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Accident Prevention Plan/ Site Safety and Health Plan

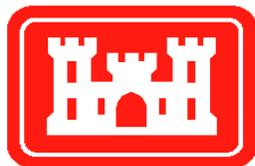
Niagara Falls Storage Site Building 401 Demolition Lewiston, New York

Contract No. W912P4-07-D-0003-0002

Prepared by:
TPMC-EnergySolutions Environmental Services, LLC



Prepared for the
U.S. Army Corps of Engineers, Buffalo District
Buffalo, New York



**US Army Corps
of Engineers®**
Buffalo District

AUGUST 2010

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**Accident Prevention Plan /
Site Safety and Health Plan
Niagara Falls Storage Site
Building 401 Demolition
Lewiston, New York**

Authored By:  09 AUGUST 2010
, CIH, Corporate Safety and
 Health Officer Date

Reviewed By:  09 AUGUST 2010
 PhD, CHP Date

Approved By:  09 August 2010
, PM / CQM System Manager Date

- New Plan
- Title Change
- Plan Revision
- Plan Rewrite

Effective
 Date 20 JULY 2010

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CERTIFICATION OF INDEPENDENT TECHNICAL REVIEW

COMPLETION OF INDEPENDENT TECHNICAL REVIEW

TES, LLC (TES) has DRAFTED the *Accident Prevention Plan/Site Safety and Health Plan* for the Niagara Falls Storage Site Building 401 Demolition Project located in Lewiston, New York. Notice is hereby given that an independent technical review has been conducted that is appropriate to address all regulatory and compliance issues appropriate to the Niagara Falls Storage Site Building 401 demolition, as defined in the TES NFSS Accident Prevention Plan/Site Safety and Health Plan. During the independent technical review, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of assumptions; methods, procedures, and material used in analyses; alternatives evaluated; the appropriateness of data used and level of data obtained; and reasonableness of the results, including whether the product meets the customer's needs consistent with existing USACE policy.

Signature/TES Report Preparer

[Redacted Signature]

Date 20 JULY 2010

Signature/TES Independent Technical Reviewer

[Redacted Signature]

Date 20 JULY 2010

Signature/TES Independent Technical Reviewer

[Redacted Signature]

Date 20 JULY 2010

Signature/TES Independent Technical Reviewer

[Redacted Signature]

Date 20 JULY 2010

Independent Technical Review Team Members:

[Redacted Name]

CERTIFICATION OF INDEPENDENT TECHNICAL REVIEW

Significant concerns and the explanation of the resolution are as follows:

Item	Technical Concerns	Possible Impact	Resolutions
APP/SSHP			
1	See attached sheets		

As noted above, all concerns resulting from independent technical review of the plan have been resolved.

[Redacted Signature]

Signature/

[Redacted Signature]

Date 20 JULY 2010

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LIST OF ACRONYMS

AHA	Activity hazard analysis
ALARA	As Low as Reasonably Achievable
APP	Accident Prevention Plan
CFR	Code of Federal Regulations
CO/COR	Contracting Officer/Representative
COC	Contaminants of Concern
CQC	Contractor quality control
EMR	Experience Modification Rates
FUSRAP	Formerly Utilized Sites Remedial Action Program
HAZWOPER	Hazardous Waste Operations and Emergency Response
ES&H	Environmental, Safety and Health
IDW	Investigation-derived waste
MSDS	Material Safety Data Sheets
OSHA	Occupational Safety and Health Administration
PPE	Personal Protective Equipment
RSP	Radiation Safety Plan
RWP	Radiation Work Permits
SOP	Standard Operating Procedures
SOW	Scope of Work
SSHO	Site Safety and Health Officer
SSHP	Site Safety and Health Plans
TES	Terranear PMC-EnergySolutions Environmental Services, LLC
USACE	U.S. Army Corps of Engineers

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1.0 BACKGROUND INFORMATION

Contractor

TES, LLC
222 Valley Creek Blvd., Suite 210
Exton, PA 19341

Contract Number

W912P4-07-D-0003-0002

Project Name:

Niagara Falls Storage Site, Building 401 Demolition, Town of Lewiston, Niagara County, New York FUSRAP Site,

Description of Project and Work to be Performed and Phases of Work Anticipated

Description of Project and Work to be Performed

Niagara Falls Storage Site (NFSS) is part of the United States Army Corps of Engineers (USACE) Formerly Utilized Sites Remedial Action Program (FUSRAP). FUSRAP was established to identify, investigate, and clean up or control sites contaminated by activities of the Atomic Energy Commission (AEC) and its predecessor, the Manhattan Engineer District (MED). All work shall be conducted under the Buffalo District's Multiple Award Remediation Contract (MARC) for the Demolition of Building 401 at the NFSS.

NFSS is located at 1397 Pletcher Road, Lewiston, New York, and the Federal Government owns the site. The site consists of an engineered Interim Waste Containment Structure (IWCS), various buildings, and open areas (refer to Attachment 1). The site was originally a part of the Lake Ontario Ordnance Works (LOOW). The primary use of the site from early 1940s through mid 1950s was for storage, trans-shipment, and disposal of radioactive waste from various sources. Building 401 was initially the powerhouse for the production of TNT at LOOW, and it was also used to store radioactive materials in support of MED activities during World War II. It was used for the production of Boron-10 from 1953 to 1959 and from 1965 to 1971 and then became a waste storage facility used by the Atomic Energy Commission/Department of Energy (AEC/DOE). In 1971, Building 401 was gutted and its instrumentation and hardware were disposed of as surplus materials. This building has been largely inactive since, and evidence of bird and animal occupation has been observed. An asbestos abatement was performed on Building 401 in the spring and summer of 2002, resulting in the removal of interior asbestos containing material (ACM). Potential exterior ACM was not included as part of this abatement.

