused. Here are some general guidelines:
  - a) Use metal mesh gloves to help prevent cuts from knives or other sharp objects.
  - b) Use leather gloves to protect against rough objects, chips, sparks or moderate heat.
  - c) Use cotton fabric gloves for protection against dirt, splinters, slippery objects or abrasions; don't use them if you work with rough, sharp or heavy materials.
  - d) Use Rubber, neoprene, or vinyl gloves will be used for chemical protection.
  - e) Insulated liners or special gloves should be used when working around electricity.
  - f) Fire retardant gloves should be used when working around open flames.
  - g) Reflective material gloves should be used when working around radiant heat.
3. Not all jobs require gloves. They can become a hazard at times, not a protection. Use your own judgment. If they get caught in a machine, they could possible take your hand along with them. If you are unsure about glove protection, check with your supervisor.

### **NEAR TRAFFIC & EQUIPMENT, AND NIGHTTIME CONSTRUCTION REQUIREMENTS:**

1. While you are working, a **hard hat will be worn at all times, no exceptions. An orange shirt, lime green shirt or orange safety vest must be worn, no exceptions.** White hardhats worn by foremen and superintendents are acceptable.

## ***Contractor Health & Safety Plan (HASP)***

- 2. Flaggers will wear a hard hat and wear** an approved reflective **safety vest at all times.**
3. If we are performing night construction, you must have reflective tape on each side of your hard hat and must wear a reflective vest.

### **OTHER P.P.E.**

1. Any other personal protective equipment needed for your particular job will be assigned to you by your Superintendent or Foreman. This could include respirators if you are working in and around dust or lead; life vests if you are working in, near or around water, or a full body harness and lanyards if you are working over six (6) feet high. You will receive training in the proper use, maintenance, fit procedures and care of your personal protective equipment.

### **Poison Ivy, Poison Oak and Poison Sumac**

How many times have you been told, “Watch your step...there’s poison ivy?” Would you know what to look for? Could you identify it before you started itching? Millions of people each year suffer from contact with poisonous plants such as poison ivy, poison oak and poison sumac.

The most distinctive features of poison ivy and poison oak are their leaves, which are composed of three leaflets each. Both plants have greenish white flowers and berries that grow in clusters.

Such plants produce severe rash characterized by redness, blisters, swelling and intense burning and itching. The victim may develop a high fever and feel very ill. The rash begins ordinarily within a few hours after exposure, but may be delayed 24 to 48 hours.

To care for poison plant contact, immediately wash the affected area thoroughly with soap and water. If a rash or weeping sore has already begun to develop, put a paste of baking soda and water on the area several times a day to reduce the discomfort. Lotions, such as Calamine or Caladryl, may help soothe the area. Antihistamines, such as Benadryl, may also help dry up the sores. If the condition gets worse and affects large areas of the body or the face, see a doctor. It may be necessary to give anti-inflammatory drugs, such as corticosteroids, or other medications to relieve discomfort.

Contaminated clothing. The irritating substances emitted by poison ivy group plants will remain on clothing for prolonged periods of time-up to weeks or months if not washed thoroughly. It may be necessary to wash contaminated clothing separately and more than once before reusing.

Preventive Medicine: A barrier cream, e.g. Stokogard Outdoor Cream (Stockhausen, Inc. 1-800-334-0242) should be applied to the exposed skin before entering and working in areas with possible poisonous plants.



## **RABIES**

The Rabies virus has been spreading in NYS and employees thus must guard against exposure to infection. Any warm-blooded animal can be a carrier of the virus, which is transmitted by bites or through contact with the animals' body fluids. All animal carcasses found on the job site should be considered as potentially infected and disposed of with caution.

Small animal carcasses should be collected in a plastic bag strong enough to avoid puncture by teeth, claws or broken bones. Use heavy work gloves and seal the bag tightly so as not to contaminate vehicles or personnel.

If animal body fluids contact the skin, wash the area immediately with soap and water. Equipment can be decontaminated with a 5% to 10% solution of household bleach in water.

If an employee has been contaminated or suspects contamination, do not dispose of the carcass. Call the County health Department or a veterinarian to see if the animal should be tested.

If bitten by an animal, get the person to a hospital as soon as possible. Call the police and let them arrange for the proper procedures for capturing the animal.

## **TICK CARRIED DISEASES**

Lyme Disease continues to be a health problem in New York State. The Department is concerned for the large numbers of employees who work outdoors and are exposed to this tick-borne disease. Rocky Mountain Spotted Fever is another potentially serious illness transmitted by ticks.

Lyme disease is an infection caused by the bite of a deer tick (*Ixodes dammini*) carrying a bacterium (*Borrelia burgdorferi* spirochete) that often infects deer, field mice, humans, and household pets. The deer tick can be found through the United States (though it is found more frequently in the Northeast, the upper Midwest and California), where it resides in woodlands and grassy areas. Since the greatest activity for these deer ticks is during the warm seasons (spring, summer and autumn) many people who spend time outdoors are susceptible to the disease.

Ticks are mostly found mostly in wooded areas and in tall grass. On the job, keep out of these areas if possible. Cover body parts while outdoors. Wear long pants and a long-sleeved shirt. Secure cuffs tightly at ankles and wrists.

While adult ticks can carry the disease, they are relatively easy to detect and remove; it is when they are in the poppy-seed size nymph stage from May to August, that they can easily be overlooked. Employees who have been working in grassy or wooded areas should inspect clothing and exposed body parts throughout the day and after work. It can take ticks 24 to 36 hours to transmit the infection, so early removal is crucial. If a tick is discovered, see a doctor immediately.

### **1. Symptoms:**

State 1: Localized: Lyme disease begins at the location of the tick bite. Frequently the first sign is a red rash that looks like a bull's eye surrounding the site of the bite. Sometimes the rash is accompanied by flu-like symptoms including fever, headache, fatigue and aches and pains in the joints and muscles.

Stage 2: Early Disseminated: Even when the infection remains untreated, the rash and other symptoms of early Lyme disease will usually disappear in three to four weeks. The second, or early disseminated state is marked by neurological problems, such as severe headache and stiff neck. Some people may have heart problems recognized as dizziness, fainting, shortness of breath and palpitations.

Stage 3: Persistent Infection: Later, in stage three of the illness (persistent infection), as many as half of all untreated Lyme disease patients will develop Lyme arthritis. This form of arthritis usually affects large joints such as the knees and consists primarily of swelling and pain. Symptoms may subside for a while, but they will return in the same joint or in another joint.

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2. Testing: The first thing your physician looks for to diagnose Lyme disease is the characteristic rash, known as erythema migrans (EM). If there is no rash, your physician will ask whether you remember having a rash or a tick bite.

During the first few weeks after a bite from a deer tick, the body responds to the developing infection by producing antibodies to fight the bacteria. In making a diagnosis, your physician may consider a preliminary blood test that checks for these antibodies. If an initial antibody test result is positive, it is recommended by the medical community that a more specific test, such as the Lyme Western blot, also be performed to confirm the presence of Lyme Disease.

Your physician will know what test is right for you and he or she will talk to you about the meaning of your test results.

Prevention is the best medicine. The best way to avoid infection is to stay away from areas of tall grass where ticks are likely to be present. When venturing into these areas, observe the following precautions:

- a. wear light colored clothing that will make ticks clearly visible.
- b. tuck shirts into trousers and trouser legs into socks/boots
- c. tape over seams of clothing (for example tops of socks)
- d. spray tick repellent on shirts, trousers, socks and shoes
- e. walk in the center of trails to minimize the likelihood of contact with ticks.

## **CONCRETE & MASONRY CONSTRUCTION**

### **1. SAFETY RULES to AVOID CHEMICAL AND PERSONAL INJURIES FROM CONCRETE & MASONRY WORK**

The most common chemical ingredient in concrete is cement. When combined with water, cement produces an alkaline chemical called calcium hydroxide. Upon contact with skin, this chemical can cause irritation, burns, drying and cracking, which can open the door to serious infection.

There are also countless chemical additives commonly added to concrete mixes that you should know about. If unsure, ask your supervisor or foreman, and check your MSDS sheets.

Follow these safety rules to avoid chemical and personal injury hazards with concrete:

- a. whenever you are working with, wheeling, dumping, shoveling or handling concrete, use good lifting techniques.
- b. a one cubic yard bucket filled with concrete does not look very heavy, but it weights more than a full-size pickup truck.
- c. keep out from under suspended concrete buckets and avoid being caught in a pinch point by a swinging concrete bucket.
- d. be alert for overhead wires whenever using a concrete pump or conveyor system.
- e. be on guard to prevent bull float handles from contacting electrical wiring and light bulbs.
- f. wet concrete conducts electricity. Make sure all cords and tools are grounded.
- g. avoid contact with fresh concrete, IT COULD BURN YOU.
- h. PROLONGED DIRECT SKIN CONTACT WITH FRESH CONCRETE MAY REDUCE SKIN MOISTURE, RESULTING IN IRRITATION OR BURNING.
- i. workers should frequently wash exposed skin to prevent irritation from
- j. cement dust. Barrier creams can be an effective deterrent to skin irritation.
- k. following contact with fresh concrete, wash the affected areas thoroughly with fresh water
- l. all protruding reinforcing steel should be guarded to eliminate the hazard of impalement or puncture wounds.
- m. mild irritation can be relieved by applying a lanolin cream.

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- n. clothing saturated with fresh concrete should be rinsed with clean water.
- o. when working with fresh concrete, you should wear a hard hat, waterproof gloves, a long-sleeved shirt, safety glasses or goggles, full-length waterproof pants, waterproof jacket and rubber boots, to prevent skin contact.
- p. use waterproof pads between fresh concrete surfaces and knees, elbows and hands when finishing concrete.
- q. pay attention to truck and equipment maintenance, to ensure safe operation.
- r. store tools and equipment in an orderly manner and keep them clean.
- s. keep fingers clear when handling chutes---avoid pinch points.
- t. although concrete has become a common building material, don't ignore the dangers.
- u. accidents can happen when workers ignore the common sense rules of mixing, handling and finishing concrete.

## **IMPALEMENT PROTECTION**

Employees shall not work above protruding reinforcing steel, unless it has been protected to eliminate the possibility of impalement. All protruding reinforcing steel, onto or into which employees could fall, shall be guarded to eliminate the hazard of impalement or puncture wound.

The plastic mushroom caps that are presently used, are only designed to protect workers against cuts, scratches and abrasions, according to the manufacturer. They are not to be used for impalement protection.

\*OSHA standard 29 CFR 1926.701 (b) states that “all protruding reinforcing steel, onto which employees could fall, shall be guarded to eliminate the hazard of impalement.”

The first defense against impalement is fall protection and prevention. When employees are working at any height above exposed rebar, or rebar is in footings or other excavations, the rebar must be guarded, according to the OSHA standard.

\*2 x 4's should be nailed together to make a “trough”, turned upside down and placed over the protruding rebar. The ends must be secured with wire to prevent the “trough” from falling off the protruding rebar.

\*new square caps are also on the market, which contain a steel plate, that OSHA says are acceptable for “impalement” protection.

\*until these square impalement protection caps are available to our company, mushroom caps will be used for protection against scratches, cuts, and abrasions on rebar that is exposed, **ONLY** when workers are not working at a height above exposed rebar, or the rebar is in footings or other excavations where the possibility of impalement exists. If the possibility of impalement exists, the protruding reinforcing steel shall be covered with a “trough”, or other means of protection.

**PORTLAND CEMENT**

**WARNING:**

**POTENTIAL EYE INJURIES.**

**CAUSES SKIN IRRITATION.**

**READ THIS WARNING BEFORE USING:**

Contact with wet (unhardened concrete, mortar, cement or cement mixtures) can cause skin irritation, severe chemical burns, or serious eye damage. Avoid contact with eyes and skin.

You should wear waterproof gloves, a fully buttoned, long-sleeved shirt, full length trousers, and tight fitting eye protection when working with these materials. If you have to stand in wet concrete, use waterproof boots that are tight at tops and high enough to keep concrete from flowing into them. If you are finishing concrete, wear knee pads to protect knees. Wash wet concrete, mortar, cement, or cement mixtures from your skin with fresh, clean water immediately after contact. Indirect contact through clothing can be as serious as direct contact, so promptly rinse out wet concrete, mortar, cement or cement mixtures from clothing. Seek immediate medical attention if you have persistent or severe discomfort. In case of eye contact, flush with plenty of water for at least 15 minutes. Consult a physician immediately.

## **CONCRETE POURS**

### **JOB SITE ACCIDENT PREVENTION**

Let's address some very important safety issues in regards to preventing job site accidents. It has always been and continues to be our goal to provide you with a safe workplace, but we must do this consistently with safe work practices. Accidents cost a great deal of money, hold up production and worst of all there is the possibility of someone getting hurt. If we work together and follow some simple guidelines we should be able to prevent most job site incidents which benefits everyone.

Nationwide, by far, the biggest source of off-road accidents has been shown to be due to backing into position to pour. Specific applications include: slip form curbing, sidewalks, flat pouring away from the mixer such as driveways, commercial floors and duck bank work (pouring over electrical conduits).

Our drivers check their mirrors frequently, but to avoid problems it is important to keep vehicles, equipment, supplies and personnel away from the rear of the mixer, **ESPECIALLY IN THE BLIND SPOT IN BACK OF THE UNIT.**

If this is not possible due to the nature of the job, or if our drivers are pouring while backing and unable to look in their mirrors, then we would **kindly ask you to use/provide a spotter.**

You also need a spotter and/or flagger if our trucks have to enter and exit a job from a high traffic roadway.

Be sure to use your revolving lights while on a jobsite and make sure your back up alarm is working correctly.

Please use pre-job planning and develop a plan that will prevent accidents and limit liability for everyone involved. Superintendents/foremen need to let the truck drivers (our own and hired) how to get to the jobsite, correct procedures for u-turns (if it's a Northway job), turning around and what is expected of them when they come on site. Production becomes much more efficient with COMMUNICATION.

We recognize that there are no perfect sites, especially on new construction, but we need accessible roadways to prevent our mixers from getting stuck. This hampers the ability to deliver in a timely fashion and ties up the jobs. If you see potential problems, please bring it to someone's attention so that we can get involved and resolve the problem as early as possible.



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Lastly, we bring to your attention the concern of chute cables on front discharge units. From time to time, these break from wear and cause the chute to swing erratically. No one should handle or stand under or on the sides of these chutes. Our drivers stress this constantly, but those who place the material feel a need to help the chute along by handling it, to take short cuts by moving under it and to get up close and look inside. This is very dangerous because if the chute hits them they can be seriously injured or even killed. It is best to stand in front of the chute away from danger.

## **DUTY TO HAVE**

### **FALL PROTECTION**

**(29 CFR PART 1926)**

**DA Collins has taken a zero tolerance stance for violators of the fall protection standard. Any employee observed in violation of this standard will be dismissed immediately.**

#### **1. Duty to Have Fall Protection:**

- a. Employees on walking or working surfaces in excess of 6' above lower levels should be protected from falls by one or more of the following:
  - Guardrail System
  - Safety Net System
  - Personal Fall Arrest System (includes full body harnesses, safety lines, retractable life lines, anchorage points, etc.)
- b. Employees engaged in leading edge work 6' above lower levels should also be protected by one or more of the systems listed above unless it can be demonstrated that the use of these systems is unfeasible or creates a greater hazard.
- c. Employees working in hoist areas 6' or more above lower levels should be protected from falls by a guardrail system or personal fall arrest system.
- d. Floor Holes-a hole 2" or more in its least direction on any walking/working surface.
  - Floor holes which employees may fall through should be protected by guardrail systems, covers, or personal fall arrest system.
  - Floor holes which employees may trip in or step into should be protected by covers able to withstand 2 times the maximum intended load and labeled "COVER" or "HOLE".
  - Floor holes through which objects may fall should be protected by covers.
- e. Employees working on formwork or reinforcing steel six feet or more above adjacent levels should be protected by personal fall arrest systems, safety net systems, or positioning device systems.
- f. Ramps, runways and other walkways should be protected by guardrail systems when they are 6' or more above the lower level.
- g. Excavations 6 feet or more in depth whose edges are not easily seen should be protected by guardrail systems, safety net systems, personal all arrest systems, or should take place in a controlled access zone. Employees reaching more than 10" below the level on which they are working should be protected by a guardrail system, safety nets, or fall arrest system.
- h. Any safety belt, lanyard, lifeline or tie-off device actually subject to in-service loading shall be immediately removed from service and shall not be used again for employee safeguarding.

## ***Contractor Health & Safety Plan (HASP)***

**Definitions:** Overhand Bricklaying and Related Work: The process of laying bricks and masonry units such that the surface of the wall to be jointed is on the opposite side of the wall from the mason, requiring the mason to lean over the wall to complete the work. Related work includes mason tending and electrical installation incorporated into the wall during the overhand bricklaying process.

- i. Any Wall openings whose inside bottom edge height is less than 30” and whose outside edge height is six feet or greater should be protected by guardrail systems, safety nets or fall arrest systems.
- j. Steep roofs with unprotected sides and edges greater than six feet should be protected by guardrail systems, safety nets, slide guards, or personal fall arrest systems.
- k. Employees engaged in built-up roofing work on roofs with a ground-to-eaves height greater than 6’ should be protected by one of the following:
  - Motion Stopping System (MSS)-MSS are fall protection using the following equipment singly or in combination: standard railings, scaffolds or platforms with guardrails, safety nets, safety belt/harness systems.
  - Warning Line Systems installed in accordance with OSHA Standards.
  - Safety Monitoring System on roofs less than 50’ wide where no mechanical equipment is being used.
- l. Employees engaged in precast concrete erection at heights greater than six feet should be protected by guardrail systems, safety nets, or personal fall arrest systems unless the use of these systems is unfeasible or creates a greater hazard.

## **2. FALL PROTECTION SYSTEMS**

- 1) Toprails should be installed between 39 and 45 inches in height and should not deflect below 39 inches under a downward force of 200 pounds.
- 2) If wire rope is used as top rails, it should be flagged every 6 feet with highly visible materials.
- 3) Cable top rails and midrails should be at least ¼” diameter.
- 4) Lumber used in the construction of guardrails should be sound and should not contain large or loose knots. All nails should be driven in completely. Double-headed nails are not permitted.
- 5) Covers should be secured in place, capable of withstanding two times the weight of any object or employee which may pass over it, and be color coded or marked “hole” or “cover”.
- 6) A controlled access zone for overhand bricklaying and leading edge work should be erected as follows:
  - The controlled access zone should be defined by a control line no less than 10 feet and no more than 15 feet from the working edge.
  - The control line should extend a sufficient distance to completely enclose the overhand bricklaying operations including the ends of the controlled access zone.

## ***Contractor Health & Safety Plan (HASP)***

- The line should be made of rope, wire, or tape with a minimum tensile strength of 200 lbs.
- Stanchions or some other means of support will be used to support the control line at a height no less than 30” and no more than 45”. The control line will be flagged every 6 feet.
- On floors where guardrails have not yet been erected, the controlled access zone should be enlarged, as necessary, to enclose all points of access, materials handling areas, and storage areas.
- On floors where guardrails are already in place but need to be removed to allow overhand bricklaying work or other leading edge work to take place, only that portion of the guardrail necessary to accomplish the day’s work should be removed.

### **3. FALL ARREST SYSTEMS**

- 1) Lanyard, vertical lifelines, D-rings and snap hooks should have a 5000 lbs. tensile strength.
- 2) All lanyard snap-hooks should be of the locking type.
- 3) Body belts, harnesses, lanyard and other fall protection equipment are not to be used for any purpose other than employee fall protection.
- 4) Employees using body harnesses for fall arrest should locate the dee-ring in the center of the back. **Body belts can no longer be used for fall arrest, starting January 1,** Additionally, all employees using a body harness for fall arrest should also use a shock-absorbing lanyard to limit arresting force to below 900 lbs.
- 5) Fall arrest anchorage points should be able to withstand 5000 lbs. per employee or should be designed as a system which maintains a safety factor of at least 2.
- 6) Fall protection systems should be erected under the supervision of a competent person. Any employee who is unsure whether an anchorage point is appropriate should ask their supervisor.
- 7) Lanyard and safety line length should be limited so as not to allow a free fall greater than 6 feet. Additionally, care should be given when designing a system to ensure that an employee will not strike lower levels prior to, or during the activation of the fall arrest system.
- 8) Positioning devices should allow for a free fall of no more than 2 feet.
- 9) Employees climbing built up walls of reinforcing steel should tie-off when they reach their work location. Employees should use continuous fall protection when climbing in excess of 24 feet vertically.

### **4. OVERHEAD UTILITY SAFETY**

It is our opinion that high voltage power line accidents are 100% preventable.

The NYS Legislature enacted the NYS High Voltage Proximity Act in 1988, declaring untrained persons working or moving materials or equipment near high voltage power lines are endangering their lives and disrupting electrical power service.

- 1) untrained persons working or moving materials near high voltage power lines are endangering their lives and the lives of those people in the vicinity

## ***Contractor Health & Safety Plan (HASP)***

- 2) untrained persons working or moving materials near high voltage power lines are endangering the quality of electrical service
- 3) high voltage power lines means electrical conductors installed above the ground and having a voltage of more than 600 volts
- 4) dangerous proximity means a distance within 10 feet of high voltage lines or with such greater distance as set forth in the current editions of the OSHA 1910 or 1926 standards
- 5) workers and equipment will not work within ten (10) feet of energized power lines or equipment
- 6) no portion of any piece of equipment, nor any tool, nor any person, will be allowed within ten (10) feet of any power line or equipment
- 7) precautionary action to protect against the danger from contact with such high voltage lines may include de-energizing the line, relocating the line by the owner or shielding the line
- 8) lines must be relocated by the owner of that utility. We cannot relocate them ourselves. Always consider all high voltage power lines as energized high voltage power lines. All equipment capable of coming into close proximity of a high voltage line in the course of its operation shall have a warning sign reading as follows:

**DANGER: UNLAWFUL TO OPERATE ANY PART OF THIS EQUIPMENT WITHIN 10 FEET OF HIGH VOLTAGE LINES**

If for any reason the operator of the equipment can not assess visually the clearance of the equipment from the overhead power lines, a second person shall be designated as an official spotter to observe the clearance and provide timely warning to the equipment operator.

### **1. MARKING OF OVERHEAD HAZARDS**

All overhead hazards will be marked under the utility on the pavement or ground with paint or a painted stake will be attached to poles that are in the area to warn Foremen, operators, crane operators and truck drivers that a hazard exists.

### **6. COMPETENT PERSON FOR OVERHEAD UTILITIES**

The competent persons of overhead electrical safety will be the Project Superintendent.

Prior to the start of work each day and throughout the life of this project, overhead hazards will be monitored and spotters will be utilized when needed.

Every one on the crew will be made aware of the dangers of overhead utilities at daily safety meetings.

In the event that the project superintendent can not be present, he shall assign the duties to one of the foremen to observe and be responsible for the overhead utilities in his absence.

## **U.F.P.O.**

### **(Underground Facilities Protective Organization/ DIG SAFELY)**

#### **1. CHECK BEFORE YOU DIG:**

Working around underground pipes and cables can slow you up, but when you hit part of an underground electric or natural gas system, you can experience:

- a. electric shock
- b. danger from escaping gas or fire
- c. lost time until repairs are made
- d. lost money from job delays plus repair costs

**At least two working days prior to digging, drilling or blasting, call UFPO at 1-800-962-7962 to have UFPO member company underground facilities located.**

#### **2. NYS DEPARTMENT OF PUBLIC SERVICE RULE 753 (Part 753)**

Part 753 must be followed when excavation or demolition work is performed within the boundaries of the State. Copies of Part 753 can be obtained by writing to: NYS Department of Public Service, Gas and Water Division, Safety Section, 3 Empire State Plaza, Albany, New York 12223-1350.

#### **3. SUBPART 753-1 GENERAL REQUIREMENTS:**

**753-1.1 PURPOSE.** The purpose of these rules is to establish procedures for the protection of underground facilities in order to assure public safety and to prevent damage to public and private property, as required by General Business Law Article 35 and Public Service Law Section 119-b. This Part may be cited as Industrial Code 53 or Code Rule 53, in addition to its designation as Part 753.

#### **753-1.2 DEFINITIONS.**

When used in this Part, unless the context otherwise requires, the following terms shall have the following meanings.

- **Contact:** Any defacing, scraping, impact upon an underground facility or its protective coating, housing or other protective devise.
- **Damage:** Any displacement of or removal of support from any underground facility which would necessitate repair of such facility or any destruction or severance of any underground facility or its protective coating, housing or other protective devise.
- **Demolition:** The total or partial wrecking, razing, rending, moving or removal of any structure.

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- **Emergency:** Any abnormal condition which presents an immediate danger to life or property including the discontinuance of a vital utility service necessary for the maintenance of public health, safety and welfare.
- **Excavation:** Any operation for the purpose of movement or removal of earth, rock or other materials in or on the ground by use of mechanized equipment or by blasting, and includes but is not limited to, digging, auguring, backfilling, drilling, grading, plowing in, pulling in, trenching and tunneling; provided, however, that the movement of earth by tools manipulated only by human or animal power and the tilling of soil for agricultural purposes shall not be deemed excavation.
- **Excavator:** Any person who is engaged in a trade or business which includes the caring out of excavation or demolition; provided, however, that an individual employed by an excavator and having no supervisory authority other than the routine direction of employees over an excavation or demolition, shall not be deemed an excavator for the purpose of this Part. The act of any employee or agent of any excavator acting within the scope of his or her official duties or employment shall be deemed to be the act of such excavator.
- **Hand dug test holes: Excavations** performed for designating, testing or verification purposes which are dug by the use of handheld tools utilizing only human power.
- **Local governing body:** A town or city outside the city of New York or a county within the city of New York.
- **Near:** An area within 15 feet of the outside perimeter or diameter of an underground facility or its encasement.
- **One-call notification system:** Any organization among whose purposes is establishing and carrying out procedures to protect underground facilities from damage due to excavation and demolition, including but not limited to, receiving notices or intent to perform excavation and demolition and transmitting the notices to one or more member operators of underground facilities in the specified area.
- **Operator:** Any person who operates an underground facility to furnish any of the following services or materials: electricity, gases, steam, liquid petroleum products, telephone or telegraph communications, cable television, sewage removal, traffic control systems, or water.
- **Person:** Any individual, firm, corporation, association or partnership, cooperative association, joint venture, joint stock association, business trust, their lessees, trustees or receivers, municipality, governmental unit or public authority whether or not incorporated.
- **Tolerance Zone:** If the diameter of the underground facility is known, the distance of one-half of the known diameter plus two feet, on either side of the designated center line or, if the diameter of the underground facility is not known, two feet on either side of the designated center line.
- **Underground facility:** A facility and its attachments located underground and installed by an operator to furnish its services or materials, including but not limited to, pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels and any encasement containing such facilities. Such term shall not

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include oil and gas production and gathering pipeline systems used primarily to collect oil or gas production from wells.

- **Work area:** The area of the ground or equivalent surface, which will be disturbed or removed by excavation work or affected by demolition work.
- **Working days:** Mondays through Fridays, exclusive of public holidays.

### **4. SUBPART 753-2 DUTIES OF LOCAL GOVERNING BODIES**

**753-2.1 PROVISION AND DISPLAY OF NOTICE** Any local governing body that issues permits for excavation and demolition shall provide a notice to applicants for permits that informs them about their responsibilities under state law to protect underground facilities and the existence, operation, programs and telephone number of the one-call notification system. Every such local governing body shall continuously display such notice in a conspicuous location in the office or agency in designates.

### **5. SUBPART 753-3 DUTIES OF EXCAVATORS**

#### **753-3.1 TIMING OF NOTICE AND EXCAVATION.**

- Before commencing or engaging in any non-emergency excavation or demolition, each excavator shall provide notice of the location and date of the proposed excavation or demolition to the one-call notification system serving the vicinity in which the excavation or demolition is to take place.
- Such notice shall be served at least two but not more than ten working days, not including the date of the call, before the proposed commencement date of the excavation or demolition.
- Whenever an excavator cancels the proposed commencement date he or she shall promptly inform the one-call notification system. A postponement of more than 10 days shall be considered a cancellation.
- Whenever an excavator postpones the commencement date for five or less working days, no call to the one-call notification system or operators is required. Whenever an excavator postpones the commencement date by more than five but less than ten working days, the same requirements for notice shall pertain to the revised commencement date as listed in subdivisions 753-3.1(a) and (b).
- An excavator may request a written admission of receipt of the notice of the location and date of a proposed excavation or demolition and of a new commencement date or cancellation.