As a result of previous field investigative activities, the USACE has identified the following concerns that require mitigation activities:

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- Bird and animal waste inside of Building 401 and silos.
- Potential ACM in roofing and siding materials.
- Potential lead based paint on surfaces within and outside Building 401.
- Potentially contaminated concrete floors inside of Building 401.
- Potentially contaminated steel beams and rafters inside of Building 401.
- Potentially contaminated floor drains and sumps inside of Building 401.
- Potentially contaminated soils around the perimeter of Building 401.
- Miscellaneous debris inside of Building 401.

Listing of Phases of Work and Activity Hazards Analyses

TES shall be responsible for engineering, procurement, waste characterization, building demolition, and waste transportation and disposition for all work to be performed under this contract, as described herein. The work activities include furnishing to the job site all necessary labor, equipment, materials, tools, supplies, office space, sanitary facilities, decontamination facilities, and clerical, supervisory, and technical and professional services to commence and sustain all operations necessary to complete the work authorized under this contract.

Work under this contract includes, but is not limited to, the following activities:

- Development of required work plans.
- Demolition of Building 401 and adjacent silos.
- Characterization, segregation, volume reduction, and appropriate packaging of the wastes generated during the performance of demolition activities.
- Loading, transportation, and disposal of packaged wastes at licensed/permitted disposal facilities.
- Performance of pre and post-construction radiological surveys of all work areas, including 15 meters outside of actual work areas, to ensure that previous activities did not result in radiological contamination of the work areas. TES shall also conduct radiological surveys to determine the appropriate disposal method for demolition debris and materials.

An Activity Hazard Analysis (AHA) will be prepared for each Major Phase of Work. AHAs will be prepared in accordance with the format shown in Figure 1-2 on page 10 of the United States

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Army Corps of Engineers (USACE) Safety and Health Requirements Manual, EM 385-1-1 (September 15, 2008), EM 385-1-1 (September 15, 2008).

The tasks anticipated are:

Task I – Write Work Plans

- Contractor Quality Control Plan
- Engineering survey
- Site operations Plan
- Demolition Plan
- Accident Prevention Plan/Health and Safety Plan (APP/HASP)
- Sampling and Analysis Plan
- Waste Management, Transportation and Disposal Plan

Task 2 – Mobilization and Materials

- Submittals for pre-work and pre-mobilization activities for review/approval
- Procurement of necessary equipment and materials required to perform abatement/demolition, decontamination, security, site maintenance, air monitoring and waste packaging.
- Procure office space and sanitary facilities for TES employees.
- Provide decontamination facilities
- Provide qualified and trained personnel
- Prepare laydown and other support areas
- Design/prepare storage areas for generated wastes from demolition/decontamination activities
- Obtain required permits
- Notification of appropriate Federal, State and local agencies
- Install temporary fencing around the work zone

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- Attend USACE NFSS site-specific health and safety orientation (prior to commencement of work)
- Identification and establish quantities of hazardous materials
- Check overhead utilities for proper clearances of heavy equipment movement.
- Solicitation and selection of qualified transportation and disposal facilities.

Task 3 – Demolition of Building 401 (and associated Silos)

- Completion of all required pre-demolition surveys
 - ACM survey of roof structures and walls
 - Inspect for hazardous materials (mercury-containing thermostats, PCB-containing ballasts, bird/animal wastes, etc.)
 - Location of underground utilities
 - Plugging drains
 - Fill drains/sumps to grade
- Protection of existing site structures
 - Prevention of surface water from entering storm water/sanitary water systems
 - Ensure fire protection/prevention system operates per NFPA 241)
- Remove/abate miscellaneous waste and debris from Building 401
 - Remove ACM
 - Remove solids/liquids from drains/sumps (solvents, metals, etc.)
 - Remove hazardous wastes/materials (mercury-containing thermostats, PCB-containing capacitors, Hg/Na vapor lights, bird/animal wastes, etc.)
 - Remove windows and glass materials
- Physical demolition of Building 401 (concrete slab and footer to remain) and three silos
- Waste characterization, segregation, packaging, transport and disposal
- Radiological monitoring and scanning

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Phase 4 – Post Demolition Activities

- Post-construction radiological surveys
- Decontamination of radiological contaminated equipment and supplies
- Decontamination of the Building 401 concrete
- Site clean-up and demobilization
- Site Restoration
- Preparation of a comprehensive Project Completion Report

2.0 STATEMENT OF SAFETY AND HEALTH POLICY

2.1 POLICY

TES is committed to providing a safe and healthy work environment for its employees and subcontractors. Furthermore, TES is committed to conducting our operations in a way that protects people, property, communities, and the environment. Achieving this objective requires the commitment of each TES employee and subcontractor to maintain an injury free and environmentally safe workplace. Our commitment to meet and exceed safety and health requirements is more important than profits and is an integral part of our management processes.

TES has established safety programs and procedures to be observed by all employees at all times. These programs and procedures are developed and implemented to ensure state, federal and USACE occupational, safety, health, and environmental regulations are adequately and completely addressed.

The following principles form the foundation for our approach to a safe and healthy workplace:

- All occupational injuries and illnesses can be prevented.
- Each employee is responsible for compliance with Company safety and health requirements as a condition of employment.
- Each employee has the right and duty to question the adequacy of safety and health protections established for their job.
- Line management is responsible and accountable for implementing safety and health requirements.
- We will proactively identify workplace deficiencies and take corrective action.
- We will employ contractors who are committed to safety and health compliance and will hold them to the same standards as ourselves.

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- We will investigate events to ensure we understand why the event occurred; correct deficiencies identified, and then share and institutionalized the lessons learned.

Employee decisions will always be guided by TES commitments to safety. All site employees have the right to stop work if an unsafe or potentially unsafe condition is observed. TES endorses these beliefs and principles, and will strive to exceed the highest standards of safety for industry.

2.2 HEALTH AND SAFETY GOALS

For the project as a whole, TES will establish the following Environmental Safety and Health (ES&H) goals:

- Zero accidents
- Lost Workday Accident Case Rate of zero
- Zero environmental non-compliances

The following ES&H performance targets to be used for measuring improvements:

- Achieve and maintain an average Emergency Modification Rate (EMR) of <1.0
- Achieve and maintain a recordable accident rate of zero
- Minimize annual personnel exposures to below 500 mrem/yr established as-low-as-reasonably-achievable (ALARA) Committee goals.

To ensure that our managers are monitoring the proper elements critical to the performance of the work and ES&H compliance, we will track the above performance.

A Formal Incentive Program will not be implemented for this project.

2.3 TES ACCIDENT EXPERIENCE

Since TES is a relatively newly formed company, a long-term accident history/ experience base does not exist. However, our successful execution of the Ashtabula River 312 (a) Maintenance Dredging Project, Ashtabula, Ohio in 2008 resulted in:

- No accidents
- No OSHA recordable cases
- No lost workday accident cases
- No environmental non-compliance or violations

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Furthermore, the accident/history/experience of the individual companies that make up the TES team (TerranearPMC and EnergySolutions) demonstrate a strong commitment to safety.

Experience Modification Rates (EMR) three (3) year average

- TerranearPMC 0.670
- EnergySolutions 0.537

3.0 RESPONSIBILITIES AND LINES OF AUTHORITY

3.1 STATEMENT OF RESPONSIBILITY

TES is ultimately responsible for the implementation of the Project Safety and Health Program.

The TES personnel responsible for safety and health at the corporate and project levels are presented in the following sections. A project organizational chart is presented in Figure 1.

As the project progresses, it may be necessary to modify certain organizational aspects/functions, such as personnel responsibilities and authorities, so that individual/specific tasks can be performed as efficiently, effectively and safely, as possible. This APP will be revised to reflect any changes to the overall TES project organization structure. These changes will be submitted to the USACE for acceptance. Following acceptance by the USACE, these changes will be transmitted to all affected parties.

3.2 IDENTIFICATION AND ACCOUNTABILITY OF PERSONNEL RESPONSIBLE FOR SAFETY

Program-level Personnel Responsible for Health and Safety

Corporate Program Safety and Health Manager

Name: [REDACTED], CIH, CSP

Phone: [REDACTED]

Cell Phone: [REDACTED]

Email: [REDACTED]

The TES, LLC (TES) Corporate Program Safety and Health Manager is responsible for the following:

- Review and accept or reject subcontractor pre-qualification questionnaires with participation from contracts.
- Review and accept or reject subcontractor training records and site-specific safety procedures prior to start of subcontractor's field operations.
- Support the Project Manager (PM) and/or Site Safety and Health Officer (SSHO) oversight of subcontractor (and lower-tier subcontractors), Environmental, Safety and

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Health (ES&H) practices, Standard Operating Procedures (SOPS) and interfaces with on-site third parties per the site-specific safety plan.

- Assist with program implementation as needed.
- Provide technical support.
- Conduct H&S Audits

Project-level Personnel Responsible for Health and Safety

Project Manager

Name: [REDACTED]

Phone: [REDACTED]

Email: [REDACTED]

The Project Manager (PM) is responsible for providing adequate resources (budget and staff) for project-specific implementation of the H&S process. The PM has overall management responsibility for the project. The PM may explicitly delegate specific tasks to other staff, as described in sections that follow, but retains ultimate responsibility for completion of the following in accordance with this document:

- Incorporate standard terms and conditions, and contract-specific roles and responsibilities in contract and subcontract agreements (including flow-down requirements to lower-tier subcontractors).
- Select safe and competent subcontractors.
- Obtain, review, and accept or reject subcontractor pre-qualification questionnaires.
- Ensure that acceptable certificates of insurance, including TES as named additional insured, are secured as a condition of subcontract award.
- Incorporate H&S information in subcontract agreements, and ensure that appropriate site-specific safety procedures, training, and medical monitoring records are reviewed and accepted prior to the start of subcontractor's field operations.
- Maintain copies of subcontracts and subcontractor certificates of insurance, bond, contractor's license, training and medical monitoring records, and site-specific safety procedures in the project file accessible to site personnel.
- Provide oversight of subcontractor practices per the site-specific safety plan.
- Manage the site and interface with third parties in a manner consistent with contract and subcontract agreements.

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- Ensure that the overall, job-specific, H&S goals are fully and continuously implemented.

Site Supervisor

Name: [REDACTED]
Cell: [REDACTED]
Email: [REDACTED]

The Site Supervisor will be the highest-level manager on the site responsible for the overall activities at the site, including Safety, Quality, and Field Activities. The Site Supervisor is responsible for the following:

- Assuring that daily safety inspections and written logs of areas/operations inspected are maintained.
- Assuring that mishap investigations and required reports are completed in a timely fashion and that OSHA Form 300 and daily production reports are maintained.
- Assuring applicable safety reference material is maintained on the job site.
- Attend pre-construction conference, pre-work meetings, including preparatory inspection meeting, and periodic progress meetings.
- Assure accepted APPs and AHAs are implemented and enforced.
- Assure that an effective safety and health deficiency tracking system is implemented and maintained.
- Assure subcontractor compliance with safety and health requirements.

Site Safety and Health Officer

Name: [REDACTED]
Cell: [REDACTED]
Email: [REDACTED]

The Site Safety and Health Officer (SSHO), who will be physically present on site at all times, is responsible for the following:

- Verify that the project is conducted in a safe manner.
- Verify that the TES Accident Prevention Plan (APP) and subcontractor Health and Safety Plans are current and amended when project activities or conditions change.