#### **753-3.2 DETAILED NOTICE REQUIREMENTS.**

- (a) Every notice provided by an excavator to the one-call notification system concerning proposed excavation or demolition shall contain at least the following information:
- (1) Name of the person serving such notice
  - (2) Name, address and telephone number of the excavator or excavator's company
  - (3) Excavator's field telephone number, if one is available



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- (4) Name of the field contact person, if any;
  - (5) Address and exact location as well as the approximate extent and dimensions of the proposed work area;
  - (6) means of excavation or demolition and whether or not explosives are to be used;
  - (7) Brief description of the proposed excavation or demolition;
  - (8) Date and time the excavation or demolition is proposed to commence.
- (b) When necessary for adequate identification, the excavator shall delineate the work area with white paint or other suitable markings.
- (c) area with white paint or other suitable markings.

### **753-3.3 COMMENCEMENT OF EXCAVATION OR DEMOLITION.**

- (a) The excavator may proceed with excavation or demolition on the stated date of commencement if, prior thereto, he or she has received notification from each and every operator notified by the one-call notification system, that:
- (1) such operator has no underground facility located in or within 15 feet of the proposed work area, or
  - (2) that any underground facility located in or within 15 feet of the proposed work area has been staked, marked or otherwise designated in accordance with the provisions of Subpart 753-4 of this Part.
- (b) The excavator shall not commence the proposed excavation or demolition on the stated commencement date if he or she has been notified by an operator that the staking, marking or other designations of an underground facility located in or within 15 feet of the proposed work area will not be completed on the stated commencement date. In such case, the operator is required promptly to report such fact to the excavator and to inform the excavator of a prompt and practicable completion date, which in no case shall be more than two (2) working days after the excavator's stated commencement date, unless a longer period is agreed to by both parties.

### **753-3.4 STAKING, MARKING OR OTHER DESIGNATION.**

- (a) Every excavator shall be familiar with the provisions of this Part, especially those relating to the size and depth indications, color coding, center line or offset staking or marking and the location of underground facilities by designations other than staking or marking.
- (b) An operator performing excavation or demolition work at or near his or her own underground facility shall not be required to stake, mark or otherwise designate such underground facility.
- (c) Whenever the excavator determines that a review of the staking, marking or other designation is necessary or that additional information is required, he or she shall so notify the operator of the one-call notification system.

### **753-3.5 PRESERVATION OF STAKES, MARKINGS OR OTHER DESIGNATIONS.**

Starting on the proposed commencement date given in the excavator's notice to the one-call notification system, the excavator shall be responsible for protecting and

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preserving the staking, marking or other designation until it is no longer required for proper and safe excavation or demolition work at or near the underground facility.

### **753-3.6 VERIFICATION OF UNDERGROUND FACILITIES.**

- Where an underground facility has been staked, marked or otherwise designated by the operator within a proposed work area and if the tolerance zone of an underground facility overlaps with any part of the work area, or the projected line of a bore/directional drill intersects the path of an underground facility, the excavator shall verify the precise location, type, size, direction of run and depth of such underground facility or its encasement. Verification may be completed before the excavation or demolition is commenced or may be performed as the work progresses. Powered equipment may not be used in a tolerance zone prior to the verification of the location of facilities within the tolerance zone.
- The verification of underground facilities furnishing gas or liquid petroleum products shall be accomplished by the excavator by exposing the underground facility or its encasement to view by mean of hand dug test holes at one or more points where the work area and tolerance zone overlap, or more points as designated by the operators of such facilities. Powered or mechanized equipment any be used for removal of pavement or masonry but only to the depth of such pavement or masonry
- The verification of underground facilities other than those furnishing gas or liquid petroleum products shall be performed at one or more points for each such underground facility as may be required by the operator. Verification shall be accomplished by exposing the underground facility or its encasement to view by hand dug test holes or by other means mutually agreed to be the excavator and operator.
- Where center line stakes or marks indicate the size of the underground facility, such facility shall be assumed to lie within a strip of land equal to the width of the facility plus four feet with the center line of such strip of land at the stakes or marks.
- Where center line stakes or marks do not indicate the size of the underground facility, such facility shall be assumed to lie within a strip of land four feet in width with the center line of such strip of land at the stakes or marks.
- Where offset stakes or remote tie-in markings indicate the size of the facility, the underground facility shall be assumed to lie in a strip of land equal to the width of the facility plus four feet with the center line of such strip of land at the center line of the facility as indicated by the stakes or markings.
- Where offset stakes or remote tie-in markings do not indicate the size of the underground facility, the facility shall be assumed to lie in a strip of land four feet in width with the center line of such strip of land at the center line of the underground facility as indicated the stakes or markings.

**753-3.7 UNVERIFIABLE UNDERGROUND FACILITIES.**

If the precise location of an underground facility cannot be verified by the excavator otherwise designated by the operator, the excavator shall so notify such operator as soon as possible. The operator shall verify the location of the underground facility with his or her own personnel as soon as possible or shall provide the excavator with prompt field assistance or use other means mutually agreed to by the excavator and operator. Such agreement shall be provided in writing to the excavator upon his or her request.

**753-3.8 POWERED EXCAVATING EQUIPMENT LIMITATIONS.**

After verifying the location of an underground facility, the excavator shall not employ powered or mechanical excavating equipment closer than four (4) inches in any direction from the staked, marked or otherwise designated or known outside diameter or perimeter of such facility or its protective coating unless agreed to in writing by the operator of the affected underground facility. Any such written agreement shall be furnished to the excavator by the operator, upon request.

**753-3.9 DISCOVERY OF UNKNOWN UNDERGROUND FACILITIES.**

Where an undesigned or otherwise unknown underground facility is discovered within a work area, the excavator shall report such discovery as follows:

- If the identity of the operator of the discovered underground facility is known or is obvious, the excavator shall report the discovery to such operator. The operator shall respond immediately and, in accordance with subdivision 753.4.9(d) of this Part, take any necessary action and advise the excavator as to whether he or she may proceed in the immediate area.
- If the identity of the operator of the discovered underground facility is not known or obvious, the excavator shall report the discovery to the one-call notification system and each operator notified by the one-call notification system shall respond immediately and, in accordance with subdivision 853-4.9 ( c ) or (d) of this Part, determine whether or not such discovered facility is his or hers.
- While awaiting a determination of ownership, the excavator may proceed with the excavation or demolitions taking reasonable care to protect and prevent damage to such underground facility.

**753-3.10 REQUIREMENTS CONCERNING CONTACT AND DAMAGE TO UNDERGROUND FACILITIES.**

Excavators shall take all reasonable precautions to prevent contact or damage to underground facilities and their protective coatings, including but not limited to, compliance with any reasonable directions or accepted engineering practices given by affected underground facility operators.

- (a) In the event of contact with or damage to an underground facility, the excavator shall immediately notify the operator of the facility.
- (b) All excavation or demolition in the immediate vicinity of the contacted or damaged portion of the underground facility shall be suspended until such portion

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is repaired and the operator advises that excavator that excavation or demolition may proceed.

- (c) The excavator in the vicinity of the contact or damage shall do no backfilling until the operator conducts an inspection and makes any necessary repairs; and the excavator shall undertake no repairs unless and until authorized by the operator.

### **753-3.11 REQUIREMENTS CONCERNING UNDERGROUND FACILITIES IN DANGER OF FAILING.**

- (a) An excavator who by removing the surrounding materials exposes an underground facility which in his or her judgment appears to have failed or to be in potential danger of failing from corrosion or other causes shall immediately report such condition to the operator of such underground facility.
- (b) The excavator shall delay any further work in the immediate vicinity of such underground facility, which could jeopardize it but may proceed in areas not affecting the questionable facility.
- (c) The excavator may proceed in such immediate vicinity after the operator responds and takes necessary action in regards thereto and advises the excavator that he or she may proceed.

### **753-3.12 REQUIRED SUPPORT AND PROTECTION FOR UNDERGROUND FACILITIES.**

- (a) An excavator shall provide prompt and adequate support and protection for every underground facility located in the work area as is reasonably specified by the operator of any such facility.
- (b) In the absence of any specifications by the operator, the excavator shall provide support and protection in accordance with generally accepted engineering practice including, but not limited to, shoring and bracing.
- (c) Support shall be at least equivalent to the previously existing support and shall protect the underground facility against freezing and against traffic and other loads.
- (d) The operator may, in agreement with the excavator, provide such support.

### **753-3.13 BACKFILLING REQUIREMENTS.**

- (a) An excavator performing excavation or demolition at an underground facility shall backfill such excavation with materials and in such manner as specified by the operator or, in the absence of such specifications, with suitable materials and in such manner as will avoid damage to, and provide proper support for, such underground facility and its protective coating both during and after backfilling operations.
- (b) The excavator shall not place large rock, frozen earth, rubble, debris, or other heavy or sharp materials or objects, which could cause damage to or scraping against any underground facility.
- (c) The backfill beneath and around any underground facility shall be properly compacted in accordance with generally accepted engineering practice.
- (d) Heavy loads and excessive forces shall not be imposed on any exposed underground facility at any time during backfilling operations.

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### **753-3.14 EMERGENCY REQUIREMENTS.**

In the event of an emergency involving danger to life, health or property as a result of damage to an underground facility containing gas or liquid petroleum products or as a result of an electrical short or escape of gas or hazardous fluids, the excavator shall:

- (a) Proceed to evacuate his or her employees and all other endangered persons from the immediate vicinity to the best of his or her ability;
- (b) immediately notify the local police and fire departments and the operator of the affected facility of the exact location, nature of the emergency and of the underground facility, which is affected.

### **753-3.15 EMERGENCY EXCAVATION OR DEMOLITION.**

Excavation or demolition which is required to be performed promptly as a result of an emergency, disaster or to correct an immediate hazard may proceed immediately without prior notification to operators, if the situation is so serious that the excavation or demolition cannot reasonably be delayed. However, excavators shall notify the one-call notification system as soon as possible that such excavation or demolition is commencing or is underway. Extreme caution shall be employed by the excavator to prevent damage to existing underground facilities and to avoid endangering persons and property.

**753-3.16 PRE-DEMOLITION CONFERENCES.** At least seven working days in advance of the commencement date of the demolition, the excavator shall request a [re-demolition conference, through the one-call notification system, with all operators who have underground facilities at or near the proposed demolition are. A request for a pre-demolition conference is not a substitute for the notice of intent to perform demolition work required by Section 753-3.1 of this Part.

**753-3.17 RESPONSIBILITY TO EMPLOYEES.** Every excavator subject to the provisions of this Part shall make certain that all of his or her employees directly concerned with excavation or demolition are thoroughly familiar with the applicable provisions of this Part and especially the provisions of this Subpart relating to their safety.

## **6. SUBPART 753-4 DUTIES OF OPERATORS.**

### **753-4.1 PARTICIPATION OF OPERATORS.**

- (a) Every operator of an underground facility shall participate in one-call notification systems within whose geographical jurisdiction or boundaries such underground facility is located.
- (b) Every operator who is not a member of the one-call notification system and installs, has installed for him or her, or otherwise acquires, an underground facility, shall participate in a one-call notification system within 10 days after commencement of the installation or after the acquisition.

**753-4.2 REMOVAL OF UNDERGROUND FACILITIES.** Any operator who removes or transfers ownership of all of his or her underground facilities from within the boundaries of any one-call notification system shall promptly notify the system.

**753-4.3 OPERATOR FURNISHED INFORMATION.**

- (a) Every operator shall provide the one-call notification system at least the following information:
  - (1) Corporate or other name and address of such operator;
  - (2) Department, agency, office or individual designated by the operator to be notified by the one- all notification system or excavators and the local address and telephone number of such department, agency, office or individual.
- (b) Whenever such information is revised, changed or found to be incomplete or incorrect, the operator shall provide corrected information to each one-call notification system in which he or she participates.

**753-4.4 RECEIVING NOTICES.** Each operator shall establish a means of receiving notices of proposed excavation or demolition from the one-call notification systems in accordance with the procedures of the system.

**753-4.5 OPERATOR'S RESPONSE TO NOTICE.**

- (a) Prior to the commencement date of the proposed excavation or demolition work as stated in the recorded notice, the operator shall make a reasonable attempt to inform the excavator directly that either:
  - (1) The operator has no underground facility in or within 15 feet of the proposed work area; or
  - (2) Every underground facility belonging to him or her, which is located in or within 15 feet of the proposed work area has been staked marked or otherwise designated in accordance with the provisions of this Subpart.
- (b) Where an operator cannot complete the staking, marking or other designation of an underground facility prior to the stated commencement date and time of the proposed excavation or demolition, the operator shall promptly report such fact to the excavator and shall inform the excavator of a prompt and practicable completion date which in no case shall be more than two working days after the excavator's stated commencement date, unless a longer period is agreed to by both parties.
- (c) Whenever an excavator requests a review of any staking, marking or other designation, the operator shall comply with such request as soon as possible.

**753-4.6 LOCATING UNDERGROUND FACILITIES.**

- (a) Whenever an operator's underground facilities are in or within 15 feet of a proposed work area, such facility shall be located, accurately and with due care, by means of staking, marking or other designation in accordance with the provisions of this Subpart.
- (b) The following staking and marking requirements shall apply:

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- (1) Stakes or surface marking shall be provided preferably at the center line of the underground facility and at such sufficient intervals as is necessary to indicate clearly the location and direction of run of such underground facility.
  - (2) All stakes and surface markings shall be color coded in accordance with the provisions of this Subpart in order to identify the type of underground facility so staked or marked.
  - (3) Stakes and surface markings shall indicate in inches the size or diameter of the underground facility or its encasement, if known.
  - (4) Each stake and surface marking shall indicate in inches the depth of the underground facility at that point, if known.
  - (5) Surface markings shall consist of paint, dye or equivalent material which is color coded in accordance with the provisions of this Subpart and which contrasts with the ground or equivalent surface.
  - (6) Where conditions exist so as to render center line staking or marking impractical or confusing, the operator may indicate the location of an underground facility by means of offset staking or remote tie-in markings which will clearly indicate the location and direction of run of the facility.
- (c) If staking or marking are not used to indicate the location of an underground facility, the operator shall designate such location in accordance with the following:
- (1) By exposing the underground facility or its encasement to view within the proposed work area in a manner sufficient to allow the excavator to verify the type, size, direction of run and depth of the facility;
  - (2) By providing field representation and instruction to the excavator in the proposed work area; or
  - (3) By any other means as mutually agreed to by the operator and excavator, including but not limited to written descriptions, photographs and verbal instructions. Such agreement shall be provided in writing to the excavator upon his or her request.

**753-4.7 UNIFORM COLOR CODE.** The following uniform color code shall be utilized for staking and marking used to designate the location of underground facilities and proposed excavation sites:

- (a) Yellow-Gas, oil, petroleum products, steams compressed air, compressed gases and all other hazardous liquid or gaseous materials except water.
- (b) Red-Electric power lines or conduits.
- (c) Orange-Communication lines or cables, including but not limited to telephone, telegraph, fire signals, cable television, civil defense, data systems, electronic controls and other instrumentation.
- (d) Blue-water
- (e) Green-Storm and sanitary sewers including force mains and other non-hazardous materials.
- (f) Purple-Radioactive materials.
- (g) White-Proposed excavation site.
- (h) Pink-Survey markings.

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**753-4.8 UNIFORM IDENTIFICATION LETTERS.** All staking and marking utilized for the location of underground facilities shall contain letter designations, which will clearly identify the type of underground facility so staked or marked. Such letters shall comply with the following code:

- (a) **C**- Communication facilities other than telephone service.
- (b) **CH**-Chemicals.
- (c) **CTV**-Cable Television
- (d) **E**-Electrical power
- (e) **FS**-Fire signals
- (f) **G**-Gas
- (g) **HPW**-High pressure water (100 psig or more).
- (h) **P**-Petroleum
- (i) **PP**-Petroleum products (naphtha, gasoline kerosene and similar products)
- (j) **S**-Sewer
- (k) **ST**-Steam
- (l) **T**-Telephone company services.
- (m) **TC**-Traffic control signals
- (n) **W**-Water
- (o) **O**-All other facilities.

## **753-4.9 OPERATOR'S RESPONSE TO NOTICES OF CONTACT OR DAMAGE, FACILITIES IN DANGER OR FAILING AND DISCOVERY OF UNKNOWN UNDERGROUND FACILITIES.**

- (a) Upon receipt of a notice from an excavator or a one-call notification system reporting contact or damage to an underground facility, the operator shall immediately inspect such facility and make the necessary repairs or shall advise the excavator that the excavation work may proceed.
- (b) Such repairs may be performed by the operator or by others authorized by him or her including the excavator.
- (c) Upon receipt of a notice from an excavator or a one-call notification system of the discovery of an underground facility in danger of failing, the operator shall respond immediately and take any necessary action in regard thereto and advise the excavator as to whether he or she may proceed in the immediate area.
- (d) When an operator has been notified by an excavator or a one-call notification system that an unknown underground facility has been discovered in the course of the excavator's work, such operator shall immediately determine whether or not such discovered facility is his or hers by means of records, onsite inspection or otherwise, and as soon as practicable either:
  - (1) Advise the excavator that the unknown facility is not his or hers; or
  - (2) If such facility does belong to him or her, advise the excavator on how to proceed and of any special requirements the operator deems necessary.

**753-4.10 UNVERIFIABLE UNDERGROUND FACILITIES.** If an excavator notifies an operator that, after diligent search at a reasonable depth within the strip of land as staked, marked or otherwise designated by the operator, that he or she cannot verify the location of an underground facility, the operator shall verify such location with his or her own personnel as soon as possible or shall provide the excavator with prompt field



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assistance or use other means mutually agreed to by the excavator and operator. Such agreement shall be provided to the excavator upon his or her request.

### **753-4.11 EMERGENCY SERVICE REQUIREMENTS.**

- (a) Each operator of an underground facility containing gas or liquid petroleum products shall provide means for accepting emergency calls and prompt field assistance to such calls on a 24-hour per day basis.

**753-4.12 REQUIREMENTS CONCERNING DEMOLITION.** In addition to responding in accordance with subdivision 753-4.6(a), the operator shall attend a pre-conference with the excavator upon the excavator's request.

**753. -4.13 SUPPORT AND BACKFILLING REQUIREMENTS.** Where an underground facility will be disturbed or uncovered by excavation or demolition, the operator of such facility shall indicate to the excavator any preferred means of support or protection required for such facility and any special backfilling requirements or provide any other guidance for protection of an underground facility. Such information shall be furnished to the excavator before the stated date of commencement of the proposed work, if practical.

**753-4.14 CONSUMER EDUCATION PROGRAMS.** Each operator of a demolition

underground gas pipeline or hazardous liquid petroleum facility shall on its own initiative or through a one-call notification system conduct a program to educate the public on the possible hazards associated with damage to facilities and on the importance of reporting gas odors and leaks. The one-call notification system may develop materials suitable for use in such programs.

## **7. SUBPART 753-5 ONE-CALL NOTIFICATION SYSTEMS**

### **753-5.1 QUALIFICATIONS:**

(a) The total extent of one-call notification systems shall be such in numbers and locations as to provide protection of underground facilities throughout all areas of the state with no geographic overlap of areas served.

Every one-call notification system shall be governed by a not-for-profit corporation in accordance with the minimum requirements contained in the law and in this Part.

### **753-5.2 NOTICE PROCEDURES:**

Every one-call notification system shall:

- (a) Establish an effective notification service for receipt of notices from excavators, including a toll-free telephone number, and for transmission of such notices to every member operator who has underground facilities in or within 15 feet of the proposed work area. Such notices may include:
  - (1) Notice of a proposed excavation or demolition;

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- (2) a request for a pre-construction or pre-demolition conference relating to excavation or demolition work at or near underground facilities; or
- (3) a notice of the discovery of an unknown underground facility.
- (b) Provide a direct means of communication between the one-call notification system and each operator who is a member of the system.
- (c) Use a standardized format to record all incoming notices or requests from excavators, including at least the following information:
  - (1) Date and time of receipt of a notice or request;
  - (2) Name of the person serving such notice or making such request;
  - (3) Name, address and telephone number of the excavator or excavator's company;
  - (4) Excavator's field telephone number, if one is available
  - (5) Name of the excavator's field contact person, if any;
  - (6) Address and exact location as well as the approximate extent and dimensions of the proposed work area;
  - (7) Means of excavation or demolition and plans for use of explosives;
  - (8) Brief description of the proposed excavation or demolition;
  - (9) Date and time the proposed work is to commence;
  - (10) Name of the person receiving such notice;
  - (11) Name of the notification system.
- (d) Assign a unique serial number to each incoming notice from excavators and provide the number to the excavator.
- (e) Give persons providing notice of intent to engage in an excavation or demolition activity the names of member operators of underground facilities to whom the notice will be transmitted.
- (f) Furnish a copy of such notice record to the excavator, upon his or her request. The mailing of such copies of the notice record shall be construed to be in compliance with this part.
- (g) Keep on file a copy of each notice record for a period of at least four years from the date of such notice.

### **753-5.3 SYSTEM DUTIES.**

Each one-call notification system shall perform the following duties:

- (a) Provide highest priority to notices concerning the discovery of underground facilities that have unknown operators or are in danger of failing;
- (b) Conduct a continuing program to:
  - (1) inform excavators of the one-call notification system's existence and purpose and their responsibility to notify the one-call notification system of proposed excavation and demolition and to protect underground facilities;
  - (2) Inform operators of the responsibility to participate in the one-call notification system, to respond to a notice relating to a proposed excavation and demolition and to designate and mark facilities according to the provision of this Part.

**8. EXCERPTS FROM PUBLIC SERVICE LAW (Particular sections only.)**

**Section 119-b. Protection of Underground Facilities.**

- a. The commission shall adopt rules and regulations to implement and carry out the requirements of article thirty-six of the general business law established for the protection of underground facilities. Such rules and regulations shall include, but not be limited to, requirements for notice, one-call notification systems, participation of operators in such systems, designation and marking of the location of underground facilities and the verification of the designated or marked location of underground facilities, support for underground facilities and obligations of excavators to protect underground facilities under such article, including the use of hand-dug test holes at underground facilities furnishing gas or liquid petroleum products and such other matters as may be appropriate for the protection and security of property, life or public health, safety or welfare.
  - b. The commission shall have power, through the inspectors or duly authorized employees of the department, to examine and inspect excavation and demolition methods used by any person within fifteen feet in any direction of any underground pipeline used for conveying natural gas or of any underground telephone, electric, steam or water facility used for providing service and to order compliance with the standards for excavation and demolition near underground facilities contained in regulations adopted by the commission to implement and carry out the requirements of article thirty-six of the general business law established for the protection of underground facilities.
1. Notwithstanding any inconsistent provisions of this chapter, the enforcement procedure for rules and regulations adopted by the commission shall be as follows:
- (a) any violation of any provision of such rules and regulations is a violation of the provisions of article thirty-six of the general business law and the attorney general may bring and prosecute an action to recover penalties for such violations as provided in paragraph c of subdivision one of section seven hundred sixty-five of such law;
  - (b) any penalties, fines and financial liability resulting from violations of such rules and regulations shall be those specified in section seven hundred sixty-five of the general business law.
  - (c) In the event a violation of such rules and regulations occurs and such violation is subject to a civil penalty pursuant to article thirty-six of the general business law, the commission shall determine the amount of the penalty after consideration of the nature, circumstances and gravity of the violation, history of prior violations, effect on public health, safety or welfare and such other matters as may be required and shall send a copy of its determination to the excavator, operator, commissioner of labor and attorney general. Upon receipt of such determination, the attorney general may commence an action to recover such penalty.

**9. EXCERPT FROM GENERAL BUSINESS LAW ARTICLE 36:  
CONSTRUCTION AND EXCAVATION NEAR UNDERGROUND  
FACILITIES.**

**Section 765. PENALTIES AND LIABILITIES:**

**1. Civil Penalties.**

- (a) Failure to comply with any provision of this article shall subject an excavator or an operator to a civil penalty of up to one thousand dollars for the first violation and up to an additional seven thousand five hundred dollars for each succeeding violation which occurs in connection with the entire self-same excavation or demolition activity within a two month period.
  - (b) The penalties provided for by this article shall not apply to an excavator who damages an underground facility due to the failure of the operator to comply with any of the provisions of this article, nor shall in such instance the excavator be liable for repairs as prescribed in subdivision five of this section.
  - (c) An action to recover a penalty under this article may be brought in the Supreme Court in the judicial district in which the violation was alleged to have occurred which shall be commenced and prosecuted by the attorney general. The public service commission shall, pursuant to section one hundred nineteen-b of the public service law, forward to the attorney general its determination of the amount of the penalty for violations or rules and regulations adopted to implement the requirements of this article. Upon receipt of such determination, the attorney general may commence an action to recover such penalty. All moneys recovered in any such action, together with the costs thereof shall be paid into the state treasury to the credit of the general fund.
2. Except as otherwise provided in this subdivision, nothing in this article shall impair, limit or reduce the statutory, common law or contractual duties or tort or other liability of any excavator excavating or demolishing in the vicinity of underground facilities.
  3. Any excavator engaging in or proposing to engage in excavation or demolition in a negligent or unsafe manner, which has resulted in or is likely to result in damage to underground facilities in such a manner that life, property or the continuation of operator service is endangered, may be enjoined from such excavation or demolition or any aspect thereof upon application of the operator owning the facilities or the attorney general made in supreme court having jurisdiction in the county wherein the excavation or demolition or proposed excavation or demolition is to take place. Three or more instances of damage by an excavator to underground facilities in the course of the entire self-same excavation or demolition activity shall be prima facie grounds for enjoining the excavator from further performance of the excavation or demolition activity.
  4. In the event that, as a result of a violation of any of the provisions of this article by an excavator, it is necessary that an operator make any repair to or provide new support to an underground facility, the excavator shall be liable to the operator for reasonable costs so incurred.

**PRE-MARKING WITH WHITE PAINT:**

The use of White paint to delineate a work area when necessary for adequate identification is encouraged. The use of white markings at the job site will help locators avoid marking more area than necessary while ensuring excavators receive marks where needed. These markings should be white to avoid confusion with colors used to mark locations of underground facilities.

- ⇒ Excavators should take care that their white marks cannot be misinterpreted as traffic or pedestrian control marks in the roadway.
- ⇒ If conditions permit, use of a chalk-based paint is advised; it will dissipate quickly with rain, etc.
- ⇒ Alerting the property owner to the reason the paint was applied will save calls to utilities and the One Call System asking, “Who put the paint here and why?”
- ⇒ In the case of a single excavation of known dimensions, delineate the exact area with white paint with dots or dashes or a continuous line.
- ⇒ Trenches and larger excavations should be marked using intervals whereby each marking can be seen from the previous marks.

**TOLERANCE ZONE:**

Tolerance Zone: If the diameter of the underground facility is known the distance of one-half of the known diameter plus two feet, on either side of the designated center line or if the diameter of the facility is not known, two feet on either side of the designated center line. (Example: Facility width plus 48”) Any excavation within the tolerance zone should be performed with hand tools until the marked facility is exposed or by other means mutually agreed upon by excavator and facility operator. Once the facility is exposed, maintain a 4” clearance with machinery unless otherwise agreed to in writing by the operator of the underground facility.