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- Verify team members and subcontractors read the APP and sign the Employee Signoff Form, prior to commencing field activities.
- Verify and document team members have completed any required specialty training (e.g., fall protection, confined space entry) and medical surveillance.
- Verify compliance with the requirements of the APP and applicable subcontractor health and safety plan(s).
- Act as the project “Hazard Communication Coordinator” and perform the responsibilities outlined in the APP.
- Act as the project “Emergency Response Coordinator” and perform the responsibilities outlined in the APP.
- Verify that safety meetings are conducted and documented in the project file as needed throughout the course of the project (e.g., as tasks or hazards change).
- Verify that project health and safety forms and permits are being used as outlined in the APP.
- Perform assessments of subcontractor ES&H practices/SOPs per the site-specific safety plan and verify that project activity self-assessment checklists are being used by TES team members.
- Conduct safety briefings weekly to team members and subcontractor supervisors. Require subcontractors to lead their own safety briefings as appropriate.
- Implement Drug-Free Workplace Policy.
- Provide open communication with employees.
- Ensure that programs are effectively functioning to prevent and control hazards on the project.
- Provide opportunities for safety involvement to project employees.

3.3 COMPETENT/QUALIFIED PERSONNEL

The list of competent/qualified corporate and project level personnel responsible for safety include: [REDACTED] – CIH/CSP, [REDACTED] – Program Manager, [REDACTED] - Project Manager, [REDACTED] – Site Supervisor, and [REDACTED] – Site Safety and Health Officer (SSHO). Copies of resumes of these individuals are presented in Attachment #1. Any additional individuals identified will be included and the list updated accordingly.

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3.4 WORK LIMITATIONS

It is TES policy that any work requiring specialized OSHA competent person training or certification will not be conducted until an appropriate competent person is present on site.

3.5 PRE-TASK SAFETY AND HEALTH ANALYSIS

Pre-task safety and health analysis will be performed prior to initiation of work activity. This pre-task safety and health analysis will be documented under the Health Hazard Control Program in the form of Accident Hazard Analysis (AHA). The SSHO will ensure that at the start of each work day, a tail gate safety briefing will be performed that reviews the AHAs applicable to the daily activities, unique site conditions, hospital route, personal protective equipment (PPE), and stop work authority.

3.6 LINES OF AUTHORITY

For this project, the SSHO has the direct responsibility for health and safety concerns on the project site. The SSHO works together with the Site Supervisor to ensure the work is completed in a safe manner.

The Site Supervisor reports to the Project Manager, who has the ultimate responsibility for health and safety matters on the overall project.

With respect to health and safety concerns, the Project Manager communicates directly to the Corporate Health and Safety Manager.

3.7 POLICIES AND PROCEDURES FOR COMPLIANCE

TES Discipline Policy

TES and contractor individuals associated with this project must work injury-free, drug-free and must comply with the project Accident Prevention Plan (APP), ES&H procedures Standard Operating Procedures (SOPs) any project-specific safety requirements and this policy.

TES may accept a contractor/subcontractor Site Specific Health and Safety Plan provided that the Plan meets/complies with the minimum requirements of this APP.

Safety Infractions

Any non-compliance with this project APP, TES ES&H/SOP procedures, and other project-specific safety requirements will be considered safety infractions. These will include, but will not be limited to:

- Violation of established safety rules, regulations, codes or other requirements
- Poor housekeeping

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- Failure to report on-the-job injuries or unsafe conditions
- Failure to wear the appropriate personal protective equipment

Intolerable Offenses

Intolerable offenses and actions will include, but will not be limited to, the following:

- Any manager, supervisor, foreman or other person in charge of the work being performed who requires, requests, asks, threatens with their job, allows, or condones employees to work in or around unsafe acts or conditions
- Any employee, supervisor, or manager who knowingly falsifies any investigative documents or testimony involving an investigation
- Any employee, supervisor, or manager who openly exhibits disregard, defiance, or disrespect for the safety program
- Any employee, supervisor, or manager who engages in a physical altercation (fight) and or who engages in physical or emotional intimidation of co-workers.
- Any supervisor, foreman or manager who fails to keep sufficient and accurate records of their work activities, materials handled and used and/or related process data. Your records must show what activities occurred, equipment being used, processes the crew were operating, problems encountered, etc., in the event of an incident, accident or illness.
- Any employee who violates established safety rules, regulations, or codes that endanger themselves or other employees.
- Any employee, supervisor, or manager failing to comply with the APP, or any and all federal, state, or local safety laws and regulations that create the potential for serious or costly consequences.
- Any employee who commits repeated minor offenses and shows a lack of responsible effort to correct these offenses.

Enforcement and Discipline

This policy will be thoroughly reviewed with each employee during the employee health and safety orientation. All personnel will indicate their review of the APP and project rules by signing the employee signoff form.

Safety Infractions

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This procedure will be followed in the event any employee violates safety rules. Safety infractions will be handled as follows:

- First Offense—Employee will receive a verbal warning of the violation of company safety policy.
- Second Offense—Employee will receive a written warning and a 2-day suspension without pay.
- Third Offense—Employee will be discharged/terminated
- If a violation is deemed to be of obvious nature and poses eminent danger this could result in immediate discharge/termination.

Drug-Free Workplace

TES does not tolerate illegal drugs, or any use of drugs, controlled substances, or alcohol that impairs an employee’s work performance or behavior. TES employees shall not be involved in any manner with the unlawful manufacture, distribution, dispensation, possession, sale, or use of illegal drugs in the workplace. Any violation of these prohibitions may result in discipline or immediate discharge. All employees will be subject to post-incident testing in the event of an accident and/or injury requiring medical attention.