**OUR GOAL.....ZERO ACCIDENTS**

**FIVE MINUTE HUDDLE**

**Date:** \_\_\_\_\_ **Job #:** \_\_\_\_\_ **Super/Foreman:** \_\_\_\_\_

**OPERATION FOR TODAY:** \_\_\_\_\_

**HAZARDS INVOLVED WITH OPERATION FOR TODAY:**

\_\_\_\_\_  
\_\_\_\_\_

**SAFETY TOPIC (S) FOR TODAY:** \_\_\_\_\_

\_\_\_\_\_

**ANY NEAR MISSES TO REPORT & DISCUSS:** \_\_\_\_\_

\_\_\_\_\_

**NAMES: (PLEASE PRINT)**

**SIGNATURE:**

---

**\*Forms such as the above will be used daily for tool box safety topics relating to the day's activity. These forms will also be used to discuss any near misses that have occurred. Discuss the hazards of the work involved and use these as daily tool box topics. These forms are turned in and recorded in employee files as training records.**

**ATTACHMENT 1**

**PERIODIC SAFETY/AUDIT INSPECTION RECORD**

## ***Contractor Health & Safety Plan (HASP)***

### **Periodic Safety/Audit Inspection Record**

#### GENERAL SAFETY

- Required Posting & OSHA Regulations
- Emergency Procedures
- Sanitary Facilities
- First Aid Kit / Supplies Accessible
- Eye Wash Stations (if necessary)

#### HOUSEKEEPING

- General Job Site Conditions
- Daily Disposal of Trash, Scrap & Debris
- Tool Storage and Organization
- Routing of cords & Hoses
- Stairways, Walkways and Roadways Clear

#### PERSONAL PROTECTIVE EQUIPMENT

- Hard Hats
- Hearing Protection
- Eye and Face Protection
- Respiratory Protection
- Proper Attire

#### FIRE PROTECTION & PREVENTION

- Fire Extinguishers Accessible
- Fuel Containers Labeled and Proper
- Fire Extinguishers charged & Inspected
- LPG Containers Stored Outside of Buildings
- Storage of Flammable & Combustible Liquids

#### CHEMICALS

- Hazard Communication Program On site
- Chemicals Properly Labeled

- MSDS on site

#### BARRICADES

- All Leading Edge Work Protected
- Warning Signs, Posters & Barricades
- Caution Tape at Temporary Hazards

#### MATERIAL HANDLING & STORAGE

- Rigging Equipment Inspected
- Manual Handling / Proper Lifting
- Aisles & Passageways Kept Clear
- Proper Trash Removal
- Material Stored 10' From Building Perimeter and 6' From Floor Openings & Hoist Ways

#### POWER AND HAND TOOLS

- Proper Personal Protective Equipment
- Electrical Grounding
- Electrical Tools Double Insulated
- Guard and Safety Devices in Place
- Damaged Tools Tagged and Removed

#### WELDING AND CUTTING

- Storage & Hoisting of Cylinders
- Condition of Torch, Hoses & Gages
- Terminal covers on Welding Machine
- Condition of Welding Lead / Cable
- Fire Extinguisher Accessible
- Fire Watch as Required
- Electrode Handling
- Proper Personal Protective Equipment



**Contractor Health & Safety Plan (HASP)**

**Periodic Safety/Audit Inspection Record (continued)**

CRANES / HOISTING EQUIPMENT

- Inspections
- Position and Barricade
- Within Rated Capacity
- Overhead / Underground Obstructions
- Operator

ELECTRICAL

- Electric Cords Condition / Grounding
- GFCI
- Overhead Wire Obstruction
- Electric Panels Covered & Marked

OTHER

- Ladders
- Manlifts / Scissor / JLG
- Stairways
- All Vehicles with Backup Alarms
- Excavation & Trenching
- Steel Erection
- Roadway Work

SCAFFOLDING

- Proper Construction
- Proper Planking, Guardrails, Cross Bracing
- Safe / Proper Access
- 18" Minimum Width Walkways
- 4 Times the Maximum Intended Load
- Inspected Daily by a Competent Person
- Fall Protection Provided Over 10'

FALL PROTECTION

- In Use as Required
- Site Specific Plan – On Site
- Equipment

EXCAVATION

- Spoil Pile Back 2 ft. Yes / No
- Trench Depth – if over 5' protection used  
Yes / No
- Soil Type UFPO Called – Tag No: \_\_\_\_\_

PROJECT SITE SPECIFIC ITEMS

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

**ATTACHMENT 2**

**SAFETY TRAINING SIGN-IN SHEET**

## SAFETY MEETING SIGN-IN SHEET

Safety Meeting Presenter: \_\_\_\_\_ Date: \_\_\_\_\_

Current Weather Conditions:

Temperature (°F) = \_\_\_\_\_ Wind Direction = \_\_\_\_\_ Wind Speed = \_\_\_\_\_

Clear - Sunny – Cloudy – Rain - Snow      Forecast = \_\_\_\_\_

Current Site Conditions (circle as appropriate):

Dry - Wet - Muddy - Frozen - Snow Covered - Other (describe) \_\_\_\_\_

1. Incidents or Injuries to report from Previous Day Activities (circle one): No – If Yes, explain below:

\_\_\_\_\_

2. Safe and/or At-Risk Observations from Previous Day Activities: \_\_\_\_\_

\_\_\_\_\_

3. Activities Taking Place Today: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3. Anticipated Hazards: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

4. Engineering Controls-Work Practices-PPE to Protect Against Hazards: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

5. Additional Safety Topic or Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

*Contractor Health & Safety Plan (HASP)*

<b>PRINTED NAME</b>	<b>SIGNATURE</b>	<b>COMPANY</b>	<b>LAST 4 DIGITS OF SS #</b>

**ATTACHMENT 3**

**CONTRACTORS WEEKLY SAFETY PLANNING SUBMISSION**

## **ATTACHMENT 4**

# **INCIDENT/NEAR MISS INVESTIGATION REPORT**

## Contractor Health & Safety Plan (HASP)

### INCIDENT/NEAR MISS INVESTIGATION REPORT

Date of Incident:		Client:		Client Contact:	
Project Name:		Project Location:		Project Manager:	
Time of Incident:	Job/WBS:	Incident Reported by:			
Type of incident (check one): ? Near-miss incident ? Personal injury ? Property damage ? Environmental spill/release			Name of Company/Subcontractor:		
Name Of Involved: Individual(s)				Trade/Function:	
Was the individual involved with the incident performing their regular job? If "no", explain why:		Date of Site Safety Orientation:		Last Safety Formal/Documented Meeting Attended:	
Description of incident according to the individual(s) involved or injured (including what happened and how the incident occurred):					
According to the individual(s) involved with the incident or injured, what could have been done differently to prevent this incident from occurring?  Why weren't these done prior to the incident?					
Describe any First Aid or Medical Treatment Provided On Site and/or at a Medical Facility.					
Did the Individual Return to Work by the next day?		Any Work Restrictions or Lost Time? If "Yes", describe:			

**Complete the information below with an Investigation Team, if appropriate.**

Team Investigation – List the Possible Causes of the Incident Below (specify <b>Personal Factors</b> (1 = lack of skill/knowledge, 2 = following correct procedure takes more time, 3 = supervisor reinforces unsafe behavior, 4 = did it this way before without adverse consequences), <b>Job Factors</b> (5 = lack of or inadequate procedure, 6 = inadequate communication of expectations or procedure, 7 = inadequate tools or equipment) or <b>External Factors</b> ).		
1.		
2.		
3.		
4.		
For Each Possible Cause Listed Above, Reply "Why" or "Why not" the Cause Occurred.		
1.		
2.		
3.		
4.		
<b>Corrective Action(s) for Each Cause - List Person(s) Responsible and Target Date:</b>		
1.		
2.		
3.		
4.		
Investigation Team Members:		
Approval (Individual Involved/Injured):		Date:
Signature:		Date:
Supervisor (Print Name): Approval		Date:
Signature:		Date:

## **ATTACHMENT 5**

# **SITE-SPECIFIC HEALTH AND SAFETY PLAN (HASP) ACKNOWLEDGEMENT**



**Site-Specific Health and Safety Plan (HASP) Acknowledgement**

I hereby confirm that site-specific health and safety training has been conducted by the site health and safety officer, which included:

- Names of personnel responsible for site safety and health
- Safety, health, and other hazards at the site
- Proper use of personal protective equipment
- Work practices by which the employee can minimize risk from hazards
- Safe use of engineering controls and equipment on the site
- Acute effects of compounds at the site
- Decontamination procedures

For the following project:

_____	_____	_____	
(Project Title)	(Project Number)	(City, State)	
_____	_____	_____	_____
Name (print)	Signature	Company	Date
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

# **RA HEALTH AND SAFETY PLAN**

## **APPENDIX A (Continued)**

### **CONTRACTOR HEALTH AND SAFETY PLANS**

CONTRACT 2 - RAILWORKS Track Services, Inc.

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**CONTRACTOR HEALTH AND SAFETY PLAN (HASP)**

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*Prepared For:*

**General Electric Company**

381 Broadway, Bldg 40-2  
Fort Edward, NY 12828


*Prepared By:*

**RAILWORKS Track Services, Inc.**

1550 North Bailey Rd.  
North Jackson, OH 44451

**REVIEWED AND APPROVED BY:**

Project Manager:

Rob Gardner / 

1/6/2007  
Date

Site Safety Representative: Paul Watson, CIH, CSP, ATC Associates

Signature: 

Date: 1/24/2007

ABEH # 5863  
BCSP # 16577

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HEALTH & SAFETY PLAN (HASP) MODEL**

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*Contractor Health & Safety Plan (HASP)*

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**Contractor Health & Safety Plan (HASP)**

**1.0 RESPONSIBILITY/IDENTIFICATION OF KEY LINE PERSONNEL**

Contractor:	Railworks Track Services, Inc.	
Address:	1550 North Bailey Rd. , North Jackson, OH 44451	
Telephone:	330-538-2261	Email:
Company Executive responsible for project:	Edward Kennedy	Contact No.
		OF 330-538-2261 Cell 330-720-7945
Project Manager/Assistant Project Manager/ QA/QC:	Rob Gardner / Ted Wilson	Contact No.
		330-720-5821 / 330-720-1388
Safety Representative/Manager:	TBD/ To be Furnished by ATC	Contact No.
		TBD
Key Foreperson or forepersons:	Bob Dedrick	Contact No.
	Rocky Bradway	330-720-5473
		330-720-5874
Client Project Management POC:	Rob Gardner	Contact No. 330-720-5891

These personnel have the authority and responsibility for implementing the provisions of this program for:

<u>Project Site Location</u>	<u>On-site Contact No.</u>
Processing Facility Site	TBD
Ft. Edward, NY 12828	

All managers and supervisors are responsible for implementing and maintaining the Contractor HASP in their work areas and for answering worker questions about the Contractor HASP. A copy of this Contractor HASP is available from each manager and supervisor.

**2.0 STATEMENT OF CONTRACTOR’S SAFETY AND HEALTH POLICY**

**RailWorks Corporation**

**Statement of Policy**

**Safety, Property and Environmental Protection**

Safety, Property and Environmental Protection are integral to the philosophy of the Company and embody the fundamental attitude that unsafe acts and conditions or damage to property or the environment are unacceptable.

The Company is committed to maintaining a safe and healthful workplace, to conducting all operations safely and to preventing injuries to persons and damage to property and the environment.

To be successful, all employees are expected to be part of this process.

**Contractor Health & Safety Plan (HASP)**

**3.0 IDENTIFICATION OF COMPETENT/QUALIFIED PERSONS**

Name	Job Title	CSP, CHST, OSHA 30-hr Construction Safety certification	CPR/FA certification expires	8-hr Defensive Driving course	Competent Person training (i.e., confined space, scaffold, excavation, etc)
Rob Gardner	Project Manager	OSHA 30-hr	CPR/FA Training Expires Feb 09	YES	
Ted Wilson	Assistant Project Manager/ QA/QC	OSHA 30-hr	CPR/FA Training Expires Feb 09	YES	
TBD	Site Safety Officer	CSP or CHST	TBD	TBD	TBD
Bob Dedrick	Project Superintendent	OSHA 30-hr	CPR/FA Training Expires Feb 09	YES	
Rocky Bradway	Project Foreman	OSHA 30-hr	CPR/FA Training Expires Feb 09	YES	

- Contractor shall identify and certify competent persons as defined by OSHA for work or tasks requiring that level of qualification or supervision. The personnel identified must be present on the project when work requiring the competent person is taking place.
- Roadway Worker Training – All workers will have Roadway Worker Training as required by Federal Railroad Administration. Workers will be certified prior to starting work on the project. RWT is renewed annually.
- Excavation Competent Person certificate – required for daily inspections of excavations greater than 4 feet in depth, the adjacent areas, and protective systems for evidence of a situation that could result in possible cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions. An inspection shall be conducted by the competent person prior to the start of work and as needed throughout the shift. Inspections shall also be made after every rainstorm or other hazard increasing occurrence. These inspections are only required when employee exposure can be reasonably anticipated.
- CPR/First Aid certification – required for at least two individuals in each work area during every shift, including each individual barge/dredge. Where AEDs are required, at least two individuals must be trained in its use.
- Confined Space Entry (Supervisor) certificate – contractor shall ensure that each entry supervisor knows the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure. Verifies, by checking that the appropriate entries have been made on the permit, that all tests specified by the permit have been conducted and that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin. Terminates the entry and cancels the permit as necessary. Verifies that rescue services are available and that the means for summoning them are operable. Removes unauthorized individuals who enter or who attempt to enter the permit space during entry operations. Determines, whenever responsibility for a permit space entry

**Contractor Health & Safety Plan (HASP)**

operation is transferred and at intervals dictated by the hazards and operations performed within the space that entry operations remain consistent with terms of the entry permit and that acceptable entry conditions are maintained.

**4.0 SCOPE OF WORK EVALUATION**

The work activities that will take place are described below. Activities of lower tier subcontractors will either be included in this section, or the lower tier subcontractor will complete their own Contractor Health and Safety Plan (KHASP).

For this scope of work, there will be lower tier subcontractors. Lower tier subcontractor activities are included in this section. Each lower tier subcontractor shall complete a Contractor Safety Evaluation package before being permitted to work on the project.

The lower tier subcontractors that will be working on the project will be:

<b>SUBCONTRACTOR</b>	<b>WORK ACTIVITIES</b>
Munter Enterprises, Inc	Rail Yard Building and Air System
DA Collins Construction Co., Inc.	Concrete Work for Scale and Buildings
Mettler Toledo, Inc.	CIM Scale Installation
Clifford R Gray, Inc.	Electrical Work
The Laberge Group	Surveying & Stakeout
Peckham Road Corporation	Paving

Major Activities of Contractor:

- \*Mobilization/Unload Materials
- \*Thermite Welding
- \*Constructing Track & Turnouts

Major Activities of lower tier subcontractor(s):

- \*Sub-Contract Work-Survey Stakeout
- \*Sub-Contract Work - Asphalt Paving
- \*Sub-Contract Work - Concrete Rail Scale Foundation
- \*Sub-Contract Work - CIM Scale Installation
- \*Sub-Contract Work – Excavation and Backfill Work
- \*Sub-Contract Work – Install Formwork and Concrete
- \*Sub-Contract Work – Unload Building Materials
- \*Sub-Contract Work – Steel Erection
- \*Sub-Contract Work - Electrical Work
- \*Sub-Contract Work – Air System



## ***Contractor Health & Safety Plan (HASP)***

### **5.0 HAZARD/RISK/EXPOSURE ASSESSMENT**

Major hazards or risks and exposures associated with the scope of work evaluation are listed below. For each major activity listed, an Activity Hazards Analysis (AHA) has been developed and is included in Section 6.

<b>Activity</b>	<b>AHA #</b>
Mobilization / Unload Materials – This activity includes mobilizing of equipment and materials to the job site. Hazards and risks associated with these tasks include low hanging electrical lines, weather conditions, collisions, pedestrians/workers, uneven ground, softened or muddy surfaces, pinch points, sharp edges, spills, leaks, slip/trip/falls, muscle or back strain, unloading on uneven ground.	<b>1</b>
Survey Stakeout-This activity includes surveying & stakeout of the alignment and grades for the new tracks and locating other fixed objects such as the rail scale, rail yard maintenance building, air lines, and paving work limits. Hazards and risks associated with this task include slip/trip/fall and getting hit by equipment.	<b>2</b>
Thermite Welding- This activity includes Thermite welding of rail. Hazards and risks associated with this task include pinch points, slip/trip/fall, smashed finger/hand, burns from sparks, general burn hazards and fire.	<b>3</b>
Construct Track- This activity includes constructing new railroad track. Hazards and risks associated with this task include mechanical failure of equipment, running into other equipment and/or workers in the vicinity, keeping rails from swinging out of control while being picked up and moved, bundles of ties sliding off of the forks, personal injuries while laying out ties on the ground, creosote burns, pinch points, sharp edges, slip/trip/fall, back strain, overhead hazards, hearing impairment, controlling equipment speed and flipping trucks over when dumping ballast.	<b>4</b>
Asphalt Paving This activity includes placing new asphalt pavement for roadway and crossing surfaces. Hazards and risks associated with this task include low hanging electrical lines, weather conditions, collisions from other truck traffic or pedestrians, uneven ground, softened or muddy surfaces, pinch points, sharp edges, burns, the risk of overturning dump trucks while dumping, slip/trip/fall, spills, leaks, muscle or back strain, traffic accidents.	<b>5</b>
Concrete Rail Scale Foundation This activity includes installation of the concrete rail scale foundation. Hazards and risks associated with this task include being struck by equipment, getting equipment caught in overhead wires, electrical, pinch points, sharp edges, concrete burns.	<b>6</b>

## ***Contractor Health & Safety Plan (HASP)***

<b>Activity</b>	<b>AHA #</b>
CIM Scale Installation This activity includes installation of the CIM rail scale. Hazards and risks associated with this task include weather conditions, moving rail cars, uneven ground, softened or muddy surfaces, pinch points, sharp edges, possible dropped rail while moving, crane overturn, slip/trip/fall, dropping the scale module, muscle or back strain, overhead hazards, assured distance from poles.	<b>7</b>
Excavation and Backfill Work This activity covers all excavation & backfill work associated with the construction of rail yard maintenance building and the rail scale foundations. Hazards and risks associated with this task include low hanging electrical lines, weather conditions, open excavations, trench collapses/cave-ins, moving equipment, spills, leaks, pinch points, sharp edges, possible dropped materials from buckets and/or moving bucket.	<b>8</b>
Install formwork and concrete This activity covers the placing of concrete formwork & pouring concrete in place. Hazards and risks associated with this task include open excavations, trench collapse/cave-ins, moving equipment, spills, leaks, open flames/sparks, pinch points, sharp edges, possible dropped materials from forks, muscle or back strain, slip/trip/fall.	<b>9</b>
Unload Metal Building Materials This activity includes unloading the materials for the construction of the rail yard maintenance building. Hazards and risks associated with this task include low hanging electrical lines, weather conditions, traffic, uneven ground, softened or muddy surfaces, pinch points, sharp edges, possible dropped materials while moving, assured distance from poles, slip/trip/falls, spills, leaks, muscle or back strain, stacked materials tipping over.	<b>10</b>
Steel Erection This activity covers the erection of the structural steel framework, walls and rook system. Hazards and risks associated with this task include moving equipment, spills, leaks, possible dropped materials from forks, pinch points, sharp edges, open flames/sparks, muscle or back strain, slip/trip/fall.	<b>11</b>
Install Electrical Systems This activity includes installing electrical systems. Hazards and risks associated with this task include potential personal injury from excavating/backfilling equipment, hearing impairment, foot injuries, slip/trip/fall, hand injuries, fall hazards, pinch points, mechanical failure of crane and/or slings.	<b>12</b>

**Contractor Health & Safety Plan (HASP)**

<b>Activity</b>	<b>AHA #</b>
Install Air System This activity includes installing underground air system. Hazards and risks associated with this task include low hanging electrical lines, weather conditions, open excavations, cave-ins, moving equipment, spills, leaks, sharp hot edges on cutting tool, muscle or back strain, slip/trip/fall, dropping materials/equipment.	<b>13</b>

**6.0 CONTROL MEASURES/ACTIVITY HAZARD ANALYSIS**

All field personnel will be FRA Roadway worker safety trained. All field personnel will be required to wear a hard hat, steel toe shoes, safety glasses with side shields and reflective safety vests.

Spill kits will be kept on site in the event that piece of equipment leaks hydraulic fluid or oil.

Fire extinguishers and safety will be kept in all company vehicles.

Daily job briefings will be held to discuss job site surroundings, daily work tasks and associated jobs hazards such as but not limited to equipment traffic, tripping hazards, finger pinch points, rail handling, tie handling and weather conditions.

No person or equipment shall foul the Canadian Pacific mainline without proper flag protection.

All field personnel shall obey equipment operators and stay out the reachable zone of moving or working equipment.

See attached Activity Hazard Analysis files for each of the above activities .

**7.0 CONTRACTOR PERIODIC SAFETY INSPECTIONS/AUDITS**

Periodic inspections to identify and evaluate on-going workplace hazards shall be performed by the following competent persons or observers in the following areas of our workplace:

<b><u>Competent Person/Observer</u></b>	<b><u>Area of Expertise/Responsibility</u></b>
Rob Gardner	Project Manager
TBD	Site Safety Officer
Bob Dedrick	Project Superintendent
Ted Wilson	Assistant Project Manager/ QA/QC
Rocky Bradway	Project Foreman

Periodic inspections are performed according to the following schedule:

- Weekly
- When we initially established our Contractor HASP;

## ***Contractor Health & Safety Plan (HASP)***

- When new substances, processes, procedures or equipment which present potential new hazards are introduced into our workplace;
- When new, previously unidentified hazards are recognized;
- When occupational injuries and illnesses occur;
- When we hire and/or reassign permanent or intermittent workers to processes, operations, or tasks for which a hazard evaluation has not been previously conducted; and
- Whenever workplace conditions warrant an inspection.

Periodic inspections consist of identification and evaluation of workplace hazards.

### **8.0 CONTRACTOR RISK MITIGATION TWO-WEEK LOOK-AHEAD PLANNING SUBMISSION**

The Risk Mitigation Two-Week Look-Ahead Form in the Appendix is used to plan risk mitigation strategies at weekly progress meetings.

### **9.0 COMPLIANCE REQUIREMENTS POLICY**

Management is responsible for ensuring that all safety and health policies and procedures are clearly communicated and understood by all employees. Managers and supervisors are expected to enforce the rules fairly and uniformly.

All employees are responsible for using safe work practices, for following all directives, policies and procedures, and for assisting in maintaining a safe work environment.

Our system of ensuring that all workers comply with the rules and maintain a safe work environment includes:

- Informing workers of the provisions of our Contractor HASP and the Master RA HASP;
- Evaluating the safety performance of all workers;
- Recognizing employees who perform safe and healthful work practices;
- Providing training to workers whose safety performance is deficient;
- Disciplining workers for failure to comply with safe and healthful work practices.

### **10.0 WRITTEN PROGRESSIVE DISCIPLINARY PROGRAM**

The written disciplinary/conduct program can be found in the Appendix.

### **11.0 HAZARD CORRECTION POLICY**

Unsafe or unhealthy work conditions; practices or procedures shall be corrected in a timely manner based on the severity of the hazards. Hazards shall be corrected according to the following procedures:

## ***Contractor Health & Safety Plan (HASP)***

- When observed or discovered;
- When an imminent hazard exists which cannot be immediately abated without endangering employees or property, we will remove all exposed workers from the area except those necessary to correct the existing condition. Workers necessary to correct the hazardous condition shall be provided with the necessary protection; and
- All such actions taken and dates they are completed shall be documented on the appropriate forms.

### **12.0 TRAINING AND INSTRUCTION POLICY**

All workers, including managers and supervisors, shall have training and instruction on general and job-specific safety and health practices. Training and instruction shall be provided as follows:

- When the Contractor HASP is first established;
- To all new workers;
- To all workers given new job assignments for which training has not previously provided;
- Whenever new substances, processes, procedures or equipment are introduced to the workplace and represent a new hazard;
- Whenever the employer is made aware of a new or previously unrecognized hazard;
- To supervisors to familiarize them with the safety and health hazards to which workers under their immediate direction and control may be exposed; and
- To all workers with respect to hazards specific to each employee's job assignment.

Workplace safety and health practices for all locations include, but are not limited to, the following:

- Explanation of the employer's Contractor HASP, the Hudson River PCBs Superfund Site Remedial Action Health and Safety Plan (RA HASP) Phase 1 Facility Site Work Construction, emergency action plan and fire prevention plan, and measures for reporting any unsafe conditions, work practices, injuries and when additional instruction is needed.
- Use of appropriate clothing, including gloves, footwear, and personal protective equipment.
- Information about chemical hazards to which employees could be exposed and other hazard communication program information.
- Availability of toilet, hand-washing, and drinking water facilities.
- Provisions for medical services and first aid including emergency procedures.

In addition, we provide specific instructions to all workers regarding hazards unique to their job assignment, to the extent that such information was not already covered in other training.

### **13.0 PROJECT SITE EMPLOYEES ORIENTATION PROGRAM SUBJECTS**

As a condition of working on a remediation project involving the potential for exposure to hazardous substances and health hazards, our workers will receive information about the following subjects:

- Names of personnel responsible for site safety and health
- Reporting emergencies, incidents and unsafe conditions
- Emergency/evacuation plans
- Safety, health and other hazards at the site
- Review of all activities on site and related Activity Hazard Analyses (AHAs)
- Proper use of personal protective equipment
- Work practices by which a worker can minimize risk from hazards
- Safe use of engineering controls and equipment on site
- Acute effects of compounds at the site
- Decontamination procedures

In addition to the above-mentioned information, we also orient our employees on:

- Client and/or Construction Manager (CM) safety requirements
- The employer's code of safe practices – good housekeeping
- Road and highway safety practices – flagging, traffic control
- Heavy equipment operation – cranes, excavators, articulating dump trucks, etc
- Driver safety - defensive driving, operation of pick-up trucks and ATVs
- Ladder safety
- Fire prevention
- Cleaning, repairing, servicing and adjusting equipment and machinery
- Proper use of powered tools
- Guarding of belts and pulleys, gears and sprockets, and conveyor nip points
- Machine, machine parts, and prime movers guarding
- Lockout/tagout procedures
- Materials handling.
- Chainsaw and other power tool operation.
- Unsafe weather conditions – lightning, high winds
- Mobilization/demobilization – yard operations, running lines, etc.

## ***Contractor Health & Safety Plan (HASP)***

- Landing and loading areas - release of rigging, landing layout, moving vehicles and equipment, truck locating, loading and shipping
- Use of elevated platforms – condors, aerial lifts and scissor lifts
- Ergonomic hazards - proper lifting techniques
- Personal protective equipment
- Hazardous chemical exposures
- Hazard communication
- Scaffolds - safe use and erection/dismantling
- Physical hazards - heat and cold stress, noise, and ionizing and non-ionizing radiation
- Biological hazards – poisonous plants/vegetation, animals, bloodborne pathogens, etc.
- Other job-specific hazards, such as Roadway Worker Protection

### **14.0 EMPLOYEE COMMUNICATION SYSTEM AND POLICY**

We recognize that open, two-way communication between management and staff on health and safety issues is essential to an injury-free, productive workplace. The following system of communication is designed to facilitate a continuous flow of safety and health information between management and staff in a form that is readily understandable and consists of one or more of the following checked items:

- New worker orientation including a discussion of safety and health policies and procedures.
- Review of our Contractor HASP and the RA HASP
- Workplace safety and health training programs.
- Regular weekly and daily safety meetings.
- Effective communication of safety and health concerns between workers and supervisors, including translation where appropriate.
- Posted or distributed safety information.
- A system for workers to anonymously inform management about workplace hazards.
- A labor/management safety and health committee that meets regularly, prepares written records of the safety and health committees meetings, reviews results of the periodic scheduled inspections, reviews investigations of accidents and exposures and makes suggestions to management for the prevention of future incidents, reviews investigations of alleged hazardous conditions, and submits recommendations to assist in the evaluation of employee safety suggestion.

### **15.0 RECORDKEEPING POLICY**

We have taken the following steps to document implementation of our Contractor HASP:

## ***Contractor Health & Safety Plan (HASP)***

- Records of hazard assessment inspections, including the persons conducting the inspection, the unsafe conditions and work practices that have been identified and the action taken to correct the identified unsafe conditions and work practices, are recorded on a hazard assessment and correction form.
- Documentation of safety and health training for each worker, including the worker's name or other identifier, training dates, types of training, and training providers are recorded on a worker training and instruction form.
- Other records are retained as required by contract specifications or by local, state or federal (OSHA regulations). Where regulations do not specify the length of records retention, a period of three years after project completion will be used.