3.8 ACCOUNTABILITY OF TES MANAGERS AND SUPERVISORS FOR SAFETY

TES is committed to conducting our operations in a way that protects people, property, communities, and the environments. All managers at all levels are accountable for the health and safety of their employees. TES believes all injuries, occupational illnesses, and un-permitted discharges or releases to the environment are preventable. Implementing this core value requires the cooperation of each employee, from upper management to field employees. Health, safety, and environmental compliance are more important than profits or work schedule commitments and are integral parts of the TES Integrated Safety Management System (ISMS). TES dedicated to the concept that all accidents and impacts to the environment are preventable. To realize this value, the company is committed to striving to obtain and sustaining “Target Zero Performance and Environmental Release Performance” through continuous improvement practices. TES safety performance objectives are as follows:

- Strive to eliminate all injuries, illnesses, and adverse impacts to the environment;
- Promote Environmental Safety and Health (ES&H) objectives as a constant value in designing, planning, training, and executing work;
- Spread ownership for ES&H effectiveness throughout the Project team;
- Enhance employee awareness and involvement in our ES&H program implementation;

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- Increase employee’s consistent use of safe practices in their daily work activities;
- Optimize the use of continuous improvement practices as the basis for Target Zero Performance initiatives;
- Prevent pollutants from entering the environment through good work practices;
- Respond appropriately to monitoring results for subsequent actions;
- Optimize the use of continuous improvement practices as the basis for “Target Zero Performance” initiatives;
- Demonstrate to current and potential customers that TES is “Dedicated to Safety and Environmental Compliance Excellence”.

It is the goal of the NFSS ES&H performance to strive towards the achievement of zero incidents. Program effectiveness at the corporate level will be measured by a continual reduction in Experience Modification Rates (EMR) and a corresponding reduction in insurance rates. It will also be a measured by how effectively risks and losses are managed. Our Project management is both responsible and accountable for setting the ES&H performance goals and metrics.

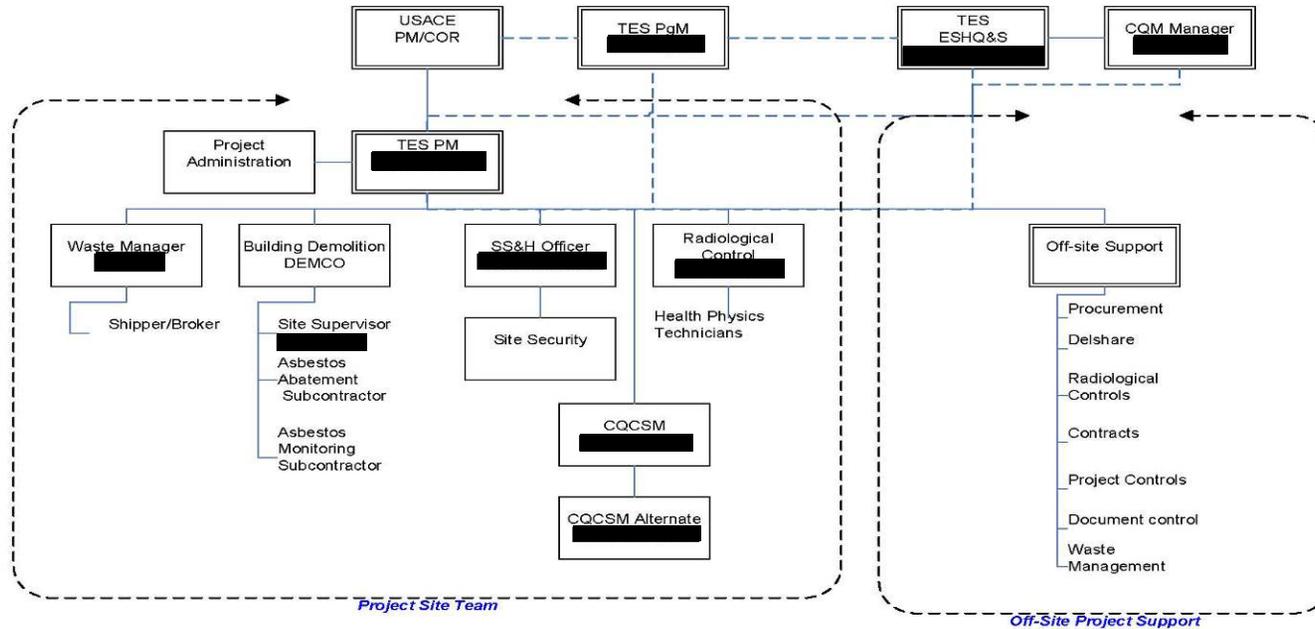
Project performance measures will be established and communicated to personnel through the Accident Prevention Plan and discussed during each Plan of the Week meeting.

Team employees will have personal ES&H performance metrics included in his/her position descriptions and annual review expectations. ES&H performance results will be part of the management and personnel appraisals. During a formal performance review, Project Personnel Performance will cover the following areas:

- Safety and Compliance
- Job Knowledge and Ability
- Quality and Quantity of Work
- Initiative and teamwork
- Communication and Interpersonal Skills
- Initiative and Flexibility
- Time Management
- Problem Solving and Decision Making

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3.9 ORGANIZATION



NFSS Building 401 Demolition
TPMC-EnergySolutions
Environmental Services, LLC

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4.0 SUBCONTRACTORS AND SUPPLIERS

The following major subcontractor(s) will be working on this project:

Demolition:

DEMCO
238 Lein Road
West Seneca, NY 14224
Office Phone: (716) 674-0883

The subcontractor listed above must be provided a copy of this APP. TES will obtain and review, for acceptance, all subcontractor Health and Safety Plans (HASP) and related SOPs prior to the start of any fieldwork. TES is responsible for ensuring DEMCO, as well as all other TES subcontractors, comply with the occupational safety and health requirements established in EM-385-1-1 (15 September, 2008). Subcontractors must comply with the minimum standards established by this APP.

TES's oversight does not relieve subcontractors of their responsibility for effective implementation and compliance with the established plan(s) and applicable federal and state safety regulations.