### **16.0 INCIDENT/NEAR-MISS INCIDENT INVESTIGATIONS POLICY**

Procedures for investigating workplace incidents and near-miss incidents include:

- Responding to the incident scene as soon as possible;
- Reporting incidents and near-miss incidents immediately to the appropriate CM point-of-contact
- Interviewing injured workers and witnesses;
- Examining the workplace for factors associated with the incident/near-miss incident;
- Determining the cause of the incident/near-miss incident;
- Taking corrective action to prevent the incident/near-miss incident from reoccurring;
- Recording the findings and corrective actions taken; and
- Post-accident substance abuse testing.

### **17.0 EMERGENCY ACTION PLAN**

Railworks will follow the alarm signal system established for the site for emergency and evacuation purposes and will relay this system to all visitors, employees, subcontractors and other authorized on-site personnel.

Alarm signals will be transmitted using an air horn (i.e., fog horn) and bullhorn as needed. The following signals will be used;

Medical Emergency: 3 short, 1-second blasts followed by 3-second delay - repeated till no longer necessary.

Alert: A 5-second blast followed by a 10-second delay – repeated till no longer necessary.

Evacuation: Continuous blast – repeated till no longer necessary.

All Emergency Procedure Plans will be discussed weekly during the Weekly Tool Box Talks. The Supervisor will assign an employee to be in charge of Rescue and Medical duties during this weekly meeting. The Supervisor will use either cell phones or 2-way radio



## ***Contractor Health & Safety Plan (HASP)***

communication to notify all work groups of an emergency and will announce where to assemble and where to evacuate to. The Supervisor will account for all employees after an evacuation by taking a head count. The Supervisor will contact the Construction Manager on site and the RailWorks Project Manager and the RailWorks Safety Director to notify of an emergency.

### **18.0 SITE-SPECIFIC MEDICAL EMERGENCY PLAN**

In the event of a medical emergency the following emergency number may be used:

**EMERGENCY NUMBER                      911**

For serious injuries requiring medical attention employees will be instructed to go to: ***Glens Falls Hospital, 100 Park St. Glens Falls, NY 12801*** Phone: 518-926-1000 (Directions and map can be found in appendix)

Managers, supervisors and foremen are CPR and First-Aid safety certified. In the event of a non-emergency situation, the following lists the names phone numbers and certifications of personnel on site.

Rob Gardner- Project Manager – cell: 330-720-5891  
CPR/AED/FA Certified – (February, 2007)

TBD – Site Safety Supervisor – cell:  
CPR/AED/FA Certified – (February,2007)

Ted Wilson – Assistant Project Manager/QA/QC – cell: 330-720-1388  
CPR/AED/FA Certified – (February,2007)

Bob Dedrick – Project Superintendent – cell: 330-720-5473  
CPR/AED/FA Certified – (February, 2007)

Rocky Bradway – Project Foreman – cell: 330-720-5874  
CPR/AED/FA Certified – (February, 2007)

For injuries **not requiring medical attention**: first Aid kits will be located in each company vehicle. An eyewash station along with a first aid kit will be located in the project trailer.

- For first aid and non-serious injuries requiring medical attention, employees will go to: ***Center for Occupational Health 2 Broad Street Glen Falls, NY 12801*** Phone: 518-926-2140 (Directions and map can be found in Appendix).

### **19.0 HAZARD COMMUNICATION PROGRAM**

- Purpose of Hazcam Program
- General Responsibilities
- MSDS Sheets

## ***Contractor Health & Safety Plan (HASP)***

- Container Labeling and Warnings
- Training and Training Elements
- Contract Employees

MSDS Books will be located in each company vehicle. Additional books will be kept in the project trailer. The written Hazcom Program and corresponding MSDSs can be found in the Appendix.

The most common hazardous chemicals used by Railworks include but are not limited to the following:

- \* Creosote
- \* Oxygen
- \* Acetylene

### **20.0 WRITTEN TRENCHING AND SHORING PLAN**

During the excavation or trenching, in order to prevent the exposure of employees to the hazards created by damage to dangerous underground facilities, efforts shall include contact with the resident engineer to determine whether underground installations will be encountered, and if so, where such underground installations are located. When it is uncovered, proper supports to prevent damage shall be provided for the existing installation. Utility companies shall be contacted and advised of proposed work prior to the start of the actual excavation.

All trenching and excavation operations deeper than 4 feet shall comply with OSHA Standard 29 CFR 1926.652 under the direction of a “competent person.” Excavation competent person certificates are included in the Appendix.

All Trenching deeper than 4 feet shall comply with OSHA Standard 1926 Subpart P Appendix B Sloping and Benching and Appendix C and D Shoring for Trenches

Where multiple cables exist in an excavation, all cables not being worked on will be protected as necessary.

The cable to be worked on shall be identified by electrical means unless identity is obvious by its appearance.

### **21.0 WRITTEN RESPIRATORY PROTECTION PROGRAM**

Not Applicable

### **22.0 ATTACH OTHER WRITTEN PROGRAMS AS REQUIRED BY REGULATION AND APPLICABLE TO THIS PROJECT**

Written plans on the subject matter below are contained in the Railworks Safety, Health and Environmental Plan, and can be found in the Appendix.

## ***Contractor Health & Safety Plan (HASP)***

- Working in Manholes, Vaults & Confined Spaces – Section 9.0
- Scaffold and Ladders – Section 11.2
- Mobile Equipment – Section 11.3
- Housekeeping – Section 11.4
- Electrical Safety Requirements – Section 12.0
- Lockout/Tagout System – Section 12.3
- Assured Grounding Procedure – Section 13.0
- Care and Use of Ropes and Blocks – Section 14.0
- Material Handling – Section 15.0
- Fall Protection Program – Section 19.0

### **23.0 LIST OF ATTACHMENTS**

- Periodic Safety/Audit Inspection Record
- Accident Inspection Report Form
- Employee Orientation/Training Record
- Contractors Weekly Safety Planning Submission
- Railworks AHA Manual
- Railworks Disciplinary/Conduct Program
- Employee Certificates – To be furnished upon completion of training.
- Directions: Glens Falls Hospital
- Directions: Center for Occupational Health

**APPENDICES**

ACTIVITY HAZARDS ANALYSIS

Page \_\_\_\_ of \_\_\_\_

<b>Project Name &amp; Number:</b> Hudson River Sediment River Phase 1		<b>AHA No. 1</b>		<b>Date:</b>		<b>New:</b>	
<b>Location:</b> Fort Edward, NY		<b>Contractor:</b>				<b>Revised:</b>	
<b>Minimum Required Personal Protective Equipment:</b> Hard hat, safety vest, safety glasses with side shields, steel toe work boots				<b>Analysis by:</b>		<b>Date:</b>	
		<b>Superintendent/Competent Person</b>		<b>Reviewed by:</b>		<b>Date:</b>	
<b>Work Task/Activity:</b>				<b>Approved by:</b>		<b>Date:</b>	
<b>Job Step</b>	<b>Potential Hazards</b>	<b>Preventive or Corrective Measures</b>		<b>Inspection Requirements</b>			

**Training Requirements:**

All assigned employees are required to familiarize themselves with the contents of this AHA before starting a work activity and review it with their Supervisor during their Daily Safety Huddle.

*Contractor Health & Safety Plan (HASP)*

**SAFETY MEETING SIGN-IN SHEET**

Safety Meeting Presenter: \_\_\_\_\_ Date: \_\_\_\_\_

Current Weather Conditions:

Temperature (°F) = \_\_\_\_\_ Wind Direction = \_\_\_\_\_ Wind Speed = \_\_\_\_\_

Clear - Sunny – Cloudy – Rain - Snow Forecast = \_\_\_\_\_

Current Site Conditions (circle as appropriate):

Dry - Wet - Muddy - Frozen - Snow Covered - Other (describe) \_\_\_\_\_

1. Incidents or Injuries to report from Previous Day Activities (circle one): No – If Yes, explain below:

\_\_\_\_\_

2. Safe and/or At-Risk Observations from Previous Day Activities: \_\_\_\_\_

\_\_\_\_\_

3. Activities Taking Place Today: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3. Anticipated Hazards: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

4. Engineering Controls-Work Practices-PPE to Protect Against Hazards: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

5. Additional Safety Topic or Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



**RISK MITIGATION TWO-WEEK LOOK-AHEAD FORM**

**Safety plan for week ending:** \_\_\_\_\_ **Contractor:** \_\_\_\_\_

**Project/ Location:** \_\_\_\_\_ **Meeting date:** \_\_\_\_\_

**Plan Prepared by:** \_\_\_\_\_ **Dated:** \_\_\_\_\_

Next Two Weeks Scope of Work:

Identified Risks/Exposures/Hazards:

Control Measures:

Additional Activity Hazards Analysis Required:

Subcontractors Mobilizing/Demobilizing:

Audit/Inspections Scheduled:

Competent Person Changes:

Planned Orientation/Training :

Recommendations/Comments/Concerns:

**Note:** This information should be incorporated into the meeting minutes.





## **EMPLOYEE DISCIPLINARY/CONDUCT POLICY**

We have established this policy to communicate our expectations for employee conduct and to insure that all employees are treated fairly and consistently. Employees are responsible for being on their jobs, on time, every scheduled or assigned work shift, and for completing their scheduled or assigned shift. Reporting off work and reporting back on for work must be done through the office in Ft. Edward, NY or the Supervisor to which he is assigned in a timely manner.

Employees are expected to conduct themselves in such a way as to maintain a safe and productive work environment. These Work rules consist of basic guidelines developed on the basis of experience and are intended to be corrective.

The Work Rules break down offenses into three categories: Unacceptable Offenses, Serious Offenses and Minor Offenses, and each category is administered separately. “Unacceptable Offenses” are so obvious and commonly recognized that no warning corrective action is necessary, the Work Rules provide for sequential disciplinary steps in each group and are designed to notify an employee who has committed an offense that further or more severe actions will result if any additional offenses occur.

The offenses listed are not intended to be comprehensive. Railworks will evaluate any other conduct considered detrimental as and if it transpires to decide if further action is necessary. The disciplinary step procedure set forth is for the general guidance of employees. Under normal circumstances it will be followed, but may be modified or changed in situations involving extenuating circumstances. Disciplinary actions will be administered in a constructive manner which is intended to motivate the offending employee toward appropriate behavior.

### **Unacceptable Offenses:**

Unacceptable offenses are willful and deliberate violations. These are offenses which will not be tolerated by the company and are of such a nature that the first offense indicates that the continued employment of the offender is not in the best interest of the company and its employees. An employee involved in this type of offense will be discharged accordingly.

1. **IMMEDIATELY DANGEROUS TO LIFE AND HEALTH:** Any situation that would put either yourself or a fellow employee in a situation that was detrimental to their health and safety.
2. **STEALING:** Theft or misappropriation of company property or property of others.
3. **FALSE INFORMATION:** Deliberate falsification of or making false statement in connection with any company related records or reports, including, but not limited to, employment application, insurance claims, time cards or quality control or production reports.

## ***Contractor Health & Safety Plan (HASP)***

4. **FIGHTING:** Fighting, committing an act of physical violence, or deliberate or reckless conduct which causes or could result in physical injury while on company premises or during scheduled or assigned work shift.
5. **WILLFUL DAMAGE OF COMPANY PROPERTY:** Deliberate damaging Company equipment, material or property.
6. **DEADLY WEAPONS:** Transportation or possession any pistol, shotgun, rifle, or any other firearm, dirk, stiletto, bludgeon, billy club, blackjack, switchblade, sword, fireworks, bomb, ammunition, poisonous or dangerous gases, or any dangerous or deadly weapon within, or upon any property owned or under the control of this Company.

### **Serious Offenses:**

Serious offenses will result in immediate suspension for three days. A second serious offense will result in suspension up to and including termination.

1. **INSUBORDINATION:** Deliberate failure or refusal to carry out a work assignment or other order or instructions of a supervisory employee.
2. **UNFIT CONDITION:** Reporting for work in an unfit condition to work. (Offending employee will not be permitted to work, will not receive reporting pay and will be directed to leave company premises.)
3. **CARELESSNESS:** Careless waste, misuse, destruction or damage of company property of the property of others while on company premises or during scheduled or assigned work shift; careless workmanship resulting in damage to company material, tools, or equipment; careless disregard of safety rules or careless conduct while on company premises or during scheduled or assigned work shift which causes or could cause physical injury.
4. **LEAVING WORK SITE WITHOUT PERMISSION:** Leaving the work site during scheduled or assigned work shift without permission from supervisor unless leaving for reasons of First Aid; i.e., seeking of medical assistance.
5. **IMPROPER CONDUCT:** Improper conduct on company premises or during schedules or assigned work shift.
6. **INTERFERENCE WITH SUBCONTRACTOR(S):** Interference with subcontractor(s) during the performance of their duties.
7. **PROVOKING OR THREATENING CONDUCT:** Provoking or instigating a fight or threatening bodily injury to any person while on company premises or during scheduled or assigned work shift.

### **Minor Offenses:**

Three step disciplinary policy will be administered for minor violations as follows:

- 1st Offense - Verbal Warning
- 2nd Offense - Written Warning
- 3rd Offense - 3 Day Suspension
- 4th Offense - Suspension with Intent to Discharge

### ***Contractor Health & Safety Plan (HASP)***

1. SAFETY: Failure to use or wear required safety equipment and clothing. Violating safety rules or working in an unsafe manner.
2. SLEEPING: Sleeping during scheduled or assigned work shift or on company premises.
3. HORSEPLAY: Engaging in “horseplay” on company premises or during scheduled or assigned work shift.
4. READING: Reading newspapers, books, magazines or other literature during scheduled or assigned work shift except as required by the work assigned, unless otherwise approved by the Department Superintendent.
5. GAMBLING: Card playing, dice playing, etc., on company premises or during schedules or assigned work shift.
6. WORKMANSHIP: Poor workmanship or careless waste of company materials, tools, or equipment.
7. SIGN AND NOTICES: Defacing or posting or removing without the prior approval of the Personnel Department signs or notices on company premises.
8. PETITIONS: Circulating petitions, distributing literature or lotteries on company premises without the prior approval of the Main Office.
9. IMPROPER RELIEF: Leaving the job site without being properly relieved or the superintendent not being informed.
10. USE OF COMPANY EQUIPMENT: Using company equipment, tools, material and time to do work for yourself without the express approval the main office /general manager.

The Work Rules will be administered as a separate program and will not limit or be limited by any other company program dealing with employee standards of conduct or work rules. Disciplinary action under the Work Rules will not preclude disciplinary action under another company program for the same or similar incident or offense.

*Contractor Health & Safety Plan (HASP)*

**MEDICAL EMERGENCY PLAN DIRECTIONS:**

**CENTER FOR OCCUPATIONAL HEALTH**

**PHONE: 518-926-2140 Contact: Christy Holland**

Mile	Instruction	For
0.0	Depart 10 East Rd, Fort Edward, NY 12828 on East Rd (West)	65 yds
0.1	Road name changes to East St	1.0 mi
1.0	Bear RIGHT (North-West) onto US-4 [Broadway]	2.4 mi
3.4	Keep STRAIGHT onto Park Pl	54 yds
3.4	Bear RIGHT (West) onto SR-254 [River St]	1.3 mi
4.7	Road name changes to Lower Warren St	0.2 mi
4.9	Keep STRAIGHT onto SR-32 [Lower Warren St]	1.6 mi
6.6	Bear RIGHT (North-West) onto US-9 [Glen St]	0.1 mi
6.7	Turn LEFT (South) onto CR-28 [South St]	0.2 mi
6.9	Arrive 2 Broad St, Glens Falls, NY 12801 [2 Broad St, Glens Falls, NY 12801]	



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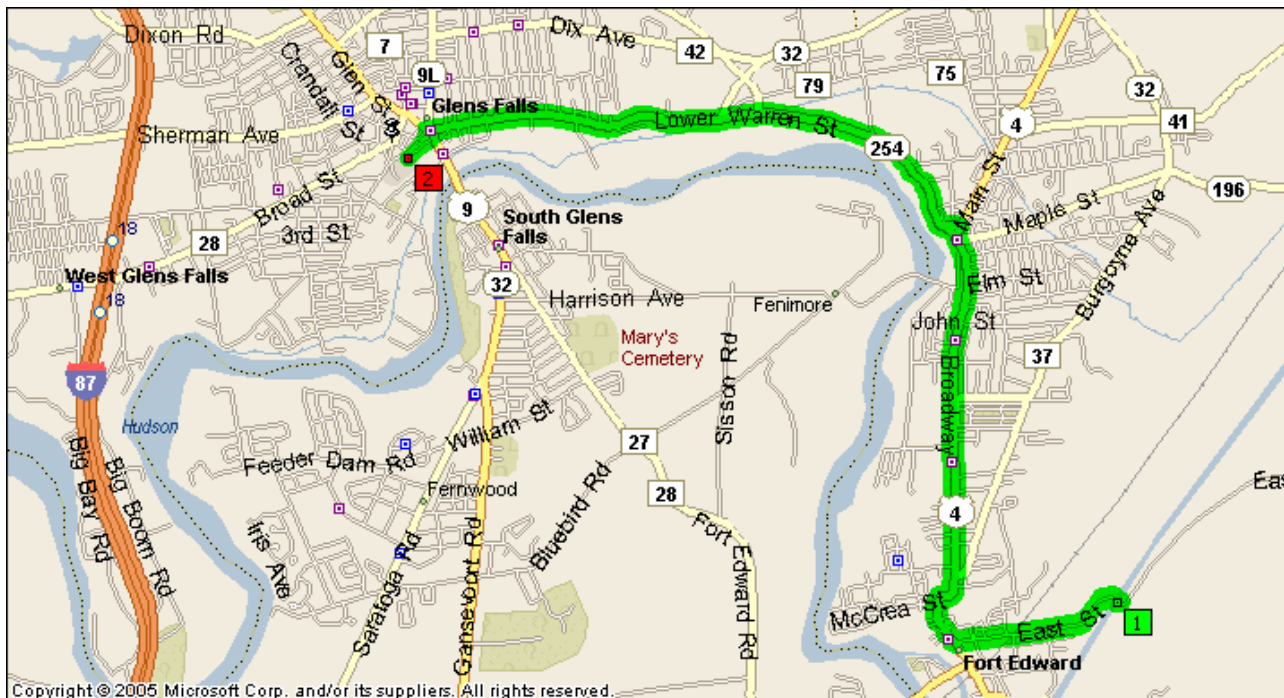
**Contractor Health & Safety Plan (HASP)**

**MEDICAL EMERGENCY PLAN DIRECTIONS:**

**GLENS FALLS HOSPITAL**

**PHONE: 518-926-1000**

<b>Mile</b>	<b>Instruction</b>	<b>For</b>
0.0	Depart 10 East Rd, Fort Edward, NY 12828 on East Rd (West)	65 yds
0.1	Road name changes to East St	1.0 mi
1.0	Bear RIGHT (North-West) onto US-4 [Broadway]	2.4 mi
3.4	Keep STRAIGHT onto Park Pl	54 yds
3.4	Bear RIGHT (West) onto SR-254 [River St]	1.3 mi
4.7	Road name changes to Lower Warren St	0.2 mi
4.9	Keep STRAIGHT onto SR-32 [Lower Warren St]	1.6 mi
6.6	Turn LEFT (South-East) onto US-9 [SR-32], then immediately turn RIGHT (South-West) onto Park St	0.2 mi
6.8	Arrive 100 Park St, Glens Falls, NY 12801	



## ***Contractor Health & Safety Plan (HASP)***

### **16.0 HAZARD COMMUNICATION PROGRAM (HAZCOM)**

#### **16.1 PURPOSE**

The Hazard Communication Program was prepared as an aid in meeting the requirements of the Federal Occupational Safety and Health Administration's Hazard Communication standard (29 CFR 1926.59). Its main goal is to provide education and procedures on how to:

- inventory chemicals in use;
- obtain and read Material Safety Data Sheets (MSDS);
- maintain labels on chemical substances; and
- educate employees and contract workers about the hazards of chemicals they are likely to encounter on the job.

Preparation of the program indicates The Company's continuing commitment to safety among its employees in all of its project locations. Each profit center and project is expected to follow the program and maintain its work area in accordance with its provisions. Employees, their designated representatives, and government officials must be provided with copies of this program upon request, verbal and/or written. In addition to the program, other information required as part of the hazard communication effort is also available to these persons upon request. Asking to see the information is an employee's right. Utilization of this information in a proactive manner in an effort to mitigate and/or control hazardous situations and materials is a foundation of the shared commitment between The Company and its employees to a safe and healthy workplace.

#### **16.2 GENERAL RESPONSIBILITIES**

The Safety Director is the overall coordinator for the program and is able to answer questions and provide additional information if needed.

The Safety Director maintains a master list of all hazardous chemicals in use or storage. The list is called the "Master Chemical List" and it is updated whenever new chemicals are received at the facility. The list is maintained by profit center or, in the case of large or far flung projects, on a project basis. The list is available for inspection upon request.

#### **16.3 MATERIAL SAFETY DATA SHEETS (MSDS)**

As part of compliance with the hazard communication standard, the Director of Safety maintains a library of MSDSs for chemicals used in the facility and on each job site. The MSDS consists of a fully completed OSHA Form 173 or equivalent.

At the field level, each crew foreman is responsible for maintaining a copy of each MSDS provided by the Division/Project Safety Manager for each chemical in use by the crew. The MSDSs are to be readily available to all employees during all work shifts.

New MSDSs: The Project Safety Manager must forward a copy of each new MSDS received to the crew foremen affected, the Director of Safety and/or to the facility where it is used. The chemical will be added to the Project Master Chemical List and the original MSDS will be added to the library maintained on site for future reference and

## ***Contractor Health & Safety Plan (HASP)***

copying. The new MSDS must be received prior to or concurrent with the first shipment of any potentially hazardous chemical from a supplier.

Acquiring MSDSs: The Safety Director is responsible for obtaining MSDSs from suppliers and for maintaining the master MSDS library for all profit centers and/or projects. The Safety Director will also contact suppliers for missing MSDSs, and monitor and maintain the current status of the MSDS library. When there is an option, the least hazardous material will be purchased.

Control of MSDSs: The original version of each new MSDS will be forwarded immediately to the Director of Safety. Copies will be forwarded to all affected crews and areas where the hazardous material will be utilized through the Foremen. The hazardous material will not be released for use until the MSDS has been received and reviewed by the foreman of the crew that will be utilizing it. The crew/area MSDS shall be filed and maintained for easy reference.

### **16.4 LABELS, CONTAINER LABELING AND WARNINGS**

The Safety Director will ensure that all hazardous materials used in profit center operations are properly labeled. The Safety Director will also verify that the identifying information and other data on a material's label corresponds to the information on the MSDS for that specific material.

Damaged labels or those lacking necessary information should immediately be reported to the Safety Director who will:

- obtain new labels as needed;
- approve all labels prepared for in-house use; and
- regularly check that all containers are labeled and up-to-date.

Labels on incoming containers of hazardous materials may not be removed or defaced unless a new label or markings with the required warnings is immediately attached to the container. Containers into which employees transfer a hazardous material for their immediate, but temporary use, do not require labeling as long as the container never leaves the employees' possession and its contents is properly disposed of at the end of the activity or shift, whichever comes first.

Labels, tags, or markings on containers will list at least:

- the identity of the hazardous material(s) as listed on the MSDS(s);
- the appropriate hazard warnings to help employees protect themselves from the potential hazards of the material; and
- the name and address of the manufacturer, importer, or other person responsible for the hazardous material from whom more information about the material can be obtained.

## ***Contractor Health & Safety Plan (HASP)***

### 16.5 TRAINING

Every employee who works with, or may be exposed to hazardous materials will be trained on the safe use of those materials and about the hazard communication standard. Initial training will be completed as soon as possible.

Additional training will be provided whenever a new hazardous material is introduced into the workplace. Crew foremen will be conduct supplementary training in required Tool Box meetings as a way of reinforcing the importance of properly handling hazardous material.

#### 16.5.1 Training Elements

16.5.1.1 Hazard communication training for employees includes:

- information about the requirements of the hazard communication standard, the content and location of the written program, and where hazardous materials are located in the work areas;
- training in the detection of the release of hazardous materials visually, by odor, and through the use of monitoring devices;
- information on the physical and health hazards associated with the hazardous materials being utilized within the workplace;
- information on how to protect themselves from hazardous materials, including the meaning and use of labels and MSDSs; and
- information about their rights under the hazard communication program, and how to obtain and use the appropriate hazard communication information.

### 16.6 CONTRACT EMPLOYEES

The appropriate foreman shall inform the Safety Director whenever outside contractor employees will be in an area where hazardous materials are present. The outside contractor shall then be informed of those hazards and given information to utilize in training its employees.

### 16.7 SAMPLE LETTER REQUESTING MSDS AND LABELS

The Project Safety Manager shall duplicate, fill out and send out the form letter on the following page to the suppliers of all hazardous materials, either new or stored, that are found not to have the MSDS on file. The Safety Director should be listed as the contact and all information necessary to allow this should be included in the letter. A copy of each letter sent, and any reply received shall be filed for future reference.

If a reply is not received within 15 days, the letter will be sent again, but this time by "Certified Mail, Return Receipt Requested" and marked "Second Request". A copy of the "Second Request" letter shall be filed with the original letter request. The file of MSDS request letters shall be maintained for future reference.

## **WRITTEN PROGRAMS AS REQUIRED BY REGULATION AND APPLICABLE TO THIS PROJECT**



## ***Contractor Health & Safety Plan (HASP)***

### **Working in Manholes, Vaults & Confined Spaces – Section 9.0**

Whenever the cover is removed, the opening shall be promptly protected with a barrier, temporary cover, or other suitable guard to prevent anyone falling in.

When anyone may be required to enter a manhole, vault or confined space, appropriate warning signs shall be promptly placed.

No entry shall be permitted unless forced ventilation is provided or the atmosphere is found to be safe by testing for oxygen deficiency and the presence of explosive gases or fumes.

Where testing or other means detects unsafe conditions, the work area shall be ventilated and otherwise made safe before entry.

Provisions shall be made for an adequate continuous supply of air.

An employee shall be available in the immediate vicinity to render emergency assistance as may be required. Note: This requirement shall not preclude the employee in the immediate vicinity from occasionally entering a manhole to provide assistance other than emergency. This requirement also does not preclude a qualified employee, working alone, from entering, for brief periods of time, a manhole where energized cables or equipment are in service for the purpose of inspection, housekeeping, taking readings, or similar work if such work can be performed safely.

When open flames must be used in manholes, extra precautions shall be taken to provide adequate ventilation. Approval must be obtained prior to any hot work.

Before using an open flame in a manhole or excavation in an area where combustible gases or liquids may be present, the atmosphere of the manhole or excavation shall be tested and found safe or cleared of the combustible gases or liquids.

Rescue equipment shall be available for extricating persons from manholes or other confined spaces.

When working on cables in manholes, metallic sheath continuity shall be maintained by bonding across the opening or equivalent means.

### **Scaffold and Ladders – Section 11.2**

Only approved scaffold and ladders are to aloud on Company Property.

Scaffolds shall be properly erected and installed according to manufacturer's specifications and inspected before first use.

Ask for and use sufficient scaffold boards to secure proper footing. Do not use a poorly constructed scaffold.

Scaffold must be provided with guardrails and toe boards.

Never lean against handrails or guardrails.

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Do not go up or down a ladder without the free use of both hands. If materials must be handled, hoist it up or down by rope first. Always face a ladder either going up or down. Make certain that your ladder is secure. Never use a defective ladder.

Never leave an opening uncovered. Provide a cover or guardrail.

Rebar is not to be used for scaffold supports.

Only approved and properly marked scaffold planks are to be used. Such markings should be red painted sides or red strips on the body of the plank.

Jumping from a higher level onto a scaffold or stairs is not allowed.

Make certain that any scaffold you are to work is properly erected and safe.

### **Mobile Equipment – Section 11.3**

Do not move winch trucks unless loads suspended from winch lines are secured to prevent swinging.

Do not ride on running boards or stand up in moving vehicles, unless under direct supervision.