TES personnel should continuously endeavor to observe subcontractors' safety performance. This endeavor should be reasonable, and include observing for hazards or unsafe practices that are both readily observable and occur in common work areas. TES is not responsible for exhaustive observation for hazards and unsafe practices. In addition to this level of observation, the SSO is responsible for confirming, via observation, subcontractor compliance the subcontractor's safety plan and applicable practices defined in this APP.

Health and safety related communications with TES subcontractors should be conducted as follows:

- Brief subcontractors on the provisions of this APP and require them to sign the Employee Signoff Form.
- Request subcontractor(s) to brief the project team on the hazards and precautions related to their work.
- When apparent non-compliance/unsafe conditions or practices are observed, notify the subcontractor safety representative and require corrective action. The subcontractor is responsible for determining and implementing necessary controls and corrective actions.
- When repeat non-compliance/unsafe conditions are observed, notify the subcontractor safety representative and stop affected work until adequate corrective measures are implemented.

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- When an apparent imminent danger exists, immediately remove all affected employees and subcontractors. Notify subcontractor’s safety representative, and stop affected work until adequate corrective measures are implemented. Notify the PM and/or, SSHO as appropriate.
- Document all significant verbal health and safety related communications in project field logbook, daily reports, or other records.

The CQC System Manager, [REDACTED], will be responsible for controlling and coordinating subcontractors and suppliers. The deputy CQC is [REDACTED], who shall perform the functions of CQC as [REDACTED] designate.

All subcontractors and suppliers performing work on site will be expected to comply with the requirements of this Accident Prevention Plan, EM 385-1-1, as well as with OSHA regulatory requirements, and any additional applicable local, state, and federal regulatory requirements

5.0 TRAINING

5.1 EMPLOYEE ORIENTATION

Employees (new and existing) expecting to access the site are required to attend an employee orientation. The training provided to the employees in the employee orientation needs to include:

- Review this Accident Prevention Plan (APP).
- Present an overall site safety briefing (general site safety).
- Review employee responsibilities including TES Drug Policy applicability.
- Review emergency procedures and evacuation plan.
- Review injury and incident reporting procedures.
- Review reporting procedures for hazardous conditions and/or hazardous activities.
- Empower all employees with “stop work authority” when they observe a potentially dangerous condition or work practice.

Each employee will receive a safety indoctrination consisting of a thorough review of applicable AHAs.

5.1.1 EMPLOYEE TRAINING

Training documentation will be provided to the TES Project Manager (PM) and/or Site Safety and Health Officer (SSHO) prior to start of work operations. This documentation/certification includes areas such as HAZWOPER, hazard communication (HAZCOM), forklift, crane, heavy equipment, fall protection, scaffold, ladder, emergency response, etc.

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TES will ensure that its employees do not perform a given task without the required training. If it is determined that an employee has been allowed to perform work without the prerequisite training, he/she will not be allowed to continue to perform that task until training has been satisfactorily completed.

5.2 REQUIREMENTS FOR MANDATORY TRAINING AND CERTIFICATIONS

The following is a list of training and certifications which are applicable to this project:

1. HAZWOPER Training and Certification (annual re-certification)
2. Personal Protective Equipment
3. First Aid and CPR
4. Emergency Response Plan
5. Injury and Incident Reporting
6. Overall Site Safety Briefing and Related APP Requirements and AHAs
7. OSHA - 30-Hour Construction Safety, and Health

Re-training of personnel will be at the discretion of the SSHO.

5.3 PERIODIC SAFETY AND HEALTH TRAINING FOR SUPERVISORS AND EMPLOYEES

Periodic safety and health training and re-training/refresher training will be provided to supervisors and employees. Such trainers may include but is not limited to: Site specific training, on-the-job training, Hazwoper training, competent person training, OSHA construction training and other related safety and health training deemed appropriate by the Corporate Health and Safety Manager or SSHO.

5.4 REQUIREMENTS FOR EMERGENCY RESPONSE TRAINING

The SSHO shall ensure that site personnel shall be properly trained for Emergency Response procedures and information, as presented in Attachments #2 and #3.

Daily tailgate safety meetings will be conducted prior to commencement of any work and before commencement of any new definable feature of work throughout the day. These daily tailgate meetings will alert on-site field personnel to the potential workplace hazards associated with the day's work and present a selected health and safety topic. Each on-site worker will be required to attend. All field personnel involved with the daily tailgate meetings are required to sign the attendance sheet. This attendance sheet will be included as an attachment to the daily report sent to the USACE. The TES SSHO will be responsible for conducting these meetings.

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For each separate task, as appropriate, the competent/responsible person overseeing the work will prepare a hazardous work permit by detailing the potential hazards associated with equipment, materials, work practices, procedures or other items/activities that may cause potential injuries and/or accidents. All persons involved with that operation or entering the area are required to sign the permit acknowledging that they have read and understand it. These permits will be included as attachments to the daily report submitted to the USACE.

6.0 SAFETY AND HEALTH INSPECTIONS

The TES SSHO will conduct site safety inspections on a daily basis. Any noted deficiencies will be identified on that day's CQC Report. Deficiencies will be tracked using the form included in Attachment #4.

The following external inspections/certifications are required for this project - (None Required)

7.0 ACCIDENT REPORTING

7.1 EXPOSURE DATA

The TES PM will submit Monthly Manhour Exposure Reports to the Contracting Officer no later than the 5th work day of each month. The report encompasses on-site work including all hourly and salaried employees. The report will include all subcontractors working on this project.

7.2 ACCIDENT INVESTIGATIONS, REPORTS, AND LOGS

The TES PM, will report all accidents and injuries no matter how slight in accordance with the requirements of our SOPs and the Emergency Response Plan presented in Attachment #2.

The TES PM will report all accidents as soon as possible but not more than 24 hours afterwards to the USACE Contracting Officer/Representative (CO/COR). TES shall notify the Contracting Officer as soon as practical, but not later than 4 hours after ALL incidents, no matter how severe. Notification will include contractor name; contract title; type of contract; name of activity, installation or location where accident occurred; date and time of accident; names of personnel injured; extent of property damage, if any; extent of injury, if known, and brief description of accident, including type of construction equipment used, PPE used, etc. TES will thoroughly investigate the accident and submit the findings of the investigation along with appropriate corrective actions to the CO/COR in a prescribed format, as soon as possible, but no later than five (5) days following the accident. Corrective actions will be implemented as soon as reasonably possible.

7.3 IMMEDIATE NOTIFICATION

The TES PM will immediately notify the Contracting Officer and District Safety Officer of any incidents involving a fatality, a permanent or partial total disability, accidents in which three or more persons are hospitalized resulting from a single occurrence, accidents that result in property damage of \$200,000 or more or any accident regardless of the consequences, if it suspected that it will result in unfavorable criticism of the Corps of Engineers.

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8.0 PLANS (PROGRAMS, PROCEDURES) REQUIRED BY THE SAFETY MANUAL (AS APPLICABLE)

Standard Operating Procedures (SOPs) which present controls to address the various safety hazards for the NFSS project are located in Attachment A of the TES Health and Safety Plan.

8.1 LAYOUT PLANS

Plans for the layout of temporary constructions buildings, facilities, fencing and access routes and anchoring systems for temporary structures are included as Attachment #5.

8.2 EMERGENCY RESPONSE PLANS

An Emergency Response Plan is included as Attachment #2.

8.2.1 PROCEDURES AND TESTS

8.2.2 SPILL RESPONSE PLAN

A Spill Response Plan including organizations with telephone numbers of individuals to contact in the event of a spill.

8.2.3 FIRE FIGHTING PLAN

Refer to Section 8.17 “Fire Protection Plan.”

8.2.4 POSTING OF EMERGENCY TELEPHONE NUMBERS

This Emergency Response Plan will ensure employee safety in case of fire, accidents/incidents, or other emergencies. This plan includes a list of emergency telephone numbers and reporting instructions for ambulance, physician, hospital, fire and police. It also includes a map of directions to the nearest hospital(s). This list and map will be conspicuously posted at the work site.

8.2.5 MAN OVERBOARD (NOT APPLICABLE)

8.2.6 MEDICAL SUPPORT

- A. A list of emergency telephone numbers and a map of directions to the nearest hospital(s) is included in the Emergency Response Plan section of this APP (see Attachment #2).
- B. First Aid kits will be maintained on site as required in Section 3 of EM 385-1-1. A description where first aid kits and fire extinguishers are located is provided in the Emergency Response Plan. (Attachment #2)

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- C. At least two employees on each shift will be qualified to administer First Aid and CPR. A list of TES/Subcontractor employees who are certified in First Aid and CPR, along with their certificates will be provided to the USACE before initiating any work. TES will provide this list of TES/subcontractor employees and their certificates as an update to Attachment # 3 of this APP:

8.3 PLAN FOR PREVENTION OF ALCOHOL AND DRUG ABUSE

TES's plan for prevention of Alcohol and Drug Abuse is located as Attachment # 6 to the APP. This plan meets the minimum requirements of DFAR 252.223.7004.

8.4 SITE SANITATION PLAN

TES's plan for establishing and maintaining basic sanitation provisions for all employees is included in Attachment # 7.

8.5 ACCESS AND HAUL ROAD PLAN

Site access and haul road use is addressed in the Site Operations Plan and Building Demolition Plan.

8.6 RESPIRATORY PROTECTION PLAN

The TES Respiratory Protection Plan is presented in Section 10.6 of the TES Radiation Safety Plan (RSP) and SOP-28 Respirator-Protection Program of the TES Health and Safety Plan.

8.7 HEALTH HAZARD CONTROL PROGRAM

Activity Hazard Analyses (AHAs) will consider all substances, agents and environments that present a hazard and will recommend hazard control measures. Engineering and administrative controls will be used to control hazards. In cases where engineering or administrative controls are not feasible, PPE may be used. The AHA will serve as certification that a hazard assessment has been conducted. AHAs are *living documents* and will be reviewed along with activity analysis with each worker for feedback and updating

Operations, materials, and equipment involving potential exposure to hazardous substances, agents or environments will be evaluated by a qualified industrial hygienist, or other competent person, to formulate a hazard control program. The following hazardous substances, agents or environments have been identified:

Project-Specific Hazards

- Poor visibility in Bldg 401 (no power)
- Fall hazard from roof work

General Hazards

- General Practices and Housekeeping
- Hazard communication

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Project-Specific Hazards

- Asbestos
- Mercury
- PCBs
- Organic Solvents
- Waste Management Operations
- Lacerations from removing glass
- Demolition –flying debris
- Radiological isotopes
- Biological Hazards
- Snakes
- Poison Ivy/Sumac
- Ticks
- Bees & other stinging insects
- Blood-borne pathogens
- Bird/animal waste

General Hazards

- Handling, Shipping and Transportation of Radiological/Chemical Materials
- Lifting
- Fire Prevention
- Electrical/Hazardous Energy Contact
- Inclement Weather
- Heat Stress
- Cold Stress
- Buried Utilities
- Vehicle Safety-Operator Safety
- Slips, trips, and falls
- Uneven work surfaces
- Pressure Washing Operation
- Handheld Tools
- Forklifts/Bobcats/Backhoes

Safe work practices and control measures to reduce or eliminate these potential hazards are included in Attachment #8.

8.8 HAZARD COMMUNICATION (HAZCOM) PROGRAM

Included as Attachment # 9 to this APP is a written hazard communication program addressing as a minimum, the following: training (to include potential safety and health effects from exposure), labeling, current inventory of hazardous chemicals on site, and the location and use of Material Safety Data Sheets (MSDSs).