Keep clear of swinging cabs of cranes.

Do not touch the crane load while it is in motion. Use tag lines.

Do not ride the ball or hook on any crane or derrick.

### **Housekeeping – Section 11.4**

Work materials should be neatly stacked so that they cannot topple over.

Adequate aisles should be provided throughout company job site storage areas.

Working platforms, scaffolds, ladders, ramps, and runways should be kept clear of all scrap, loose work materials, grease and mud.

Daily clean up is essential. All work areas should be neatly policed and cleaned to expedite operations.

### **Electrical Safety Requirements – Section 12.0**

#### **12.1 Scope**

These regulations apply only to electrical installation used on the job site, whether temporary or permanent.

#### **12.2 Purpose**

All circuits that have active parts exposed to the working area will be de-energized before the craftsmen start, if possible.

## ***Contractor Health & Safety Plan (HASP)***

### **12.3 Lockout/Tagout System**

Determine the circuit to be de-energized

Locate the switch that de-energizes circuit.

With the proper approval, move the switch to break the identified circuit. Remove associated fuses if any.

Lock out applicable switch or breaker in the off position.

Place approved red tag on the outside of switch in a prominent place, this tag will indicate that men are working on this circuit.

The person turning the switch off must sign the tag with signature, badge number and date. This must be done at the start of each shift and if there is more than one shift, persons involved in the second shift must attach their own tag with signature, date and badge number. The same would apply to a third shift.

Tags required for a period longer than 24 hours must be signed, dated and attached by Project Superintendent.

All tags must be signed and dated by only the one person placing the lock/tag. The same person is responsible for removal of his/her LO/TO device.

Before trenching or excavating in areas where the exact location of underground lines are unknown, the craftsmen involved should get clearance from the Project Superintendent.

Before work starts on any location, the Safety Director and / or Project Superintendent will inspect the site.

This inspection shall ascertain whether any hazards exist, proper warnings are posted and maintained. All affected personnel must be notified of such hazards and the proper protective measures to be taken.

Passageways and open spaces around exposed energized electrical equipment shall be guarded to prevent workers from inadvertent contact.

All tasks requiring work instructions and/or procedures on safe handling and operations of a special nature, will be referred to the attention of the Company's project or Director of Safety and not begin until the safe procedure is received and understood.

## **Assured Grounding Procedure – Section 13.0**

### **13.1 Scope**

This procedure describes the requirements to assure the installation and maintenance of equipment grounding conductors for temporary wiring on construction sites in accordance with OSHA Standards 29 CFR 1910.309 (c)(3) and 29 CFR 1926.400(h)(3).

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### **13.2 Purpose**

Ground-fault circuit interrupters (GFCI'S) are not required for 120 volt, single phase, 15- and 20- ampere receptacle outlets where all of the requirements of this procedure are implemented at the construction site.

Employees shall not use any equipment, which has not met the requirements of this procedure.

### **13.3 Jobsite Information**

Name or description of construction site:

OWNER / General Contractor Information

Employer complying with this procedure is:

The Company & Co, and all of its subcontractors

Person designated to implement the procedure is:

(Name of Project Manager or his designee).

### **13.4 Equipment Grounding Conductors**

Equipment grounding conductors shall be installed as follows:

- All 120-volt, single-phase, 15 and 20 ampere receptacles shall be of the grounding type and their contacts shall be grounded by connection to the equipment grounding conductor of the circuit supplying the receptacles in accordance with the applicable requirements of the National Electrical Code.
- All 120-volt cord sets (extension cords) shall have an equipment-grounding conductor, which shall be connected to the grounding contacts of the connector(s) on each end of the cord.
- The exposed non-current-carrying metal parts of 120-volt cord-and-plug-connected tools and equipment that are likely to become energized shall be grounded in accordance with the applicable requirement of the National Electrical Code.
- Visual Inspection - Employees shall be instructed to visually inspect receptacles, flexible cord sets (extension cords), except those that are fixed and not exposed to damage, and equipment connected by cord and plug before each day's use for external defects such as deformed or missing pins or insulation damage and for indication of possible internal damage. Where there is evidence of damage, the damaged item shall be taken out of service and tagged until tested and any required repairs have been made.

All 120-volt, single-phase, 15 and 20 ampere receptacles which are not a part of the permanent wiring of the building or structure, 120-volt flexible cord sets, and 120-volt cord and plug-connected equipment required to be grounded shall be tested as follows:

- All equipment grounding conductors shall be tested for continuity and shall be electrically continuous.

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- Each receptacle and attachment cap or plug shall be attached to the equipment-grounding conductor. The equipment-grounding conductor shall be connected to its proper terminal.

### **13.4.1 Testing Schedule**

#### **Tests shall be performed:**

- Before first use.
- Before equipment is returned to service following any repairs.
- Before equipment is used after any incident that can be reasonably suspected to have caused damage (i.e. when a power cord is run over by equipment).
- At intervals not to exceed 3 months.

### **13.4.2 Test Record**

Tests performed as required by this procedure shall be recorded and maintained on site for inspection. Test record markings on electrical tools and cord sets shall identify each of the following:

- The quarter being inspected.
- The date the inspection started and was completed.
- The name and identification number of the competent person(s) as designated by Company management.

### **13.4.3 Test Verification**

Verification shall be by means of a color-coded marking tape on receptacles, cord sets, or equipment to identify that it has passed the test and to indicate the internal of testing in accordance with the following coding.

<b><u>Quarter</u></b>	<b><u>Color Code</u></b>
JAN	WHITE
FEB	WHITE
<u>MARCH</u>	<u>WHITE</u>
APRIL	GREEN
MAY	GREEN

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<b><u>Quarter</u></b>	<b><u>Color Code</u></b>
JUNE	GREEN
JULY	RED
AUG.	RED
<u>SEPT.</u>	<u>RED</u>
OCT.	ORANGE
NOV.	ORANGE
<u>DEC.</u>	<u>ORANGE</u>

### **13.5 Training**

Employees shall be instructed about this Assured Grounding Program in the recognition and avoidance of unsafe conditions.

Documentation of the training shall be made with use or the Jobsite Safety Meetings Report, and shall be kept in the Project Files.

## **Care and Use of Ropes and Blocks – Section 14.0**

### **14.1 Wire Rope**

Inspect wire rope for broken strands, kinks and excessive wear.

Inspect blocks for bent shafts, bent housings and damaged or hard running sheaves.

Check blocks to see if they are made up properly.

All wire rope ends should be taped, whipped or woven to prevent unraveling.

Make sure all tag lines, hand lines, etc., are properly done up and hung up.

### **14.2 Slings**

Replace slings that show signs of wear.

Pads should be placed on sharp corners between load and rope sling.

Make sure that slings are of adequate size and length. The most common mistake in rigging is "too light."

### **14.3 Block and Tackle**

Blocks and tackle are two very important and useful items in our work. They should be handled with care to insure good shape when they are to be used. They should occasionally be visibly checked. Anyone whose safety depends on the use of ropes and blocks should

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need no urging to make certain his equipment is in a good condition and cared for properly. If the following suggestions are carried out, the rope or block will be made safe so that any job performed with this equipment will be done efficiently and safely.

### **14.3.1 Tackle (rope)**

When removing rope from the coil, make sure that it unwinds in a counter-clockwise direction. Lay coil down flat with the inside end at the bottom. Pull end of rope up through the center of coil. Always take new rope from the center of coil. After use, coil rope in a clockwise direction. This prevents twists and kinks.

Store rope in a dry place and where a free circulation of air is provided. Never store rope near exhaust steam or where it may come in contact with sharp objects.

Wet rope should never be stored. Always dry rope properly after wetting and avoid premature loss of rope life and strength.

Whenever practicable, use dry rope but if wet rope must be used, use rubber gloves.

Keep rope from oil, sand, mud and grit, and keep it away from acids or surfaces upon which acid has been spilled.

Inspect rope frequently and do not use if it is worn or shows signs of deterioration. Inspect for broken strands, rot and excessive wear.

All rope ends should be taped, whipped or woven to prevent unraveling.

Knots are not as strong as the rope itself. Care should be taken in the selection of the knot for each particular job. It is far more important to make sure everyone can tie a few knots correctly and know when to use them, than to tie a wide variety of them.

### **14.3.2 Blocks**

Do not drop or hammer blocks unnecessarily.

Check blocks to see that they are made up properly.

Inspect blocks for bent shafts, bent housings, split sides or shells, and damaged or hard running sheaves.

Use the proper size rope and blocks for the job. Make sure the block size is correct for the size rope being used.

Lubricate blocks regularly.

Never place a load on the point end of a block hook.

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### **Material Handling – Section 15.0**

#### **15.1 Manual Lifting**

Physical differences make it impractical to set up safe lifting limits for all workers. Height and weight do not necessarily indicate lifting ability. Some small, wiry men can handle loads that heavier men cannot.

Codes limiting the load a worker may be required to lift in repetitive operations differ widely. Each employer should know the provisions of his local codes.

When a worker is to lift a heavy or bulky object and carry it to another point, he should first inspect the ground around the object and the route over where it is to be carried, making sure that there is no obstruction or spillage on the floor on which he might trip or slip. He should make sure that clearances are sufficient. If there are obstructions that will interfere, he should determine a safe route around them.

He should next inspect the object to decide how it should be grasped and how he can avoid sharp edges, slivers, or other things that might cause injury. He may have to turn the object over before he attempts to lift it from the ground. If the object is wet or greasy, he should wipe it dry so that it will not slip from his grasp. If this is not practical, he could use a rope sling or other device to gain a positive grip.

Most strains and back injuries occur when lifting and setting down objects by hand. It is important that those who do this work be trained in the proper lifting techniques, if these injuries are to be reduced.

The correct application of six basic factors is essential. In practice, their order of application is as shown:

##### Correct Position of Feet

One of the causes of muscle injury, particularly to the back, is loss of balance due to working with the feet too close together. Lifting off the ground, pushing and pulling, or reaching (and in many instances over reaching) may throw the weight of the body off balance. To counteract this, the muscles of the lower limbs and back "stiffen." In the kinetic method, however, the feet are correctly positioned with one placed in the proposed direction of movement and the other in a position where it can give thrust to the body. The worker can decide whether he prefers the forward foot to be his left or right. Following is a description of the kinetic method of lifting.

##### Straight Back

A straight back is not necessarily a vertical back. In the kinetic method, the back is often inclined, particularly when lifting weights from the ground, but the inclination should be from the hips so that the normal curvatures are maintained. This normally curved spine is termed a "straight back."

With "straight back lifting" the spine is fairly rigid (non-medically speaking) and the pressure on the lumbar inter vertebral disks is evenly distributed. When lifting with the back bent, the



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spine forms an arc with the result that the lower back muscles are subject to strain and there is uneven pressure on the disks.

In addition to the risk of inter vertebral disk lesions, lifting an object with the back bent and the legs straight imposes excessive stress on the muscles of the back for two reasons. First, the back must be inclined at a greater angle to the vertical for the hands to reach the object. Since the "effective weight" (of the object plus the upper part of the worker's body) increases rapidly as this angle is increased, a much greater effort is required to raise the back to its vertical position. Second, muscular effort is required to "straighten" the spine.

When a weight is being lifted from the ground, making maximum effective use of the legs, the back is straight but inclined forwards. As the lift proceeds by the extension of the knees, the back returns to the vertical position.

The position of the feet and the flexion of the knees are the key factors for maintaining a straight back.

### Load and Arms Close to the Body (for lifting and carrying)

When lifting and carrying weights the arms should be close into the body and remain straight whenever possible. This is because flexing the elbows and raising the shoulders imposes unnecessary strain on the muscles of the upper arms and chest.

Carrying involves a static posture of the arms, and particularly in the case of long distances, any assistance given by the body in supporting the weight will lessen the tension in the muscles. Carrying with the arms straight enables the weight to rest against the thighs.

### Correct Hand Hold

An insecure grip may be due to taking the load on the fingertips, thus creating undue pressure at the ends of the digits and strain to certain muscles and tendons of the arm. Greasy surfaces often prevent a secure hold - whenever possible such surfaces should be wiped clean. The use of suitable gloves should also be considered.

A full palm grip will reduce local muscle stress in the arms and decrease the possibility of the weight slipping.

### Chin In

Raising the top of the head and tucking the chin in straightens the whole spine, not merely the neck. This automatically raises the chest and conditions the shoulders for more efficient arm action.

This chin-in action should be introduced immediately before lifting and maintained throughout the movement. The worker will be looking down at the early stages of the lift and this may conflict with his desire to raise his head to see where he is going. However, as he returns to the upright position, his head will automatically be raised at the same time.

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### Use of Bodyweight

With the correct positioning of the feet and the flexion and extension of the knees, the weight of the body can be effectively utilized to push and pull objects and to initiate a forward movement such as placing an object on a shelf or walking.

When lifting an object from the ground, the thrust from the back foot, combined with the extension of the knee joints, will move the body forward and upward and for a brief period it will be off balance. This is immediately countered by bringing the back leg forward, as in walking, but by this time the lift is completed. This forward movement of the body results in a smooth transition from lifting to carrying.

Here are some techniques for specific situations.

If the object is too large or too heavy to be handled by one person, he should get help.

Before lifting the load to be carried, the worker should consider the distance to be traveled and the length of time he will have to maintain the grip. He should recognize the fact that his gripping power may tire if he has to carry the load a long distance, especially if he has to climb stairs or ramps.

To place an object on a bench or table, first set it on edge and push it far enough onto the support to be sure it will not fall. Release it gradually as you set it down. Move it in place by pushing with the hands and body from in front of the object. This method prevents fingers from getting pinched.

It is especially important that an object, placed on a bench or other support, be securely set so that it will not fall, tip over, or roll off. Supports should be correctly placed and strong enough to carry the load. Heavy objects, like lathe chucks, dies, and other jigs and fixtures, should be stored at approximately waist height.

To raise an object above shoulder height, lift it first to waist height. Rest the edge of the object on a ledge, stand, or hip. Shift hand position, so object can be boosted after knees are bent. Straighten out knees as the object is lifted or shifted to the shoulders.

To change direction, lift the object to carrying position and turn the entire body, including the feet. Do not twist your body. In repetitive work, the person and the material should both be positioned, so that the person will not have to twist his body when moving the material.

To deposit an object manually in a tight space, it is safest to slide it into place with the hands in the clear, rather than to lift it.

## **Fall Protection Program – Section 19.0**

### **19.1 Purpose**

To provide guidelines for maximum effective protection for all personnel exposed to falls when working 6 feet or more above ground level.

## ***Contractor Health & Safety Plan (HASP)***

### **19.2 Scope**

The program sets forth the requirements and criteria for fall protection in construction workplaces covered under the OSHA Fall Protection Standard 29 CFR 1926, Subpart M.

### **19.3 References**

OSHA 29 CFR 1926.21

OSHA 29 CFR 1926.28

OSHA 29 CFR 1926.500 (Attachment C)

OSHA 29 CFR 1926.750

### **19.4 Responsibilities**

Project management and front line supervision are responsible for supporting and enforcing this program to ensure 100% compliance by all personnel. The Safety Director shall have full authority to ensure 100% enforcement of the program. The Safety Director's primary responsibility, however, will be to support and monitor the program for compliance and to advise project management of non-compliance.

Project management and field supervision, as well as individuals within the Safety Department, reserve the right to issue disciplinary warnings to employees, up to and including termination, for failure to follow the guidelines of this program.

### **19.5 Procedure:**

The Fall Protection Work Plan Procedure is:

- Supervisors must analyze all elevated tasks for fall protection needs and ensure that adequate fall protection systems are provided where fall hazards of 6 feet or more exist. Work areas of less than 6 feet in elevation are to be protected if the possibility of falling into or onto dangerous equipment or installations exists.
- After analyzing the elevated work areas, supervisors will instruct the employees involved in the specifics of the fall protection measures to be used.
- All employees on company projects will be required to wear an approved full body harness with shock-absorbing lanyard for fall arrest systems, when working at an elevation of 6 feet or more. The harness shall conform to the requirements of an ANSI Standards Class III Full Body Harness.
- Employees shall make maximum use of primary fall protection systems such as scaffolds, area lifts, personnel hoists, etc. These systems shall be equipped with a complete working / walking surface that is free of floor openings, and are equipped with standard guardrail systems and a safe means of access.
- Personnel traveling or working in elevated areas where a fall exposure exists shall make use of a secondary fall protection system by securing their safety lanyard at all times to a structure, lifeline, or approved fall arresting device capable of supporting at least 5,000 pounds.

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- Employees working from or traveling in powered work platforms or personnel lifting/hoisting devices (JLG, man lifts, scissor lifts, bucket trucks, etc.) shall properly secure their safety lanyards as noted in the procedures below.
- ***NOTE: EMPLOYEES TRAVELING IN CONSTRUCTION ELEVATORS ARE NOT REQUIRED TO SECURE SAFETY LANYARDS.***
- Fall protection devices such as lifelines, safety harnesses/ lanyards, etc., shall be inspected on a regular basis for damage and/or deterioration. Defective equipment shall be removed from service and destroyed.
- Fall protection devices subjected to shock loads imposed during fall arresting shall be removed from service and destroyed.
- Fall protection devices and systems shall not be used for any other purpose than employee safeguarding.
- Subcontractors shall comply with the requirements set forth in the program as a minimum for fall protection.

### **19.6 Fall Protection Devices**

#### **19.6.1 Primary Fall Protection Systems**

These systems provide walking and working surfaces in elevated areas are:

Free from floor openings; equipped with standard guard rail systems on all open sides; and with closure apparatus for ladder openings or other points of access when required.

These systems include, but are not limited to:

- scaffolds;
- aerial lifts (JLG, scissors lifts, etc.); and
- other approved employee hoisting devices.

**Standard guard rail systems** consist of:

- a **top rail** of 2"x4" lumber or equivalent material approximately 42 inches above the walking/working surface;
- a **mid-rail** of 2"x4" lumber or equivalent material at approximately 21 inches above the walking/working surface;
- a **toe board** of 4 inches high mounted at the face of the walking/working surface; and
- **support posts** of 2"x4" minimum lumber or equivalent material spaced on 8 foot centers maximum.

The entire system must be capable of supporting 200 pounds of force in any direction with minimum resultant deflection. Guardrail systems are used to guard open sides of floors, platforms, and walkways in elevated areas.

Covers are used to close openings and holes in floors, platforms and walkways. The cover must be capable of supporting the maximum potential load that it might be subjected to. The

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cover must completely cover/close the opening and is secured against accidental displacement.

All covers must be marked "HOLE COVER – DO NOT REMOVE".

### **19.6.2 Secondary Fall Protection Systems**

#### **19.6.2.1 Safety Harness/Lanyard Systems**

These systems must be worn and used as backup to Primary Fall Protection Systems noted above, and in the absence of Primary Systems.

Only safety harness/lanyard systems furnished or approved by **the Company** may be used on a project. Personal safety harness/lanyard systems may not be used.

Subcontractors shall provide appropriate fall protection equipment to their employees.

Lanyards must be of the deceleration/shock absorbing type when used for fall protection.

The fall protection lanyard shall be attached to the D-ring located in the middle back of the safety harness.

***NOTE: NO MORE THAN ONE SNAP-HOOK SHALL BE CONNECTED TO A SINGLE D-RING.***

D-rings located at the waist may only be used for positioning and with rail type ladder climbing devices.

Work positioning lanyards are to be attached to D-rings at the waist belt location and be supported by an appropriate work belt. Positioning lanyards need not be of the deceleration/shock absorbing type and must not be used for fall protection. The positioning lanyard must always be backed up by a properly secured the deceleration/shock absorbing type fall protection lanyard.

#### **Lifelines**

Lifeline systems are points of attachment for fall protection lanyards, and must be capable of supporting at least 5,000 pounds. Lifelines may be mounted either vertically or horizontally, and are generally intended to provide mobility to employees working elevated areas.

Horizontal lifelines must be made of at least 3/8-inch wire rope cable properly supported to withstand at least 5,000 pounds impacts. Alternate materials, for specific cases, (i.e. use of synthetic fiber rope), must be approved by the Safety Director.

Horizontal lifelines should be positioned to provide points of attachment at waist level or higher for employees utilizing them. At no time shall the lifeline be positioned at a height that will not allow the full deployment of the fall protection lanyard before the employee impacts the ground (i.e. if the scaffold work platform height is 8 feet, the height of the tallest worker's lanyard attachment is 4 feet above the platform, and the shock absorbing lanyard's fully deployed length is 10 feet, then the lifeline must be positioned at least 6 feet above the platform).

Lifelines shall not be used for any purpose other than fall protection.

Vertical lifelines are used for employee fall protection when vertical mobility is required, and may be comprised of static lifelines made of synthetic fiber rope or cable that are equipped

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with approved sliding rope grabs; or they may consist of self-retracting reel type lanyards/lifelines which are attached directly to a safety harness.

***NOTE: NO MORE THAN ONE EMPLOYEE SHALL BE ATTACHED TO A SINGLE LIFELINE WHEN VERTICAL LIFELINES ARE USED.***

Static rope lifelines with rope grabs are required for employees working from power-climbers and two-point suspension scaffolds. These types of lifelines can also be used to provide fall protection for other operations such as scaffold erection and structural steel erection where tie-off points are limited and vertical mobility is required.

Sliding rope grabs approved for the size rope used are the only method for securing a safety lanyard to a vertical lifeline. Lanyards shall not be attached to lifelines by means of knots or loops.

Rope grabs shall be positioned on the lifeline at least above the shoulders of the user.

### **Horizontal Lifelines**

All horizontal lifelines placed in skeletal steel structures (i.e. pipe racks) shall be 3/8-inch cable as a minimum, and shall be secured on each end by at least cable clamps. Intermediate supports shall be adequate to minimize sag and vertical deflection under loading.

Priority shall be given to lifeline placement as structures are erected.

Lifelines shall be arranged to provide adequate mobility in all areas of the structure while maintaining 100% fall protection for employees.

Lifelines should be arranged to provide tie-off points at least waist high for the employees using them.

Lifelines shall not be used for any purpose other than fall protection.

Employees installing lifelines shall be protected from falls at all times (i.e. by use of retractable lanyards or tie-off to structural steel, etc.)

The Project Supervision shall schedule regular documented inspections of all lifelines at least weekly.

### **Vertical Lifelines/Static Rope**

Static rope lifelines shall be synthetic fiber type approved for use with site specific rope grabs.

Static rope lifelines must be used with approved rope grabs for lanyard attachment.

Static rope lifelines must be anchored at the top by means capable of supporting at least 5,000 pounds.

Static rope lifeline/rope grabs will be placed for each person working from or riding in single point spydere/power-climbers or two point suspension scaffolds. Each person must have an individual lifeline.

### **Retractable Reel Lifelines**

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Retractable lifeline devices shall be attached to supports capable of withstanding at least 5,000 pounds impact loading.

When self-retracting lifelines or other deceleration devices are used which limit free fall to 2 feet, anchorages shall be capable of withstanding 3,000 pounds impact loading.

Retractable lifeline devices shall be secured by means of shackles and wire rope chokers or synthetic slings. ROPE (synthetic or natural fiber) SHALL NOT BE USED TO SECURE THESE DEVICES.

Each retractable lifeline device shall be equipped with a rope tag line for extending the device to elevations below the point of attachment.

Safety Nets and installation of nets when required will be under the direction of the Project Engineer after consult with the Director of Safety.

### **19.7 Temporary Work Platforms/Walkways (Scaffolds)**

Every effort shall be made to ensure all temporary platforms/walkways are equipped with solid decks free of openings and with perimeter protection with standard guardrail systems.

Employees working from temporary platforms or traveling on temporary catwalks shall have their safety lanyard secured at all times to a lifeline or structure capable of supporting at least 5,000 pounds impact loading.

Every temporary work platform or walkway must be provided with a safe means of access/egress that ensures adequate fall protection for employees at all times. Retractable lifelines, when required, shall be used to achieve fall protection while ascending or descending access ladders to temporary work platforms or walkways.

### **19.8 Personnel and Ariel Lifts/Hoisting Devices (JLG, Scissors, Snorkel, etc.)**

Each employee riding in or working from these lifts must secure his or her safety lanyard to the lift basket at all times.

Lifts shall be placed on solid, level surfaces to eliminate the possibility of overturning.

### **19.9 Elevators**

Employees riding inside enclosed elevator cars are not required to secure their safety lanyard.

### **19.10 Skeletal Steel and Open Structures**

This section deals with fall protection when employees are required to gain access to travel and work in skeletal steel/ open structures such a pipe racks. This includes traveling or working on any elevated surface that is not designed as an employee work surface or walkway (i.e. pipe, cable tray, etc.)

Employees working or traveling in elevated skeletal steel/open structures shall secure their lanyards to a lifeline or structure capable of supporting at least 5,000 pounds of impact loading at all times (100% fall protection).

***NOTE: THIS INCLUDES BOTH HORIZONTAL AND VERTICAL TRAVEL.***

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Employees working or traveling in skeletal steel/open structures shall have two safety lanyards at all times in order to achieve 100% fall protection. One of the lanyards must be secured at all times.

Adequate lifeline systems will be provided in skeletal steel/open structures to allow 100% fall protection for employees working or traveling in these structures.

Vertical travel in these structures shall consist of properly placed and secured access ladders equipped with retractable lifelines when required. Employees climbing or descending these ladders shall secure these retractable lifelines to their safety harnesses while using the ladder.

In lieu of lifelines, employees may secure safety lanyards to substantial structural steel members, pipes, and pipe supports. Employees shall avoid securing lanyards to cable tray, conduit, and small-bore screw pipe.

### **19.11 Reinforcement Steel/Form Work**

Employees working on rebar walls, piers, and on concrete form walls must have fall protection 100% of the time they are off the ground.

Employees working on rebar or formed walls and elevated piers are required to use a working positioning lanyard (cannot be used for fall protection) and a fall protection lanyard.

On vertical walls, the safety lanyard shall be secured at a point above the worker's head, either to a lifeline or a horizontal section of rebar.

On form walls, employees shall use approved construction form tie-off attachments or lifelines to secure their safety lanyards. These persons shall receive specific instructions on the equipment to be used and the fall protection practices to be used.

### **19.12 Storage**

All fall protection equipment shall be stored in a clean, dry environment in an orderly manner.

### **19.13 Training**

#### **19.13.1 Introduction**

The Safety Director will instruct all employees reporting to the project, prior to starting work, to recognize and understanding the potential fall hazards on site.

The training will enable each employee to recognize the nature of fall hazards in their work area and the procedures to be followed in order to minimize those hazards.

#### **19.13.2 Potential Fall Hazards**

Many of the activities to construct a project will expose employees to potential falls exceeding 6 feet.

The Project/Work Description Form (Form No. 8, Attachment A) will be utilized to describe the general nature of the work to be performed and to list the activities that have potential fall exposure.

Certification of training will be through the use of the Company's Safety Meeting Form. The name(s) of the employee(s) trained, date of training, subject for training, and the signature of the person(s) who conducted the training must be on the certification.



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The documentation used for training will be attached to the Safety Meeting Form and kept on file at the job site for future review.

### **19.14 Retrieval of Fall Victim**

If a worker is suspended in an elevated area, a prompt rescue using a ladder, a man lift, or retrieval unit shall be used to retrieve the worker.

Trained rescue personnel shall use rappelling equipment only.

The use of a crane and man basket shall only be employed as a last resort, and then all man basket safety requirements shall be met.

If a worker is injured, the closest person trained in first aid should administer first aid. If the injury appears to be serious, the victim is not to be moved unless there is in more danger. Have someone call the nearest emergency rescue personnel.

### **19.15 Accident Investigation**

#### **19.15.1 Investigation**

All incidents and or accidents that result in injury to workers, regardless of their nature, shall be investigated and reported. It is an integral part of any safety program that documentation takes place as soon as possible so that the cause and means with prevention can be identified to prevent a reoccurrence.

In the event that an employee falls, or some other related serious incident occurs, this plan shall be reviewed to determine if additional practices, procedures, or training needs to be implemented to prevent similar types of falls or incidents from occurring again.

### **19.16 Changes to Plan**

The Project Manager will approve any changes to the plan. A qualified person shall review this plan as the project progresses to determine if additional practices, procedures, or training are needed.

Workers shall be notified and retrained, if necessary, in the new procedures. A copy of this plan and all revisions shall be maintained at the job site.

# **RA HEALTH AND SAFETY PLAN**

## **APPENDIX B**

### **GE EHS REQUIREMENTS**

# **GE ENVIRONMENTAL, HEALTH, AND SAFETY REQUIREMENTS**

## **Construction Management Services Agreement**

### **Between General Electric Company and CM**

#### **1.0 GENERAL SCOPE**

Construction Manager recognizes that the life, health and safety of persons and property during performance of the work is a material requirement of this Agreement. Accordingly, Construction Manager pledges to implement all necessary precautions for the prevention of accidents, and shall cooperate fully with Owner in addressing and resolving with due diligence any safety concerns that may be raised by Owner or its consultants during execution of the work, including, without limitation, the immediate suspension of all work until such time as pending safety issues are satisfactorily resolved. Notwithstanding the foregoing, Construction Manager shall remain primarily responsible for all its acts and omissions, and those of its employees, agents, subcontractors and suppliers, and their respective employees, agents, sub-subcontractors, and suppliers, regardless of tier, including those affecting life, health, and safety of persons and property.

#### **2.0 COMPLIANCE WITH LAWS, RULES, REGULATIONS & STANDARDS**

- A. Construction Manager shall comply, and shall require its employees, agents, subcontractors, and suppliers, and their respective employees, agents, sub-subcontractors and suppliers, regardless of tier, with:
1. the requirements of all applicable National, Provincial, and Local laws, rules and regulations, including but not limited to those governing building construction, use of tools and equipment, and the safety of persons and property;
  2. all rules and regulations of OSHA or other applicable governmental entities, Owner, and any other stakeholder which may be in effect at the job site regarding employment, passes, badges, smoking, fire prevention, environmental, health, safety, and conduct on the property; and
  3. the highest (most stringent) applicable industry standards concerning the preservation of life, health, and safety of persons and property in the performance of the work shall apply.
- B. Failure by Construction Manager to comply with the requirements of this clause, including the failure to enforce its requirements on its employees, agents, subcontractors, and suppliers, and their respective employees, agents, sub-subcontractors and suppliers, regardless of tier, shall be considered a material breach of the Agreement. Failure to comply with safety and security requirements is cause for work stoppage and termination of personnel from the project. Repeated and/or willful violations are cause for termination of the contract.

### **3.0 SAFETY**

A. The Construction Manager shall:

1. receive and acknowledge Owner's contractor safety rules and regulations for the project's operating site (if applicable). Furthermore the Construction Manager will review these safety rules with its employees, agents, subcontractors and suppliers, and their respective employees, agents, sub-subcontractors, and suppliers, regardless of tier, including those affecting life, health, and safety of persons and property.
2. provide a site-specific EHS plan that addresses the identification of site hazards inclusive of a mitigation plan to address those hazards. The Construction Manager shall also request and receive a similar site-specific EHS plan from their subcontractors.
3. take all necessary precautions for the safety of all persons and property on the Project;
4. erect and properly maintain at all times, as required by job conditions and progress of the work, all necessary safeguards for the protection of the workmen and the public;
5. post danger signs warning against the hazards created by such features of construction as protruding nails, bad hoists, well holes, hatchways, scaffolding, window openings, stairways, dangers from falling materials, etc.;
6. not load or permit any part of the Work to be loaded so as to endanger its safety; and
7. shall designate a responsible member of his organization on the worksite whose duty shall include the prevention of accidents.

In any emergency affecting the safety of persons or property, Construction Manager shall act, at Construction Manager's discretion, to prevent threatened damage, injury or loss. Any additional compensation or extension of time claimed by the Construction Manager on account of such emergency work shall be determined by agreement of the parties.

By executing this Agreement, Construction Manager warrants and certifies to Owner that its employees, its subcontractors' employees, and all persons employed by or through Construction Manager pursuant to this Agreement, have been properly trained in safety procedures associated with their trade and construction in general.

1. Construction Manager shall request and keep on file at the project site all EHS training documentation of its employees, agents, subcontractors and suppliers, and their respective employees, agents, sub-subcontractors, and suppliers, regardless of tier.

Construction Manager further warrants and certifies that it shall exercise due diligence and care in the supervision of the personnel so employed, to ensure that such safety procedures and practices are properly observed at all times during execution of the Work.

#### **4.0 SUPERVISION AND DISCIPLINE**

- A. The Construction Manager shall provide a competent Superintendent who is authorized to act for him and has been approved by the Owner. Such Superintendent shall be on the Project site at all times when Work is being performed. Construction Manager shall be solely responsible for all construction means, methods, techniques, sequences and procedures, and for supervising the work of the subcontractors and materialmen and coordinating all portions of the Work.

Construction Manager shall at all times enforce discipline and good order among all persons employed on the Project by himself and his subcontractors and materialmen and he shall not employ nor allow anyone to employ on the Project any unfit person, anyone not skilled in the work assigned to them, nor anyone who fails or refuses to adhere to safety requirements in effect at the jobsite.

#### **5.0 USE OF THE SITE**

- A. The Construction Manager shall confine operations at the site to areas permitted by law, ordinances, permits, and the Contract, and shall not unreasonably encumber the site with any materials or equipment.
- B. The Construction Manager shall keep the job site and adjoining premises clean at all times of rubbish caused by him or his subcontractors, and at the completion of Work shall remove all rubbish, tools, equipment, surplus material and temporary structures and installations, leaving the premises clean and ready for use.

#### **6.0 SUBCONTRACTED WORK**

- A. The Construction Manager may perform such portions of the Work with his own forces as his qualifications and experience shall permit. Prior to the award of any subcontract, the Construction Manager agrees to obtain pre-qualification information from the proposed subcontractor, and to submit for Owner's review, such subcontractor's environmental, health and safety history and training records.
- B. The Construction Manager shall remain primarily responsible and liable for performance of the entire Work, regardless of whether the Owner has given approval or consent to a particular subcontractor, subcontract or any other matter in connection with either.

#### **7.0 MINIMUM OWNERS REQUIREMENTS**

The Construction Manager agrees to document all findings (hazardous conditions and hazardous acts) through the performance of daily inspections. Findings must be corrected and tracked to closure within 24 hours. The system(s) used for tracking must be able to trend the data.

All accidents and near misses must be reported to the Owner's Project Manager and EHS Manager immediately. Accident investigation reports must also be submitted and an accident/incident log kept for each project.

The Construction Manager agrees to develop/review a Task Hazard Analysis (mitigation plan) for all Construction Manager High Risk Operations as described in the attached *Owner's Construction/Renovation EHS Requirements*.

Owner's EHS team may audit the site and may require access to all Construction Manager EHS files to measure conformance with this agreement. The Construction Manager agrees to correct all audit deficiencies within the specified time noted in the audit.

The Construction Manager will provide a monthly safety highlight report to the Owner's Project Manager and EHS Program Manager indicating field man-hours worked each month sorted by contractor and subcontractors of all tiers, recordable and lost time accidents, incidence rates and EHS highlights. A sample report is included in the *Owner's Construction/Renovation EHS Requirements*.

Prior to erecting, installing, constructing, repairing, adjusting, inspecting, operating, or maintaining any equipment or process where unexpected energization, start up, or release of hazardous energy sources will be isolated, locked and tagged out (e.g. electrical, pneumatic, hydraulic, gravity, electrical storage devices, capacitors, springs, and other mechanical). The Construction Manager must implement procedures that provide equal to or better than the General Electric LOTO program. **These procedures must be reviewed by authorized Owner's personnel before work commences.**

## **8.0 WORKMANSHIP**

The Construction Manager shall perform the Work in a good workmanlike manner and in strict accordance with the Contract and complete the Project in a professional and timely manner. The Construction Manager will be responsible to the Owner for the acts and omissions of all of his employees and all subcontractors, their agents and employees, and all other persons performing any of the Work under a contract with the Construction Manager.

## **9.0 CORRECTION BY OWNER; SUSPENSION OF WORK**

In the event that the Construction Manager shall fail to prosecute the Work in accordance with the Contract, or shall otherwise default thereunder, the Owner may, without terminating the Contract and without prejudice to any other remedy he might have, order the immediate suspension of the work, terminate the Contract, or cure said default at the expense of the Construction Manager following written notice thereof.

## **10.0 INDEPENDENT CONTRACTOR**

Construction Manager is and shall remain for all purposes an independent contractor, and he shall have no power, nor shall he represent that he has any power, to bind Owner or to assume or create any obligation, expressed or implied, on behalf of Owner.

# **OWNER'S CONSTRUCTION/RENOVATION EHS REQUIREMENTS**

## **PERSONAL PROTECTIVE EQUIPMENT**

- Hard Hats are required at all times in the construction work area.
- Appropriate eye and face protection that complies with ANSI Z87 shall be worn at all times. Safety glasses with side shields are required as a minimum.
- Sensible and safe work clothing/shoes must be worn. This means the wearing of shirts with a minimum 4" sleeve.
- Shorts, cutoffs, sleeveless shirts, tank tops, sneakers and running shoes are strictly prohibited.
- At a minimum, substantial shoes must be worn on all project sites. No canvas or leather sneakers (even if equipped with steel toe) or sandals will be worn. All construction boots or shoes designed to accommodate laces must be fully laced.
- Appropriate hearing protection shall be worn in work areas where levels exceed established standards.
- Suitable gloves must be worn to protect the hands from injury as appropriate for the work to be performed.
- Approved respirators must be used when excessive dust, mist, fumes, gases or other atmospheric impurities are present.
- Safety harnesses and secured safety lanyards or retractable lifelines must be used when working from unguarded work surfaces where falls greater than 6 feet/1.8m present a hazard. (NOTE: Site requirements may limit this potential fall length to 4 feet/1.2m) Lanyards or retractable lifelines must be secured to separate lifelines and independent connection points capable of withstanding the load of a potential fall.
- Proper personal protective equipment must be worn for welding and burning.
- Welding screens must be used when welding operations are in the vicinity of other employees.
- Electric insulating protective equipment, such as rubber gloves, blankets, hoses, boots, etc. Shall be inspected before use.
- High visibility warning vests or other suitable garments marked with or made of reflectorized or high-visibility material must be worn when working in roadways or around heavy excavating equipment.

## **GENERAL SAFETY & SECURITY GUIDELINES**

- Alcoholic beverages, recreational drugs and people under the influence of these substances are not permitted on site.
- Weapons and firearms are strictly prohibited.
- No food or drink will be allowed in the construction work area except in the designated eating area.

- Music radios/headsets are prohibited.
- No cameras or video equipment are permitted on site except as necessary to document the progress of the Work and as may be allowed under the specific Site Security guidelines.
- Smoking is not permitted in any building (including the building footprint and roof). Smoking is allowed in designated areas only.
- Horseplay and fighting is prohibited.
- Barricaded or roped off areas are considered danger zones and should be respected as such. Admittance to such areas is prohibited without authorization.
- Protect floor openings by providing adequate barricades and secured covers. All covers must be painted with high-visibility paint or shall be marked with the word “HOLE” or “COVER” to provide warning of the hazard.
- No one will be allowed to enter the site without proper identification. All trade workers, vendors, and visitors must comply with the Owner’s badge and access program.
- Do not prop exit doors.
- Throwing or dropping materials from one level to another is prohibited.
- No toxic chemicals or other types of pollutants may be disposed of in the on-site sewerage systems, either storm or sanitary.
- All gas cans and other liquid chemicals must remain in secondary containment devices.
- No riding in the back of pick-up trucks.
- Park in designated contractor-parking areas.
- The driver of any motor vehicle on company property is responsible for its safe condition and use. The vehicle owner must promptly correct any malfunction of brakes, lights, horn, or exhaust system. The driver is required to have a valid driver’s license and the vehicle must have a valid license plate. All traffic rules must be obeyed and pedestrians have the right of way at the Owner’s site.
- All deliveries and use of special equipment will be through areas designated by the Owner. The Owner’s facility has minimal staging and storage areas designated for construction use. All contractors must schedule and coordinate deliveries in order to minimize the necessity of storing materials prior to installation.
- Area and personal air monitoring required by federal, state or local regulations shall be the responsibility of the Construction Manager.

## **HOUSEKEEPING**

- Cleanliness and orderliness are the first fundamentals of good housekeeping.
- Contractors are responsible for cleaning up and removing hazardous and non-hazardous waste generated on site.



- Each Contractor shall be responsible to maintain areas where he is performing work free from waste materials, debris and rubbish. Work will not be considered complete until all waste materials are removed and the work area returned to a clean and orderly condition. Waste material must be disposed of off-site.
- All protruding nails in form lumber, boards, etc., must be withdrawn or bent into the wood before the wood is stacked or piled.
- Rags, packing materials, paper cups, and sawdust in saw areas must be collected daily and placed in proper containers.
- All objects with sharp edges (scrap sheet metal, scrap glass, bottles, metal cans) shall be collected daily and placed in containers.
- Avoid placing debris and other obstacles in roadways, walkways, aisles and other travel routes.
- Allow sufficient time at the end of each day for proper cleanup of the work area. Place all debris in proper refuse containers.
- All stored material must be kept in an orderly manner at all times.
- Provide a proper collection container and floor protection when using cutting oil, solder flux, hydraulic oil, and other fluids.
- In the event of a large spill, immediately install acceptable containment barriers.

## **LADDERS**

- The use of metal and wood ladders is prohibited. All ladders shall be heavy duty, industrial strength. The use of fiberglass, or aluminum/fiberglass composite ladders is acceptable. Job-made wooden ladders shall only be allowed upon approval from the Owner's EHS Program Manager.
- Stepladders must be fully open. They cannot be used as straight ladders.
- Tie-off all straight and extension ladders to keep them secure. Straight and extension ladders must extend three feet (3') beyond the top landing. The base of the ladder shall be set out at least one-fourth of the ladder height measured from bottom to point of bearing.
- Any ladder found defective shall be removed from service and destroyed (vertically) or repaired to original specifications.
- Do not place ladders in blind spots (doorways, driveways) or in egress ways unless properly barricaded or guarded.

## **TOOLS & EQUIPMENT**

- Defective tools and equipment must be taken out of service and shall be properly repaired before reuse.
- Machinery, tools (including portable grinders and buffers) and equipment with exposed gears, belts, power transmission, couplings, etc. shall not be operated without effective guards in place.

- The use of gasoline and propane powered equipment in the building is strictly prohibited.
- A motor vehicle engine shall not be left running if the vehicle/equipment is unattended unless it is necessary in the normal operational requirement of the unit. Unattended means that the operator has left the normal control position of the vehicle.
- All moving equipment must be equipped with back-up alarms.
- Store or stack equipment and material so that it will not create a falling or tripping hazard or block access to fire extinguishers or emergency exits.

### **COMPRESSED GAS CYLINDERS**

- Defective tools and equipment must be taken out of service and shall be properly repaired before reuse.
- To avoid accidental displacement, keep compressed gas cylinders standing and securely tied off, whether empty or full. Make sure valve protection caps are on when cylinders are not in use. The valve shall be closed on all empty cylinders.
- When moving cylinders by crane or derrick, a cradle, boat or suitable platform shall be used. Slings or hooks shall not be used.
- When cylinders are not in use, they must be secured and capped.
- If cylinders are not used within a 24-hour period, they are considered to be in storage, and must be secured, capped and separated. Separate oxygen and fuel gas cylinders by a minimum of 20' or a 5' high, ½ hour fire-rated barrier.

### **FIRE PREVENTION**

- Use only approved cleaning agents — never gasoline or flammable liquids.
- Gasoline and similar flammable liquids must be stored only in approved safety containers and in areas free of burning hazards.
- Keep all heat sources from flammable liquids, gases or other combustible materials.
- Open fires are strictly prohibited.
- Every hot work operation must have a properly trained and equipped fire watch with appropriate fire extinguishers for the specific hazard in the work area. The fire watch must remain in the work area for at least 30 minutes after the hot work activity is completed.

### **FALL PROTECTION**

All workers in an area exposed to a fall greater than 6 feet (1.8m) must use appropriate fall protection. Such protection includes:

- Guardrail systems
- Safety net systems
- Personal fall arrest systems

Other protection methods include:

- Controlled access zones
- Controlled decking zones
- Hole covers
- Positioning device systems
- Equipment guards
- Fences and barricades
- Warning line systems in combination with guardrail systems, safety net systems, personal fall arrest systems or safety monitoring systems.

**Exception:** When the employer demonstrates that it is infeasible or creates a greater hazard to use these systems, a fall protection plan that meets the OSHA requirements must be developed for review and implemented.

Fall protection is required but not limited to the following when a worker is exposed to a fall of six feet (1.8m) or more:

- Performing steel erection work
- Working on scaffolds
- Unprotected sides and edges
- Overhand bricklaying and related work
- Leading edges
- Roofing work on low-slope roofs
- Hoist areas
- Steep roofs
- Holes
- Precast concrete erection
- Formwork and reinforcing steel
- Wall openings
- Ramps, runways and other walkways
- Walking/working surfaces
- Excavations
- Aerial lifts
- Dangerous equipment
- Metal decking operations
- Erecting, dismantling and working on scaffolds

The provisions in this section do not apply when:

- Employees are making an inspection, investigation or assessment of workplace conditions prior to the actual start of work or after all construction work has been completed
- Working on certain cranes and derricks
- Working on certain types of equipment used in tunneling operations
- Engaged in the construction of electric transmission and distribution lines and equipment
- Working on stairways and ladders
- Tradespeople shall not stand on motors, pumps, conduits or the like to gain access to elevated work.
- Use of Safety Monitor System (SMS), Controlled Access Zone (CAZ), or Controlled Decking Zone (CDZ) will not be accepted unless prior approval from Owner's EHS Program Manager has been received.
- Working on a roof within six (6) feet (1.8m) of the edge or a floor opening requires appropriate fall protection (guardrail systems, safety net systems, or personal fall arrest systems). Use of a safety monitor system or controlled access zone will not be accepted without prior approval from Owner's EHS Program Manager.
- Safety harnesses must be worn at all times in scissors and personnel lifts. Chains must be closed. Harnesses must be secured to an approved tie-off point when breaking the plain of the lift.
- Safety harnesses must be secured to an approved tie-off point in all aerial lifts.
- Establish a barricaded or roped off danger zone around lifts for falling objects.

Hoisting of personnel on a personnel platform by a crane or derrick is prohibited, except when the erection, use, and dismantling of conventional means of reaching the worksite, such as a personnel hoist, ladder, stairway, aerial lift, elevating work platform or scaffold, would be more hazardous or is not possible because of structural design or worksite conditions. This type of operation must meet the requirements of OSHA 1926.550(g).

Workers must wear a safety harness with his/hers safety lanyard secured to a separate lifeline while working from swing scaffolds, boatswain's chairs, or other suspended work platforms where a fall hazard is present.

Construction Manager's written Fall Protection Program - Construction Manager must develop a written Fall Protection Program and it must be communicated to all affected employees. The program will contain the following elements:

- Hazard identification
- Selection of fall hazard control
- Equipment inspection and maintenance
- Employee training

Construction Manager must conduct a fall hazard assessment to address both routine ongoing activities and tasks as well temporary activities, which may take place during maintenance and construction.

Control measures will be identified, implemented and communicated by the Construction Manager. Documentation of fall hazard control measures should be included in THAs, safe work plans or other operating procedures.

Construction Manager workers must be trained in the requirements of the fall protection program including use of fall protection equipment as appropriate.

Contractors must inspect and maintain fall protection equipment in accordance with manufacturer's recommendations.

## **SCAFFOLDING**

- All scaffolds must be inspected before use and must be designed for the safe working load.
- Only scaffold planking tested and approved to carry the load may be used. Scaffold planking must be secured by tying or cleats to prevent slipping. Mark scaffold planks (in most cases the manufacturer does this) and use only on scaffolds.
- Handrails and toeboards shall be used on all scaffolds and the scaffold secured as required.
- Rolling tower scaffolds must be locked while the scaffold is in use. Tower must be free of personnel, material and equipment before being moved. Rolling scaffolds are not to be moved from the top.
- Ladders must be used for accessing scaffolds. Climbing of bracing is prohibited.
- Scaffold platforms more than 6 feet (1.8m) above any working surface must be equipped with a guardrail system—
- Top rails (42" (1.1m) plus or minus 3" (8cm), mid rails (midway between the top rail and the scaffold platform) and toe boards or personal fall arrest systems must be implemented.
- No scaffold shall be erected, moved, dismantled or altered except by trained and qualified personnel under the authority of the competent person.
- Abide by the Scaffold Tag System
  - *GREEN*—complete scaffold per required safety standards.
  - *YELLOW*—conditional use—100% fall protection required.
  - *RED*—Scaffold not complete. Do Not Use.
- Makeshift platforms, such as stacked materials, chairs, boxes, or drums shall not be used.
- Scaffolds shall be built to OSHA standards (1926.451).
- **Tubular Welded Frame Scaffolds have additional special safety requirements:**

- Scaffold legs shall be set on adjustable bases, plain bases or other foundations adequate to support the maximum rated load.
- To prevent movement, the scaffold shall be secured to the building or structure at intervals not to exceed 30 feet (9.1m) horizontally and 26 feet (7.9m) vertically.
- All pins to secure diagonal braces and to prevent uplift shall be used.
- **Outriggers and platforms below the working/walking level shall be fully planked.** Outriggers shall be tied to the frame.
- Scaffolds may not be used as material hoist towers or for mounting derricks without first determining the loads and stress involved.
- All scaffolds shall be free of tools, trash, etc. before calling in for removal.

### **CRANES, HOISTS & RIGGING**

- Never raise a load over people or occupied buildings.
- **Tag lines must be used to control every load.**
- Rigging operations utilizing chains is not permitted without prior approval from Owner EHS Program Manager.
- Multiple-lift rigging is strictly prohibited.
- All materials shall be rigged to prevent unintentional displacement. **Hooks with self-closing safety latches shall be used** to prevent components from slipping out of the hook.
- Defective rigging equipment shall be tagged and removed from service.
- Only qualified operators may operate power equipment. Seat belts must be worn wear applicable.
- Cranes and Hoists
- Safe lifting procedures for cranes and hoists must be developed and documented.
- Crane and hoist operators and qualified riggers must conduct rigging equipment inspections prior to each use on each shift and as necessary during its use to ensure that it is safe.
- All operators of cranes and hoists should have received training that addresses safe operating practices for all crane types that they will be operating on site.
- Preventative maintenance must be conducted on cranes and hoists in accordance with manufacturer's guidance or local regulatory requirements.
- Contractors must submit copies of detailed and documented annual inspections conducted by qualified individuals.
- Riding on hooks, headache balls or slings of hoisting equipment is strictly prohibited.

## **ELECTRICAL**

- Electrical equipment shall not be installed, repaired, or removed except by trained qualified electricians.
- Electrically operated equipment (stationary and portable) must be grounded.
- When extension cords, power tools or equipment cords are frayed or worn, or when bare wire is showing, the equipment must be tagged and taken out of service.
- Do not use electrical tape on extension cords.
- Temporary cords should be supported a minimum of 8' above the floor in egress walkways, corridors and areas requiring employee access.
- Temporary lighting must be guarded.
- All 120-volt, single phase 15 and 20-ampere receptacle outlets on construction sites, which are not a part of the permanent wiring of the building or structure and are in use by employees, shall have approved Ground Fault Circuit Interruption (GFCI) for personnel protection. When using the permanent receptacles, GFCI devices must be installed on each extension cord prior to the source receptacle.
- Lock-out/Tag-out programs represent a lifesaving control. Compliance with Owner's procedures is mandatory.
- Equipment-specific energy control procedures are required for all lock-out/ tag-out operations.
- Extension cords must be at least 16-gauge heavy duty 3—wire with a UL approved three prong grounded plug.
- 110-volt outlets on portable generators and welders shall be 3-way (NEMA 5-15R) grounded to the frame. The power lead shall be connected through a Ground Fault Circuit Interrupter.

## **CONTRACTOR HIGH RISK OPERATIONS/HIGH HAZARD ACTIVITIES**

All major construction activities on this project must be carefully analyzed to determine appropriate safety controls to ensure worker safety and health in accordance with Federal, State, and local regulations and Owner compliance. Reviewing the construction activities prior to the Construction Manager's arrival on site or the start of any special construction activity allows all parties to plan for safety.

Work that has a high risk of resulting in a serious worker exposure, injury, or death or an environmental violation is considered a high-risk operation. A Task Hazard Analysis or Mitigation Plan is a procedure which identifies potential hazards specific to a scope of work or activity and defines actions required by specifying locations, safety precautions, activities involved and the work sequencing so that the operation will take place in the safest manner possible. A Task Hazard Analysis or Mitigation Plan will be required for, but not limited to, all of the following activities: Operations involving the shut-down and start-up of fire alarm systems, fire protection systems and sprinkler systems in occupied facilities, operations involving shut down and start-up of process piping, electrical systems, hydraulic systems and elevators/escalators; trenches and excavations greater than 5 feet in depth or that require a

shoring system; elevated work activities including work on a roof or major scaffold; work to be performed on existing equipment; installation or removal of equipment or machinery, work involving existing piping, vents, or drains, piping tie-ins and line breaking; any hazardous painting, floor or wall coating (epoxy paints, electro-static painting, cocooning); asbestos abatement; working on/with lead containing materials; demolition work; structural steel erection; major scaffold erection; use of ladders above 24 feet; elevated work requiring the use of fall protection; hot work (welding, cutting, brazing) in hazardous areas or near hazardous materials; passivation; confined space entry; control of hazardous energy and line breaking (lock out/tag out); any activity which will impede a sidewalk, roadway, or building entrance (in occupied facilities or public areas); crane and/or hoist operations; Critical lifts (defined as any lift meeting one of the following four criteria) - lifts which exceed 75% of the cranes rated capacity or other lifting equipment configuration, lifts that require the use of more than one crane or in combination with other lifting equipment approved for hoisting or rigging purpose, lifts which are located in an area or areas where conditions present exposures to electrical hazards, underground hazards, overhead piping systems, vessels, operational buildings, etc., lifts of equipment which are identified as specialized equipment, "one of a kind" which has been designed, engineered and fabricated for a specific process of the owner. This will include equipment specified by the owner such as glass-lined reactors, vessels, etc.; and any other unusual activity that may require review of the tasks and hazards involved.

A Task Hazard Analysis/Mitigation Plan must be documented by the Construction Manager/Subcontractor to ensure a safe working environment. Procedures regarding work permits (where applicable) should be defined in the THA.

All attachments (training documents, crane location plans, crane swing radius information, Material Safety Data Sheets, etc.) must be included with the mitigation plan submission. The THA must be submitted to the Owner for review a minimum of 48 hours prior to the scheduled operation.

The Construction Manager's competent person must review the Task Hazard Analysis with the work crew prior to the commencement of the activity and on a daily basis or as conditions (such as weather) change.

Reference guidance document *Task Hazard Analysis Framework for Contractor High Risk Operations* located on GE Corporate Contractor Safety Support Central.

## **LOCK OUT TAG OUT**

The LOTO standard applies, but is not limited to activities that are performed on a machine, a piece of equipment, a process, or circuit. Primary, secondary, stored and single source energy sources require a lockout when performing servicing and/or maintenance activities. Primary energy sources are the main energy sources such as electricity, gas, fluids, etc., provided to machines, equipment, processes and circuits. Shut down machinery with moving parts or process equipment in service before adjustments or repairs. Owner's LOTO procedures must be followed.

If shut down is not feasible a risk assessment must be used. The risk assessment explores the safest conditions possible for individual work assignments. Risk assessment establishes safe



practices and alternative methods to reduce the possibility of injury when normal LOTO procedures cannot be applied. A task hazard analysis (mitigation plan) and written procedures specific for the job must be completed and reviewed with Owner prior to start.

Never remove warning or danger tags or locks on any apparatus, valves or switches unless you have been instructed to do so, and then only by the persons who attached them.

Contractors who are involved with equipment/systems and are potentially exposed must implement procedures that provide protection equal to or better than the General Electric LOTO program. LOTO programs for outside services or contractors must be reviewed by authorized General Electric personnel.

The contractor supervisor must be made aware of the overall LOTO procedure and informed of the equipment specific procedure by an Owner Authorized Representative.

Contractors must place their own locks and tags (one lock, one key, one person) and verify LOTO by try-out. As a best practice, the Owner's Authorized Representative may perform the LOTO step-by-step process. The contractor will then be required to attach and secure their individual LOTO locks and red tags to the same energy-isolating devices that the Owner representative has locked out.

All Contractor workers involved in a LOTO operation must have documentation of LOTO training. This documentation must be available for audit at the work site.

### **CONFINED SPACE**

A confined space is an enclosed area that has each of the following four characteristics: 1) Large enough and so configured that an worker can bodily enter and perform assigned work, 2) Has limited means for worker entry and exit due to the number, size, or location of openings, 3) Is not designed for continuous worker occupancy, 4) Contains or may contain a serious safety or health hazard. Such hazards include currently or potentially hazardous atmospheres, potential worker entrapment (from inwardly converging walls or downward sloping floor), or potential worker engulfed by stored materials. Examples of confined spaces include tanks, vessels, pits, sewers, pipelines, boilers and utility vaults.

Entry into a confined space shall be conducted only if necessary to do assigned work. Whenever possible, assigned work shall be completed from outside the space.

Entry into a confined space is prohibited until atmospheric testing of the space and applicable entry procedures have been documented and permits completed.

All Contractor entrants and attendants must have documentation of confined space entry/attendant training.

Additional respiratory protection training and documentation will be required (if respiratory protection is needed).

This documentation must be available for audit at the work site.

All entrants and attendants must be informed of the entry procedures and mitigation plan prior to the entry.

The use of retrieval equipment is required for all confined space entries. The number of entrants must be equal to the number attendants and to the number of retrieval devices available.

## **STRUCTURAL STEEL ERECTION**

The safety standards for structural steel erection will follow the OSHA regulations for Steel Erection Subpart R (1926.750-1926.761 inclusive of Appendices A-H) dated January 18, 2001 and revised on July 18, 2001 with the following exceptions and additions:

All workers including connectors and deckers must be protected from falls at or greater than six (6) feet (1.8m).

Multiple lift rigging procedures (Christmastreeing) is strictly prohibited.

The use of a Controlled Decking Zone (CDZ) is prohibited.

Cranes used in steel erection activities shall be visually inspected prior to each shift by a competent person. The inspection must include observation for deficiencies during operation. The inspection must be written and a copy submitted to Owner daily. Deficiencies constituting a hazard require that the hoisting equipment be removed from service until the deficiency is corrected.

At the end of the shift or when environmental or jobsite conditions require, metal decking must be secured against displacement.

Metal decking must be laid tightly and immediately secured upon placement to prevent accidental movement or displacement.

Wire mesh, exterior plywood or equivalent must be installed around columns where planks or metal decking do not fit tightly. The materials used must provide fall protection for personnel and prevent objects from falling through.

All columns must be anchored by a minimum of four (4) anchor bolts.

Anchor bolts should not be repaired, replaced or field modified without the approval of the project structural engineer of record.

## **WRITTEN PROGRAMS**

The Construction Manager must submit a site-specific Health and Safety Plan for each project location that includes all Owner and any other Stakeholder's EHS requirements.

The Construction Manager must submit a **Disciplinary Program** for review by Owner.

The Construction Manager must have a **Written Hazard Communication Program** on site inclusive of a Chemical Inventory List and Material Safety Data Sheets (MSDS) for all chemicals brought to the site.

An **Evacuation Plan** inclusive of a designated muster area must be put in place for the project. Evacuation drills and alarm testing may occur periodically.

The Construction Manager must submit LOTO and Confined Space Plans (if applicable)

## **REQUIRED REPORTS**

The following reports must be submitted to Owner as noted:

**MONTHLY SAFETY HIGHLIGHT REPORT** – This report must include field man-hours monthly and cumulatively for each project, incidence rates (TCIR and DART), incidence rate charts, accident/incident log summary, and project EHS highlights. *See attached sample report.*

**MONTHLY ACCIDENT/INCIDENT SUMMARY LOG** – This log must include the date of any accident/incident, a description of the accident, specific injuries and treatment (if applicable), Contractor involved, injured worker's name (if applicable), type of accident (recordable, lost time, number of lost workdays and number of restricted days or job transfer) near miss, first aid, etc.), and comments indicating how the same or a similar accident will be prevented from recurring.

**SAFETY VIOLATION LOG** – A spreadsheet that is updated as required and forwarded to Owner monthly indicating the time of the violation, location of the violation, violator's name, company, supervisor's name, type of violation, person who issued the violation, warning #/termination, and comments.

**SAFETY OBSERVATION LOG/PROCESS** – A process to document **all EHS observations** with a method to **track to completion** that includes a **sorting mechanism**. **The log must be completed daily and forwarded to Owner weekly.** Process should include the following information: Date of the observation, Description of the observation, Observation type (electrical, ladder, etc.), Location, Contractor, and Date that the observation was corrected.

**SAMPLE**

**MONTHLY SAFETY HIGHLIGHT REPORT**

**Safety Overview – January 2005**

To date the \_\_\_\_\_ project has worked \_\_\_\_\_ man-hours with \_\_\_\_\_ OSHA recordable cases, one of which had \_\_\_\_\_ days of restricted or lost work activity.

The project-to-date safety statistics for the \_\_\_\_\_ project are:

<b>CATEGORY</b>	<b><sup>1</sup>NATIONAL AVERAGE</b>	<b>ACTUAL</b>
Total OSHA Recordable Cases	6.1	0
Incidence Rate (TCIR)		
DART Incidence Rate	3.1	0
(Recordable Cases with Days Away from Work, Days of Restricted Work Activity or Job Transfer)		
During January 2005 there were:		
Zero (0) OSHA Recordable Cases		
Zero (0) Recordable Cases with Days Away from Work, Days of Restricted Work Activity or Job Transfer		
Zero (0) Lost Workdays		
Zero (0) Restricted Workdays		
Zero (0) First Aid Cases		
Zero (0) Incidents/Other		
Zero (0) Near Misses		

In January 2005, \_\_\_\_\_ man-hours were worked on this project bringing the project-to-date total to \_\_\_\_\_ man-hours.

Describe any accidents/incidents that occurred during the month here.

This month, \_\_\_\_\_ contractor workers and \_\_\_\_\_ Owner employees attended the site-specific safety orientation on the project. To date, \_\_\_\_\_ contractor workers and \_\_\_\_\_ Owner employees have attended this project safety orientation. This continues to be an excellent venue for explaining the team approach and jobsite safety rules for the project.

Describe % of observations corrected in 24 hours, overview of trends of findings, EHS issues and any other EHS process improvements here.

Attached are graphs indicating our project-to-date safety status as compared to the National Average for the Construction Industry.

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<sup>1</sup> 2002 Bureau of Labor Statistics for Nonresidential Building Construction, SIC Code 154

# **RA HEALTH AND SAFETY PLAN**

## **APPENDIX C**

### **DIVING SAFETY MANUAL**

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**Attachments**

- Attachment G Safe Ascent Recommendations
- Attachment H Diving Medical Exam Overview for the Examining Physician
- Attachment I Diving History
- Attachment J Diving Emergency Management Procedures
- Attachment K Medical Examination of Scientific Diver

# 1. GENERAL POLICY

## 1.1 DIVING STANDARDS

### 1.1.1 Purpose

The purpose of the Diving Standards is to confirm that all diving performed during activities covered by the *Remedial Action Health and Safety Plan* (RA HASP) (Parsons, 2006) for the Hudson River PCBs Superfund Site is conducted in a manner intended to protect divers from accidental injury and/or illness.

The American Academy of Underwater Sciences (AAUS) is recognized by OSHA as the scientific diving standard setting organization (refer to Attachment G for a list of safe ascent recommendations). The standards described in this document adhere to the AAUS standards where necessary and appropriate.

## 1.2 OPERATIONAL CONTROL

### 1.2.1 Diving Standards and Safety Manual

This *Diving Safety Manual* provides for the development and implementation of policies and procedures to meet the requirements of local environments and conditions, and comply with the AAUS scientific diving standards that are applicable to the types of diving conducted during activities covered by the RA HASP.

These diving standards must include:

- Emergency evacuation and medical treatment procedures.
- The criteria for diver training and certification.
- Standards written or adopted by reference for each diving mode utilized, which include the following:
  1. Safety procedures for the diving operation.
  2. Responsibilities of the dive team members.
  3. Equipment use and maintenance procedures.
  4. Emergency procedures.

### 1.2.2 Diving Safety Officer

The DSO serves as a member of the Diving Control Board (DCB). This person should have broad technical and scientific expertise in research-related diving.

The duties and responsibilities of the DSO include:

- Responsible, through the DCB, to the administrative officer or his/her designee for the conduct of the scientific diving program. The routine operational authority for this program, including the conduct of training and certification, approval of dive plans, maintenance of diving records, and ensuring compliance with this manual and all other relevant regulations, rests with the DSO.
- May permit portions of this program to be carried out by a qualified delegate, although the DSO may not delegate responsibility for the safe conduct of the local diving program.
- Guided in the performance of the required duties by the advice of the DCB, but operational responsibility for the conduct of the local diving program will be retained by the DSO.



- Suspending diving operations that he/she considers to be unsafe or unwise.

The necessary qualifications of the DSO include:

- Appointed by the responsible administrative officer or his/her designee, with the advice and counsel of the DCB.
- Trained as a scientific diver.

### 1.2.3 Diving Supervisor

The responsibilities of the Diving Supervisor include:

- Acting as the on-site representative of the DSO for scientific diving projects and diver training activities.
- Maintaining presence on all dives from vessels and all other dives which present unusual or difficult circumstances.
- Providing in-water supervision of individuals who hold a Diver-In-Training Permit.
- Coordinating with other known activities in the vicinity that are likely to interfere with diving operations.
- Verifying that all dive team members possess current certification and are qualified for the type of diving operation to be undertaken.
- Planning dives in accordance with Section 2.2.1 of this *Diving Safety Manual*.
- Verifying that safety and emergency equipment is in working order and at the dive site.
- Briefing the dive team members on:
  1. Dive objectives.
  2. Unusual hazards or environmental conditions likely to affect the safety of the diving operation.
  3. Modifications to diving or emergency procedures necessitated by the specific diving operation.
- Suspending diving operations if, in his/her opinion, conditions are not safe.
- Reporting to the DSO and DCB any physical problems or adverse physiological effects, including symptoms of pressure-related injuries.

The necessary qualifications of the Diving Supervisor include:

- Meet all qualification criteria for Scientific Diver as outlined in Sections 4 and 5 of this *Diving Safety Manual*.
- Completed a minimum of 100 hours of documented dive time (underwater).
- Hold current cardiopulmonary resuscitation (CPR) and first-aid certifications.
- Diving experience in a variety of conditions including cold water, current, low visibility, and from large and small vessels.
- Written recommendations from two supervisors, as applicable.

### 1.2.4 Lead Diver

The DSO or the Diving Supervisor must appoint one member of each dive team as the Lead Diver.

The responsibilities of the Lead Diver include:

- Responsible for the in-water coordination of the scientific effort and the safety of the team while underwater.
- May assume the on-site responsibilities of the Diving Supervisor when diving operations are conducted in protected or shallow areas (less than 10 meters), with currents less than 0.5 knots, and at the discretion of the DSO.

The necessary qualifications of the Lead Diver include:

- Hold a Scientific Diver certification; and
- Be experienced with the site, mode, and dive objectives.

### **1.2.5 Waiver of Requirements**

The organizational DCB may grant a waiver for specific requirements of training, examinations, depth certification, and minimum activity to maintain certification as a scuba diver for activities covered by the RA HASP.

#### **1.2.5.1 Consequence of Violation of Regulations by Scientific Divers**

Failure to comply with the regulations of this *Diving Safety Manual* may be cause for the revocation or restriction of the diver's scientific diving certificate by action of the DCB.

### **1.3 RECORD MAINTENANCE**

The DSO or his/her designee must maintain permanent records for each individual scientific diver certified. The file must include evidence of certification level, log sheets, results of current physical examination, waiver, reports of disciplinary actions by the DCB, and other pertinent information deemed necessary.

Concerning the availability of records:

- Medical records must be available to the attending physician of a diver or former diver when released in writing by the diver.
- Records and documents required by this standard must be retained by the organizational member for the following period:
  - Physician's written reports of medical examinations for dive team members: Maintained for 5 years.
  - Manual for diving safety: Current document maintained only.
  - Records of dive: Maintained for 1 year, with the exception of 5 years where there has been an incident of pressure-related injury.
  - Pressure-related injury assessment: Maintained for 5 years.
  - Equipment inspection and testing records: Current entry or tag maintained, or until equipment is withdrawn from service.

## 2. DIVING PROCEDURES

### 2.1 INTRODUCTION

No person shall engage in scientific diving operations unless he/she holds a current certification issued pursuant to the provisions of this *Diving Safety Manual*.

### 2.2 PRE-DIVE PROCEDURES

#### 2.2.1 Dive Plans

Dives should be planned around the competency of the least experienced diver. Before conducting any diving operations during activities covered by the RA HASP, the Diving Supervisor for a proposed operation must formulate a *Dive Plan* that must be reviewed and approved by the DSO. The *Dive Plan* must include the following:

- Diver qualifications and the type of certificate or certification held by each diver.
- Emergency plan with the following information:
  1. Name, telephone number, and relationship of person to be contacted for each diver in the event of an emergency.
  2. Nearest operational recompression chamber via the Divers Alert Network.
  3. Nearest accessible hospital.
  4. Available means of transport.
- Approximate number of proposed dives.
- Location(s) of proposed dives.
- Estimated depth(s) and bottom time(s) anticipated.
- Decompression status and repetitive dive plans, if required.
- Proposed work, equipment, and boats to be employed.
- All potentially hazardous conditions.

#### 2.2.2 Pre-Dive Safety Checks

The diver's pre-dive responsibilities include the following:

- Conducting a functional check of his/her diving equipment in the presence of the diving buddy or tender.
- Refusing to dive if, in his/her judgment, conditions are unfavorable, or if he/she would be violating the precepts of his/her training, of this manual, or the organizational member's diving manual.
- No dive team member shall be required to be exposed to hyperbaric conditions against his/her will, except when necessary to prevent or treat a pressure-related injury.
- No dive team member shall be permitted to dive for the duration of any known condition which is likely to adversely affect the safety and health of the diver or other dive members.

In addition, the diver must complete the following evaluations:

- Equipment Evaluations
  1. Each diver must verify that his/her equipment is in proper working order and that the equipment is suitable for the type of diving operation.

2. Each diver must have the capability of achieving and maintaining positive buoyancy.
- Site Evaluation
    1. The environmental conditions at the site will be evaluated.

## **2.3 DIVING PROCEDURES**

### **2.3.1 Solo Diving Prohibition**

All diving activities must assure adherence to the buddy system (two comparably equipped scuba divers in the water in constant communication) for scuba diving. This buddy system is based on mutual assistance, especially in the case of an emergency.

### **2.3.2 Decision to Dive**

When making a decision whether to dive or not, scientific divers should follow these guidelines:

- The decision to dive is that of the diver. A diver may refuse to dive, without fear of penalty, whenever he/she feels it is unsafe for them to make the dive.
- The ultimate responsibility for safety rests with the individual diver. It is the diver's responsibility and duty to refuse to dive if, in his/her judgment, conditions are unsafe or unfavorable, or if he/she would be violating the precepts of his/her training or the regulations in this manual.

### **2.3.3 Termination of Dive**

Upon terminating the dive, scientific divers should follow these guidelines:

- It is the responsibility of the diver to terminate the dive, without fear of penalty, whenever he/she feels it is unsafe to continue the dive, unless it compromises the safety of another diver already in the water.
- The dive must be terminated while there is still sufficient cylinder pressure to permit the diver to safely reach the surface, including decompression time, or to safely reach an additional air source at the decompression station.

### **2.3.4 Emergencies and Deviations from Regulations**

Any diver may deviate from the requirements of this manual to the extent necessary to prevent or control a situation which is likely to cause death, serious physical harm, or major environmental damage. A written report of such actions must be submitted to the DCB explaining the circumstances and justifications.

### **2.3.5 Diving From Vessels**

All diving from contractor-controlled vessels must be limited to the following individuals:

- Those persons certified as divers engaged in recognized diving projects for activities covered by the RA HASP.
- Those persons certified as divers engaged in training or certification activities as authorized by the DSO.
- Those persons who are contracted for diving services related to activities covered by the RA HASP.

In addition, the following guidelines apply to diving from vessels:

- All diving activities from vessels during activities covered by the RA HASP must be conducted under the direction of a Diving Supervisor. The Diving Supervisor will be responsible for all diving activities and will cooperate with the vessel captain to ensure the safety of all aboard.
- A designated Safety Diver must be on watch aboard vessels operating under the auspices of activities covered by the RA HASP when diving activities are being conducted. He/she will be fully dressed for immediate entry into the water. The support vessel will be deployed in the water ready for immediate use. One of the diving crew must be responsible for logging divers on and off the vessel and maintaining dive records. It will be the responsibility of each diver to consult with this individual before entering the water to determine the time / depth limitations of the next dive.
- When diving activities are conducted from a small vessel, the minimum crew must consist of a boat operator and three divers, one of whom will serve as a Safety Diver while two are in the water. The boat operator will be responsible for recording dive times. One of the individuals on board must be a Diving Supervisor.
- When diving operations take place in protected waters near shore, at depths less than 10 meters, with currents less than 0.5 knots, and at the discretion of the DSO, the Safety Diver and boat operator functions may be carried out by one qualified individual. In addition, under these conditions, a designated Lead Diver may substitute for the Diving Supervisor.

### **2.3.6 Safety Stops**

The following guidelines apply to safety stops:

- The inclusion of a safety stop performed during the ascent phase of the dive is strongly recommended to minimize the formation of inert gas bubbles. Stops at 20 or 10 FSW (depending on surface swell heights) for at least 3 minutes should be part of the dive plan and air consumption calculations.
- Weighted lines to accommodate safety stops may be suspended from the stern of a vessel or be part of the anchor cable. Buoyed descent/ascent lines may be used provided there is enough scope to allow the buoy to move up and down with the swell. Note: Surfacing, then going back down for a safety stop negates any beneficial effect of the stop. Once on the surface, the diver must remain there.

## **2.4 POST-DIVE PROCEDURES**

After the completion of a dive, each diver must report any physical problems, symptoms of decompression sickness, or equipment malfunction.

## **2.5 EMERGENCY PROCEDURES**

Each organizational member must develop emergency procedures that follow the standards of care of the community and must include procedures for emergency care, recompression, and evacuation for each dive location.

## **2.6 FLYING AFTER DIVING**

Divers should have a minimum surface interval of 12 hours before ascending to altitude.

## **2.7 RECORDKEEPING AND REQUIREMENTS**

### **2.7.1 Personal Diving Log**

Each certified scientific diver must log every dive made during activities covered by the RA HASP and is encouraged to log all other dives. Log sheets must be submitted to the DSO to be placed in the diver's permanent file. Details of the submission procedures are left to the discretion of the DSO. The diving log must include at least the following:

- Name of diver, partner, and Diving Supervisor.
- Date, time, and location.
- Diving modes used.
- General nature of diving activities.
- Approximate surface and underwater conditions.
- Maximum depths, bottom time, and surface interval time.
- Diving tables or computers used.
- Detailed report of any near or actual incidents.

### **2.7.2 REQUIRED INCIDENT REPORTING**

All diving incidents requiring recompression treatment, or resulting in moderate or serious injury or death, must be reported to the DCB. The report will specify the circumstances of the incident and the extent of any injuries or illnesses. Additional information must meet the following reporting requirements:

- The DCB must record and report occupational injuries and illnesses in accordance with requirements of the appropriate Labor Code section.
- If pressure-related injuries are suspected, or if symptoms are evident, the following additional information must be recorded and retained by the DSO, with the record of the dive, for a period of 5 years:
  1. Name, address, phone numbers of the principal parties involved.
  2. Summary of experience of divers involved.
  3. Location, description of dive site, and description of conditions that led up to the incident.
  4. Description of symptoms, including depth and time of onset.
  5. Description and results of treatment.
  6. Disposition of case.
  7. Recommendations to avoid repetition of incident.
- The DCB will investigate any incident of pressure-related injury and prepare a report documenting its findings.

## **3. DIVING EQUIPMENT**

### **3.1 GENERAL POLICY**

All equipment must meet the standards as determined by the DSO and DCB. Equipment that is subjected to extreme usage under adverse conditions should require more frequent testing and maintenance. All equipment must be regularly examined by the diver using the equipment.

### **3.2 EQUIPMENT**

#### **3.2.1 Regulators**

Regulators will consist of a primary second stage, an alternate air source (such as an octopus second stage or redundant air supply), and a submersible pressure gauge. Only those makes and models specifically approved by the DSO and DCB must be used. Scuba regulators must be inspected and tested prior to first use and every 12 months thereafter.

### **3.2.2 Breathing Masks and Helmets**

Breathing masks and helmets must have:

- A non-return valve at the attachment point between helmet or mask hose, which must close readily and positively;
- An exhaust valve; and
- A minimum ventilation rate capable of maintaining the diver at the dive depth.

### **3.2.3 Scuba Cylinders**

Scuba cylinders must be designed, constructed, and maintained in accordance with the applicable provisions of the Unfired Pressure Vessel Safety Orders. Other requirements of scuba cylinders include:

- Must be hydrostatically tested in accordance with DOT standards.
- Must have an internal inspection at intervals not to exceed 12 months.
- Valves must be functionally tested at intervals not to exceed 12 months.
- Backpacks without integrated floatation devices and weight systems must have a quick release device designed to permit jettisoning with a single motion from either hand.

### **3.2.4 Gauges**

Gauges must be inspected and tested before first use and every 12 months thereafter.

### **3.2.5 Flotation Devices**

Guidelines concerning the use of flotation devices include:

- Each diver must wear an approved buoyancy compensator regardless of the type of exposure suit employed.
- Personal flotation systems, buoyancy compensators, dry suits, or other variable volume buoyancy compensation devices must be equipped with an exhaust valve.
- These devices must be functionally inspected and tested at intervals not to exceed 12 months.

### **3.2.6 Timing Devices, Depth and Pressure Gauges**

Both members of the diving pair must have an underwater timing device and approved depth indicator.

### **3.2.7 Determination of Decompression Status: Dive Tables, Dive Computers**

A set of diving tables, approved by the DCB, must be available at the dive location. The National Association of Underwater Instructors (NAUI) Dive Tables must be employed on all dives. Exceptions must be by approval of the DCB.

Additionally, dive computers may be utilized in place of diving tables; these must be approved by the DCB.

## **3.3 AUXILIARY EQUIPMENT**

### **3.3.1 Handheld Underwater Power Tools or Sampling Devices**

Electrical tools and sampling equipment used underwater must be specifically approved for this purpose. The need for power tools will be emphasized in *Dive Plans* submitted to the DCB, and it is at the discretion of the DCB to either approve or deny diving operations involving this equipment. Electrical

tools and equipment supplied with power from the surface must be de-energized before being placed into or retrieved from the water.

Handheld power tools must not be supplied with power from the dive location until requested by the diver.

### **3.4 SUPPORT EQUIPMENT**

#### **3.4.1 First-Aid Supplies**

A small first-aid kit for diving emergencies [purchased from the Diver Alert Network (DAN)] will be present for diving operations.

#### **3.4.2 Diver's Flag**

A diver's flag must be displayed prominently whenever diving is conducted under circumstances where required or where water traffic is probable.

### **3.5 AIR QUALITY STANDARDS**

Breathing air for scuba diving must meet the following specifications as set forth by the Compressed Gas Association (CGA Pamphlet G-7.1) and referenced in OSHA 29 CFR 1910.134.

<b>CGA Grade E</b>
<b>Component Maximum</b>
Oxygen 20 - 22%/v
Carbon Monoxide 10 PPM/v
Carbon Dioxide 500 PPM/v
Condensed Hydrocarbons 5 mg/m <sup>3</sup>
Water Vapor NS
Objectionable Odors None

## **4. TRAINING REQUIREMENTS**

### **4.1 GENERAL**

An individual who is authorized to dive during activities covered by the RA HASP must be able to safely operate in an environment that may include below freezing air temperatures, near-freezing water temperatures, high currents, low to zero visibility, and rough seas. The transition for a diver with a basic scuba certification to one certified to dive during activities covered by the RA HASP requires a specific training program to enable an individual to safely perform research activities within this challenging environment.

Candidate prerequisites include:

- Age: 21 years or older;
- Adult certification in Basic Scuba Diving by a nationally recognized agency (NAUI, Professional Association of Diving Instructors [PADI], Scuba Schools International [SSI], etc.);
- Successful completion of a diving medical examination; and
- Successful completion of a swimming and scuba skill evaluation.



## **4.2 EVALUATIONS**

### **4.2.1 Medical Examination**

The applicant for training must be certified by a licensed physician to be medically qualified for diving as designated in Section 5 before proceeding with the training.

### **4.2.2 Swimming Evaluation**

The applicant for training must successfully perform the following tests, or their equivalent, in the presence of the DSO or an examiner approved by the DSO:

- Swim underwater without swim aids for a distance of 25 yards without surfacing.
- Swim 400 yards in less than 12 minutes without swim aids.
- Tread water for 10 minutes, or 2 minutes without the use of hands, without swim aids.
- Transport another person of equal size a distance of 25 yards in the water without the use of swim aids.

## **4.3 SCUBA TRAINING**

### **4.3.1 Practical Training**

At the completion of scuba training, the trainee must satisfy the DSO or the DSO's designee of the trainee's ability to perform the following in a pool or in sheltered water, as a minimum performance standard:

1. Enter water with full equipment.
2. Alternate between snorkel and scuba on the surface.
3. Remove, replace, and clear face mask while submerged breathing from regulator.
4. Remove and replace scuba equipment while submerged.
5. Demonstrate understanding of underwater signs and signals.
6. Demonstrate air sharing, including both buddy breathing and the use of an alternate air source, as both donor and recipient, stationary, and swimming with and without a face mask.
7. As a diver, perform in-water rescue of a simulated passive, non-breathing victim of a diving accident, transporting the victim 50 yards in under 4 minutes.
8. Demonstrate simulated in-water mouth-to-mouth resuscitation.
9. Demonstrate water skills and ability acceptable to the DSO or evaluator.
10. Demonstrate understanding of emergency ascent techniques.
11. Demonstrate competence in controlled ascent techniques.
12. Demonstrate competence in diver-related first aid and rescue.

### **4.3.2 Written Examination**

Before completing training, the trainee must pass a written examination for basic scuba diving principles and practices. A passing score on this exam is required to obtain a Diver-In-Training authorization. The exam will cover knowledge of at least the following:

1. Function, care, use, and maintenance of diving equipment.
2. Physics and physiology of diving.
3. Diving regulations and precautions.

4. Nearshore currents and waves.
5. Dangerous marine animals.
6. Emergency procedures, including buoyant ascent and ascent by air sharing.
7. Currently accepted "No-Decompression" and repetitive "No-Decompression" limits, and decompression procedures.
8. Proper use of dive tables.
9. Underwater communications.
10. Aspects of fresh water and altitude diving.
11. Hazards of breath-hold dives and ascents.
12. Planning and supervision of diving operations.
13. Diving hazards.
14. Cause, symptoms, treatment, and prevention of the following:
  - a. Near drowning;
  - b. Air embolism and related pulmonary overpressure conditions;
  - c. Carbon dioxide excess;
  - d. "Squeezes" associated with diving;
  - e. Oxygen toxicity;
  - f. Nitrogen narcosis;
  - g. Carbon monoxide poisoning;
  - h. Exhaustion and panic;
  - i. Respiratory fatigue and motion sickness;
  - j. Decompression sickness;
  - k. Hypothermia - hyperthermia; and
  - l. Hypoxia and anoxia.

#### **4.3.3 Open Water Evaluation**

The trainee must satisfy the DSO or an approved evaluator of his/her ability to perform at least the following in open water, as a minimum standard:

1. Surface dive to a depth of 10 feet in open water without scuba.
2. Share a breathing air source, including both buddy breathing and use of an alternate air source, as both donor and recipient. Swim effectively a prescribed distance and make a proper controlled ascent.
3. Enter and leave open water or surf, if applicable, wearing scuba gear.
4. Kick on the surface 400 yards while wearing scuba gear, but not breathing from the scuba unit.
5. Successfully complete five open-water scuba dives for a minimum total time of 4 hours, of which 2 hours cumulative bottom time must be on scuba. Not more than three of these training dives must be made in 1 day.
6. Demonstrate judgment adequate for safe diving.
7. Where appropriate, demonstrate the ability to maneuver in aquatic plants at and below the surface.
8. Complete a simulated emergency swimming ascent.
9. Remove, replace, and clear mask and regulator while submerged.
10. Proficiently exit the water and board a diving support vessel.
11. Achieve and maintain neutral buoyancy while submerged.

12. Demonstrate techniques of self-rescue and buddy rescue for a tired diver and unconscious non-breathing diver.
13. Navigate underwater at least a reciprocal compass course.
14. Demonstrate ability to plan and execute a dive.

## **5. MEDICAL REQUIREMENTS**

### **5.1 GENERAL**

Dive team members who are potentially exposed to hyperbaric conditions must pass a current diving physical examination and have been declared by a licensed physician to be fit to engage in diving activities, as may be limited or restricted in the medical evaluation report.

All medical evaluations required by this standard must be performed by, or under the direction of, a licensed physician of the applicant-diver's choice, preferably one trained in diving/undersea medicine.

The diver should be free of any chronic disabling disease and be free of any condition contained in the list of conditions for which restrictions from diving is generally recommended.

### **5.2 FREQUENCY OF MEDICAL EVALUATIONS**

A medical evaluation must be completed:

- Before a diver may dive, unless an equivalent medical evaluation has been given within the preceding year, the physician has obtained the results of that examination, and those results have been reviewed and found satisfactory by the DSO and DCB.
- Annually from the date of initial evaluation or last equivalent evaluation.
- After any major injury or illness or any condition requiring hospitalization. These occurrences require clearance to return to diving from a physician. If the condition or illness is pressure-related, then the clearance to resume diving must come from a physician trained in diving medicine.
- After any episode of unconsciousness.
- After any diving accident.

### **5.3 INFORMATION PROVIDED TO EXAMINING PHYSICIAN**

A copy of the medical evaluation requirements must be provided to the examining physician. Attachment H (Diving Medical Exam Overview for the Examining Physician) may be used for this purpose.

### **5.4 CONTENT OF MEDICAL EXAMINATIONS**

Medical examinations conducted initially and periodically must consist of the following:

- Applicant agreement for release of medical information to the DSO and DCB;
- Medical history;
- Diving-related medical history (Attachment I);
- Diving physical examination; and
- Any additional tests the physician may consider necessary.

## **5.5 RESTRICTION OF DIVING**

Conditions for which restriction from diving is recommended are presented in Attachment J (Diving Emergency Management Procedures).

## **5.6 LABORATORY REQUIREMENTS FOR DIVING MEDICAL EXAMINATION**

The initial entry examination, first examination with a physician unfamiliar with the diver's past diving medical history, and/or the first examination over 40 should include:

- Medical history;
- Chest x-ray;
- Electrocardiogram (EKG);
- Pulmonary function test;
- Audiogram;
- Visual acuity;
- Complete blood count;
- Blood chemistry (SMA-12);
- Urinalysis; and
- Any tests deemed necessary by the physician to qualify the individual for scuba diving.

A periodic re-examination must include:

- Medical history;
- Pulmonary function test;
- Audiogram;
- Visual acuity;
- Complete blood count;
- Blood chemistry (SMA-12);
- Urinalysis; and
- Any further tests deemed necessary by the physician to qualify the patient for scuba diving.

An exercise stress EKG may be performed at the advisement of the physician at the first exam over age 35 and at 2-year intervals thereafter, as appropriate. If there is evidence of high risk for cardiac artery disease (i.e., family history, smoking, obesity, or high cholesterol), more frequent tests are strongly advised.

## **5.7 PHYSICIAN'S WRITTEN REPORT**

After any medical examination relating to the individual's fitness to dive, the examining physician must prepare a written report documenting the examining physician's opinion of the individual's fitness to dive, including any recommended restrictions or limitations. Attachment K (Medical Examination of Scientific Diver) may be used for this purpose. These written reports must be reviewed by the DSO.

**ATTACHMENT G**  
**SAFE ASCENT RECOMMENDATIONS**

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## *Safe Ascent Recommendations*

From: AAUS Biomechanics of Safe Ascents Workshop, 1990, Lang and Egstrom (Eds.)

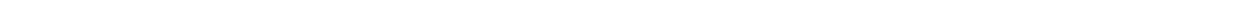
It has long been the position of the AAUS that the ultimate responsibility for safety rests with the individual diver.

The time has come to encourage divers to slow their ascents.

1. Buoyancy compensation is a significant problem in the control of ascents.
  2. Training in, and understanding of, proper ascent techniques is fundamental to safe diving practice.
  3. Before certification, the diver is to demonstrate proper buoyancy, weighting, and a controlled ascent, including a “hovering” stop.
  4. Divers shall periodically review proper ascent techniques to maintain proficiency.
  5. Ascent rates shall not exceed 60 feet per minute.
  6. A stop in the 10-30 foot zone for 3-5 minutes is recommended on every dive.
  7. When using a dive computer or tables, non-emergency ascents are to be at the rate specified for the system being used.
  8. Each diver shall have instrumentation to monitor ascent rates.
  9. Divers using dry suits shall have training in their use.
  10. Dry suits shall have a hands-free exhaust valve.
  11. Buoyancy compensators (BCs) shall have a reliable rapid exhaust valve which can be operated in a horizontal swimming position.
  12. A BC is required with dry suit use for ascent control and emergency flotation.
  13. Breathing 100% oxygen above water is preferred to in-water air procedures for omitted decompression.
-

**ATTACHMENT H**

**DIVING MEDICAL EXAM OVERVIEW  
FOR THE EXAMINING PHYSICIAN**



## *Diving Medical Exam Overview for the Examining Physician*

### **TO THE EXAMINING PHYSICIAN:**

This person, \_\_\_\_\_, requires a medical examination to assess his/her fitness for authorization as a Diver. His/her answers on the Diving History Form (attached) may indicate potential health or safety risks as noted. Your evaluation is requested on the attached Scuba Diving Medical Evaluation Report. If you have questions about diving medicine, you may wish to consult one of the references on the attached list. Please contact the undersigned Diving Safety Officer if you have any questions or concerns about diving medicine or the Diving Safety Program standards outlined in the *Diving Safety Manual*.

Thank you for your assistance.

Scuba and other modes of compressed-gas diving can be strenuous and hazardous. A special risk is present if the middle ear, sinuses, or lungs do not readily equalize air pressure changes. The most common cause of distress is eustachian insufficiency. Most fatalities involve deficiencies in prudence, judgment, emotional stability, or physical fitness. Consult the following list of conditions that usually restrict candidates from diving:

(Adapted from Davis 1986:47-50, bracketed numbers are pages in Davis)

1. Tympanic membrane perforation or aeration tube [7].
  2. Inability to auto inflate the middle ears [6, 7, 8].
  3. External ear exostoses or osteomas adequate to prevent external ear canal pressure equilibration [4].
  4. Meniere's disease or other chronic vertiginous conditions, status post-surgery, such as subarachnoid endolymphatic shunt for Meniere's disease [11].
  5. Stapedectomy and middle ear prostheses [9].
  6. Chronic mastoiditis or mastoid fistula [5].
  7. Any maxillofacial deformity that interferes with the retention of the regulator mouth piece [43].
  8. Corrected near visual acuity not adequate to see tank pressure gauge, watch, decompression tables, and compass underwater. Uncorrected visual acuity not adequate to see the diving buddy or locate the boat in case corrective lenses are lost underwater [13].
  9. Radial keratotomy or other recent ocular surgery [14].
  10. Claustrophobia of a degree to predispose to panic [15, 16].
  11. Suicidal ideation [16].
  12. Significant anxiety states [16].
  13. Psychosis [18].
  14. Severe depression [16].
-



15. Manic states [16].
  16. Alcoholism [19, 20].
  17. Mood-altering drug use [19, 20].
  18. Improper motivation for diving [16, 17, 18].
  19. Episodic loss of consciousness [1, 22].
  20. History of seizure. History of seizure in early childhood must be evaluated individually [21].
  21. Migraine [20].
  22. History of cerebrovascular accident or transient ischemic attack [23].
  23. History of spinal cord trauma with neurologic deficit - whether fully recovered or not [23].
  24. Any degenerative or demyelinating CNS process [25].
  25. Brain tumor with or without surgery [24].
  26. Intracranial aneurysm or other vascular malformation [24].
  27. History of neurological decompression sickness with residual deficit [23, 24].
  28. Head injury with sequelae [21].
  29. History of intracranial surgery [24].
  30. Sickle Cell Disease [34].
  31. Polycythemia or leukemia [34].
  32. Unexplained anemia [34].
  33. History of myocardial infarction [28, 29, 30].
  34. Angina or other evidence of coronary artery disease [29].
  35. Unrepaired cardiac septal defects [32].
  36. Aortic stenosis or mitral stenosis [32].
  37. Complete heart block [31].
  38. Fixed second-degree heart block [31].
  39. Exercise-induced tachyarrhythmias [31, 32].
  40. Wolf-Parkinson-White (WPW) Syndrome with paroxysmal atrial tachycardis or syncope [31].
  41. Fixed-rate pacemakers [33].
  42. Any drugs that inhibit the normal cardiovascular response to exercise tolerance [31].
  43. Peripheral vascular disease, arterial or venous, severe enough to limit exercise tolerance [33, 41].
  44. Hypertension with end-organ finding-retinal, cardiac, renal, or vascular [30]
  45. History of spontaneous pneumothorax [36].
-

46. Bronchial asthma. History of childhood asthma requires special studies [7, 35].
47. Exercise or cold-induced asthma [36, 37].
48. X-ray evidence of pulmonary blebs, bullae, or cysts [36, 37].
49. Chronic obstructive pulmonary disease [37].
50. Insulin-dependent diabetes mellitus. Diet or oral medication-controlled diabetes if there is a history of hypoglycemic episodes [38].
51. Any abdominal wall hernia with potential for gas-trapping until surgically corrected. Paraesophageal or incarcerated sliding hiatal hernia [39].
52. Sliding hiatus hernia if symptomatic due to reflux esophagitis [39].
53. Pregnancy [1, 45].
54. Osteonecrosis. A history consistent with a high risk of dysbaric osteonecrosis.
55. Any condition requiring ingestion of the following medication: antihistamines, bronchodilators, steroids, barbiturates, phenytoin, mood-altering drugs, insulin.

#### **REFERENCES:**

- Bove, A. and J. Davis. *Diving Medicine*. 1990. W.B. Saunders Co., Philadelphia.
- Davis, Jefferson, M.D. (ed.). *Medical Examination of Sport Scuba Divers*. 1989. Best Publishing Co., P.O. Box 30100, Flagstaff AZ 86003-0100.
- Dueker, C.W. *Scuba Diving in Safety and Health*, Madison Publishing Associates, Diving Safety Digest, P.O. Box 2735, Menlo Park, CA 94026.
- Edmonds, C., C. Lowery, and J. Pennefather. *Diving and Subaquatic Medicine*, 3rd Edition. 1992. Butterworth-Heinemann Ltd., Oxford. (Available from Best Publishing Company, P.O. Box 30100, Flagstaff, AZ 86003-0100).
- National Oceanic and Atmospheric Administration. *NOAA Diving Manual*. Superintendent of Documents, U.S. Government Printing Office, Washington, D.C.
- Shilling, C.W., C.B. Carlson, and R.A. Mathias. *The Physician's Guide to Diving Medicine*. Plenum Press, New York (Available through Underwater and Hyperbaric Medical Society, Bethesda, MD).
- U.S. Navy. *U.S. Navy Diving Manual*. Superintendent of Documents, U.S. Government Printing Office, Washington, DC.
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**ATTACHMENT I**  
**DIVING HISTORY**

---

## DIVING HISTORY

Last Name:	First Name:	M.I
Date of Birth:	Employee Number:	
Office Phone:	Email:	

### SECTION 1: DIVING TRAINING HISTORY

Date of First Certification:	Agency	Location

Certification Type	Agency Date	Number	Duration	Location
Basic				
Open Water				
Advanced				
Rescue				
Asst. Instructor				
Dive Master				
O2 Administration				
Instructor				
Military				

Other Dive Training (List Below):

Type of Training	Agency or School	Date(s)	Location

**(Please provide photocopies of all certificates and c-cards to document claimed training)**

### SECTION 2. EMERGENCY TRAINING HISTORY

Date of Last Physical:	Date of Last Diving Physical:
Date of CPR Training:	Agency:
Name of Course:	
Date of First-Aid Training:	Agency:
Name of Course:	

### SECTION 3. DIVING EXPERIENCE

#### A. General

Years Diving: \_\_\_\_\_ Age 1st Skin Dive: \_\_\_\_\_ Age first Compressed Air Dive: \_\_\_\_\_

Military Diving Experience: \_\_\_\_\_

---

**B. Diving Experience**

Type of Diving	Total Years	Maximum Depth	Total # Dives	# Dives Last Year	Cumulative Bottom Time
Compressed Air Scuba					
Compressed Air Surface-Supplied					
Nitrox – Open-Circuit Scuba					
Trimix - Open-Circuit Scuba					
Heliox (He/O2)					
Oxygen Rebreather					
Semi-Closed Circuit Rebreather					
Closed-Circuit Rebreather					
One-Atm. Diving Suit					

**C. Activity Profile**

Past Experience with (✓ check all that apply):

<input type="checkbox"/>	Sport Diving
<input type="checkbox"/>	Research
<input type="checkbox"/>	Marine Life Collecting
<input type="checkbox"/>	Net Tending
<input type="checkbox"/>	Commercial Collecting
<input type="checkbox"/>	Commercial Construction
<input type="checkbox"/>	Saturation
<input type="checkbox"/>	Surface Decompression
<input type="checkbox"/>	Mixed Gas/Heliox
<input type="checkbox"/>	Education
<input type="checkbox"/>	Other:

Number of Dives per Day: Maximum: \_\_\_\_\_ Average: \_\_\_\_\_ Minimum: \_\_\_\_\_

List Approximate Number of Dives (Past Year) in the Following Categories (enter 0 where appropriate):

Depth:	
< 30 feet:	
30 to 60 feet:	
60 to 100 feet:	
100 to 150 feet:	
>150 feet:	

Conditions:	
Night:	
Low Visibility:	
Physical Overhead:	
Bluewater (No Bottom):	

Platform/Technology:	
Small Boat Dives:	
Shipboard Diving	

Other (Describe): \_\_\_\_\_

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**SECTION 4. INJURY HISTORY**

	2001	2002	2003	2004	2005	Total
Total Number of Dives						
Deepest Dive						
# Dives with Staged Decompression						
# Dives with Surface Decompression						
# Dives Resulting in Skin Bends or “niggles” (not treated):						
# Dives Resulting in Bends (pain only):						
# Central Nervous System DCS:						
# Times treated for DCS:						
Any permanent injury from DCS:						

If you have ever had DCS, what type of treatment did you receive?

<b>a. For Bend Pain:</b>	
None:	
Aspirin:	
Oxygen on Surface USN Table (list):	

<b>b. For CNS Symptoms:</b>	
None:	
Aspirin:	
Oxygen on Surface USN Table (List:	
Other:	

Do you have difficulty clearing your ears on descent, or in aircraft?

Yes / No      IF YES, EXPLAIN: \_\_\_\_\_

Does ear difficulty limit your diving?

Yes / No      If yes, how often: 1 2 10 50 100

Have you ever experienced “ear squeeze” to the point of having temporary hearing loss?

Yes / No      If yes, how often: 1 2 10 50 100

Have you ever aborted a dive because of ear problems? Yes / No

If yes, how often: 1 2 10 50 100

Have you ever had difficulty with your sinuses during a dive? Yes / No

If yes, how often: 1 2 10 50 100

Have you ever had a sinus squeeze? Yes / No

If yes, how often: 1 2 10 50 100

**APPLICANT'S AFFIDAVIT:**

I certify that the above information is true to the best of my knowledge and ability. I understand that misstatements on this report can result in loss of my diving privileges.

Signature of Applicant: \_\_\_\_\_

Date: \_\_\_\_\_

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**ATTACHMENT J**

**DIVING EMERGENCY MANAGEMENT PROCEDURES**

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# **DIVING EMERGENCY MANAGEMENT PROCEDURES**

## **INTRODUCTION**

A diving accident victim could be any person who has been breathing air underwater regardless of depth. It is essential that emergency procedures are pre-planned and that medical treatment is initiated as soon as possible. It is the responsibility of the Lead Diver for each project or dive to establish effective diving emergency procedures for the local diving operations, including evacuation and medical treatment.

## **GENERAL PROCEDURES**

Depending on the nature of the diving accident, stabilize the patient, administer 100% oxygen, contact the local Emergency Medical Services (EMS) for transport to a medical facility, and contact the Diving Safety Officer (DSO), as appropriate. Explain the circumstances of the dive accident to evacuation teams, medics, and physicians. Do not assume that they understand why 100% oxygen may be required for the diving accident victim, or that recompression may be necessary.

Make appropriate contact with the victim, or rescue as required.

- Establish (A)irway, (B)reathing, (C)irculation as required. Control severe bleeding and treat for shock, as per first-aid guidelines.
  - Administer 100% oxygen, if appropriate (in cases of suspected near-drowning, decompression sickness (DCS), arterial gas embolism (AGE), cardiac emergencies, or breathing emergencies).
  - Contact local EMS for transport to nearest medical treatment facility.
  - If possible, complete or assign additional personnel to complete the following actions:
    1. Take notes of how the incident occurred and all response measures taken, including a time table of actions;
    2. Isolate the victim's equipment for inspection by the DSO and authorities;
    3. Manage the accident scene for crowd control. Assign someone to keep bystanders from interfering; and
    4. Make statements regarding the incident only to personnel authorized by the Health and Safety Manager.
  - Notify the DSO and appropriate Health and Safety Manager.
  - Complete and submit the Incident/Near Miss Investigation Report (Attachment F to the RA HASP).
-

**ATTACHMENT K**  
**MEDICAL EXAMINATION OF DIVER**

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# MEDICAL EXAMINATION OF DIVER

## SECTION 1: MEDICAL HISTORY.

*TO BE COMPLETED BY THE DIVER PRIOR TO EXAM.*

Last Name:	First Name:	M.I
Date of Birth:	Sex:	
Home Phone:	Email:	
Home Street Address:		
City:	State:	Zip:

Have you previously completed this form? ..... Yes / No

Is your medical history unchanged since last completing this form? ..... Yes / No

If the answer to both questions was 'yes', then skip to Section 2.

### **To The Applicant:**

Scuba diving makes considerable demands on your physical and emotional condition.

Diving with particular health issues may present serious hazards for you, your dive buddy, or anyone coming to your aid if you have difficulty in the water. It is essential that certain medical and physical requirements be met before beginning a diving or training program.

Your answers to the following questions are more important, in many cases, than the physician's examination. You must provide accurate and complete information. This form will be kept confidential. If you believe any question amounts to an invasion of your privacy, you may elect to omit an answer provided that you subsequently discuss that matter with your own physician, and he/she must indicate, in writing, that you have done so and that no health hazard exists.

If any answer indicates a condition which might make diving hazardous, you will be asked to review the matter with your physician. In such instances, his/her written authorization will be required in order for further consideration to be given to your application.

**Family History:**

If single, answer as child; If married, answer as spouse

Relative	Age	State of Health	Occupation	Age at Death	Cause of Death
Father/Husband					
Mother/Wife					
Child 1 Sex:					
Child 2 Sex:					
Child 3 Sex:					
Child 4 Sex:					
Child 5 Sex:					
Sibling 1 Sex:					
Sibling 2 Sex:					
Sibling 3 Sex:					
Sibling 4 Sex:					
Sibling 5 Sex:					

**Personal History:**

Please answer ALL questions. Comment on all positive answers in the space below.

1. When was your last physical exam and what was its purpose? \_\_\_\_\_  
\_\_\_\_\_
2. Who examined you (name and address)? \_\_\_\_\_  
\_\_\_\_\_
3. Have you ever been rejected for armed service, employment, or insurance for medical reasons?  
..... Yes/No
4. Has your physical activity ever been restricted for any reason in the past 5 years?..... Yes / No
5. Have you ever received treatment or counseling for a nervous condition, personality  
or character disorder, or emotional problem? ..... Yes / No
6. Are you being treated by a doctor at the present? ..... Yes / No
7. Are you taking any medication daily, or on a regular basis, either orally or by  
injection? ..... Yes / No
8. What medication(s) do you take on an irregular basis and how often? \_\_\_\_\_  
\_\_\_\_\_
9. How often do you take aspirin or aspirin-like drugs? \_\_\_\_\_
10. How often do you take "cold medicines," i.e., antihistamines? \_\_\_\_\_
11. In the course of a year, list any other drugs/medicines not listed above that you might take:  
\_\_\_\_\_  
\_\_\_\_\_
12. Do you have allergies to any drugs? ..... Yes / No  
If yes, list:.....  
.....
13. Are you subject to air/seasickness? ..... Yes / No

14. Have you had any of the following diseases?

- |                      |          |                        |          |
|----------------------|----------|------------------------|----------|
| Chickenpox: .....    | Yes / No | Measles: .....         | Yes / No |
| Tuberculosis: .....  | Yes / No | Mumps: .....           | Yes / No |
| Scarlet Fever: ..... | Yes / No | Rheumatic Fever: ..... | Yes / No |
| Poliomyelitis: ..... | Yes / No | Malaria: .....         | Yes / No |
| Jaundice: .....      | Yes / No | German Measles: .....  | Yes / No |
| Meningitis: .....    | Yes / No |                        |          |

If Yes, give details: \_\_\_\_\_

15. What other illnesses have you had? \_\_\_\_\_

16. Have you ever had any operations? ..... Yes / No

17. Have you ever had any broken bones? ..... Yes / No

18. Have you ever been knocked unconscious? ..... Yes / No

19. Do you smoke/use any type of tobacco? ..... Yes / No

If yes, how often? \_\_\_\_\_

Check whether or not you have, or ever have had, any of the following. Explain any “yes” responses under “Remarks,” providing dates and other pertinent information. If you wish this to be confidential, please say “confidential,” but it must be discussed with the physician during the examination.

20. Frequent colds or sore throat. .... Yes / No

21. Hay fever or sinus trouble. .... Yes / No

22. Trouble breathing through nose, other than during colds. .... Yes / No

23. Painful or running ear, mastoid trouble, broken eardrum. .... Yes / No

24. Hearing problems. .... Yes / No

25. Asthma or bronchitis. .... Yes / No

26. Shortness of breath after moderate exercise. .... Yes / No

27. History of Pleurisy. .... Yes / No

28. Collapsed lung (pneumothorax). .... Yes / No

29. Chest pain or persistent cough. .... Yes / No

30. Tiring easily. .... Yes / No

31. Spells of fast, irregular, or pounding heartbeat. .... Yes / No

32. High or low blood pressure. .... Yes / No

33. Any kind of “heart trouble.” .... Yes / No

34. Frequent upset stomach, heartburn, or indigestion, or peptic ulcer. .... Yes / No

35. Anemia. .... Yes / No

36. Belly or backache lasting more than a day or two. .... Yes / No

37. Kidney or bladder disease; blood, sugar, or albumin in urine. .... Yes / No

38. Broken bone, serious sprain or strain, or dislocated joint. .... Yes / No

39. Rheumatism, arthritis, or other joint trouble. .... Yes / No

40. Severe or frequent headaches. .... Yes / No

41. Trouble sleeping, frequent nightmares, or sleepwalking. .... Yes / No

42. Nervous breakdown or periods of marked depression or nervousness. .... Yes / No

43. Dizzy spells, fainting spells, or fits. .... Yes / No

44. A phobia for closed-in places, large open places, or high places. .... Yes / No

45. Any neurological or psychological condition. .... Yes / No

46. Alcoholism or any drug or narcotic habit (including regular use of sleeping pills, Bensedrine, Prozac, Haldol, etc.). .... Yes / No

47. Recent gain or loss of weight or appetite. .... Yes / No

48. Hepatitis. .... Yes / No

- 49. Tuberculosis. .... Yes / No
- 50. Sickle Cell disease. .... Yes / No
- 51. Diabetes. .... Yes / No
- 52. Inner ear disease. .... Yes / No
- 53. A seizure disorder. .... Yes / No
- 54. Epilepsy. .... Yes / No
- 55. Hemoglobinopathy or leukemia. .... Yes / No
- 56. Dental bridgework or plates. .... Yes / No
- 57. Susceptible to panic. .... Yes / No
- 58. Pain from altitude of flying or diving. .... Yes / No
- 59. Frequent diarrhea or blood in stool. .... Yes / No
- 60. Infectious disease. .... Yes / No
- 61. Any serious accident, injury, illness, or condition not mentioned above.  
 (Describe under "Remarks," giving nature and dates). .... Yes / No

**Females only:**

- 62. Premature birth. If yes, how many weeks: .... Yes / No
- 63. Irregular Menstruation .... Yes / No
- 64. Severe Cramps .... Yes / No
- 65. Excessive Flow .... Yes / No
- 66. Are you pregnant? .... Yes / No

**Remarks:** (reference each remark by the appropriate question number)


**SECTION 2. MEDICAL HISTORY UPDATE FOR DIVING REAUTHORIZATION**

Have you been hospitalized or have you had any accidents or injuries of any kind since your previous diving authorization? ..... Yes / No

If yes, explain and give dates in "Remarks" section above.

Have you suffered any diving injury or been involved in any diving incident since your last diving authorization? ..... Yes / No

If yes, explain and give dates in "Remarks" section above

**Diver Affirmation:** I certify that I have not withheld any information, and that the above is accurate to the best of my knowledge.

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

**Applicant's Release of Medical Information:**

I authorize the release of this information and all medical information subsequently acquired in association with my diving to the Diving Safety Officer and Diving Control Board, or their designee at (place): \_\_\_\_\_

on (date): . \_\_\_\_\_

Signature of Applicant: \_\_\_\_\_

Date: \_\_\_\_\_

## MEDICAL EXAMINATION - DIVERS

### SECTION 3.

*TO BE COMPLETED BY THE PHYSICIAN*

Last Name:	First Name:	M.I
Date of Birth:		Sex:
Height:	Weight	

#### Medical History Review:

Is there any significant past history that would disqualify the applicant for diving? ..... Yes / No

Remarks: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

General Appearance: \_\_\_\_\_

Blood Pressure: \_\_\_\_\_ Pulse: \_\_\_\_\_

Vision: Uncorrected: R/ L/ \_\_\_\_\_ Corrected: R/ L/ \_\_\_\_\_

Color Test: Normal \_\_\_\_\_ Deficient \_\_\_\_\_

**Examination:** Please check all items and, if abnormal, give details.

Item	Normal	Abnormal	Comments
1. Head and Neck			
2. Nose, Sinsus			
3. Ear Canals			
4. Ear Drums			
5. Ear Clearing			
6. Webber, Rinne			
7. Fundi, Disks			
8. Pupils, ECM			
9. Peripheral Visions			
10. Mouth and Throat			
11. Neck, Nodes/ Mass			
12. Auxiliary Nodes			
13. Back and Chest			
14. Lungs			
15. Heart Sounds			
16. Heart Rhythm, Size			
17. Abdomen LS & K			
18. Genitalia, Nodes			



19. Cremasteric			
20. DTR's Tricep			
21. DTR's Bicep			
22. DTR's Knee			
23. DTR's Ankle			
24. Plantar Reflex			
25. Sensory, Noxious			
26. Sensory, Fine			
27. Sensory, Vib			
28. Heel/Toe Walk			
29. Romberg			
30. Fast Pointing			
31. Finger – Nose			
32. Rapid Movement			
33. Squat			
Emotional Stability:			
Diving Aptitude:			
Breath Hold Duration:			

Examiner's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Print or Type Name: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone: \_\_\_\_\_