8.9 PROCESS SAFETY MANAGEMENT

(Not Applicable)

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8.10 LEAD ABATEMENT PLAN

(Not Applicable)

8.11 ASBESTOS ABATEMENT PLAN

The Asbestos Abatement Plan is included as Section 5.0 of the Demolition Plan, located in Attachment 13 of this APP.

8.12 RADIATION SAFETY PLAN

The TES Radiation Safety Plan is presented in Appendix B of this APP.

8.13 ABRASIVE BLASTING

(Not Applicable)

8.14 HEAT AND COLD STRESS MONITORING PLAN

The heat and cold stress monitoring plan is presented in Attachment # 8.

8.15 CRYSTALLINE SILICA MONITORING PLAN

(Not Applicable)

8.16 NIGHT OPERATIONS LIGHTING PLAN

(Not Applicable)

8.17 FIRE PROTECTION PLAN

TES will provide a fire protection plan for the project site. This plan shall include a list of the major workplace fire hazards; potential ignition sources; the types of fire suppression equipment or systems appropriate to the control of fire; assignments of responsibilities for maintaining the equipment and systems; personnel responsible for controlling the fuel source hazards; and housekeeping procedures; including the removal of waste materials. It shall be used to brief employees and emergency first responders on the fire hazards, the material and processes to which they are exposed, and the emergency evacuation procedures. The Fire Prevention Plan is included as Attachment # 10.

8.18 WILD LAND FIRE-MANAGEMENT PLAN

(Not Applicable)

8.19 HAZARDOUS ENERGY CONTROL (LOCKOUT/TAGOUT PLAN)

A Hazardous Energy Control Plan meeting the requirements of Section 12.A.07 of EM 385-1-1 is included as Attachment # 11 to this Accident Prevention Plan.

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8.20 CRITICAL LIFT PLAN

(Not Applicable)

8.21 CONTINGENCY PLAN FOR SEVERE WEATHER

A severe weather plan for project activities is included in Attachment # 12.

8.22 FLOAT PLAN

(Not Applicable)

8.23 SITE-SPECIFIC FALL PROTECTION AND PREVENTION PLAN

Fall protection (from falls into trenches) is addressed in SOP-12 - Fall Protection (Attachment A) of the TES Health and Safety Plan

8.24 DEMOLITION PLAN

A demolition plan is presented in Attachment # 13

8.25 EXCAVATION/TRENCHING PLAN

An excavation/trenching plan is presented in Attachment # 14.

8.26 EMERGENCY RESCUE (TUNNELING)

(Not Applicable)

8.27 UNDERGROUND CONSTRUCTION FIRE PREVENTION PLAN

(Not Applicable)

8.28 COMPRESSED AIR PLAN

(Not Applicable)

8.29 FORMWORK AND SHORING ERECTION AND REMOVAL PLANS

(Not Applicable)

8.30 PRECAST CONCRETE PLAN

(Not Applicable)

8.31 LIFT SLAB PLANS

(Not Applicable)

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8.32 STEEL ERECTION PLANS

(Not Applicable)

8.33 SAFETY AND HEALTH PLAN FOR HTRW WORK

A Site Safety and Health Plan (developed from the Company Health and Safety Plan) is presented in Appendix A of this APP. The Radiation Safety Plan is presented in Appendix B of this APP.

8.34 BLASTING SAFETY PLAN

(Not Applicable)

8.35 DIVING PLAN

(Not Applicable)

8.36 CONFINED SPACE ENTRY PLAN

(Not Applicable)

If site conditions or site activities change and a confined space condition is identified, the TES Confined Space Program (SOP-05, Attachment A of the HASP), will be implemented

9.0 RISK MANAGEMENT PROCESS

An Activity Hazard Analysis (AHA) defines the activity being performed, the hazards posed, and control measures required to perform the work safely.

AHAs for this Project will be prepared before initiating each project task/activity posing H&S hazards to protect personnel using the AHA form provided in EM-385-1-1 (September 15, 2008). The AHA will identify the work tasks required to perform each activity, along with potential H&S hazards and recommended control measures for each work task. In addition, a listing of the equipment to be used to perform the activity, inspection requirements and training requirements for the safe operation of the equipment listed will be identified. Workers will be briefed on the AHA before doing the work and their input is solicited prior, during and after the performance of work to further identify the hazards posed and control measures required.

An AHA will be prepared for all field activities performed by TES and subcontractors during the course of the project. The Project-Specific scope of work and general hazards applicable TES, Corporate H&S Plan and related TES Standards of Practice (SOPs) will be used as a basis for preparing these AHAs.

TES subcontractors will be required to provide AHAs specific to their scope of work on the project for acceptance by TES. Each subcontractor will submit AHAs for their field activities as defined in their work field activities, equipment, tools, or material to perform work of

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additional/different hazard encountered that require additional/different hazard control measures requires either a new AHA to be prepared or an existing AHA to be revised. All AHAs must be approved by TES prior to work commencement.

Detailed site specific hazards and controls are provided in the AHAs for the Excavation Volume Uncertainty Reduction Project. The AHAs for this site field investigation activities are included in Attachment #15. Also see Section 9.g Health Hazard Control Program and Attachment #8.

The APP Checklist is provided in Attachment #16.

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ATTACHMENT 1: COMPETENT/QUALIFIED PERSONNEL RESUMES

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ATTACHMENT 2: EMERGENCY RESPONSE PLAN

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This Plan outlines the procedures that are to be followed in case of a site-wide emergency.

1.0 PRE-EMERGENCY PLANNING

The TES SSHO will insure that the applicable pre-emergency planning tasks have been performed before starting field activities and coordinates emergency response with subcontractor on-site parties, and local emergency service providers (as appropriate).

- Review the facility emergency and contingency plans where applicable
- Determine what on-site communication equipment is available (e.g., two-way radio, cell phones).
- Determine what offsite communication equipment is needed and its location (e.g., nearest telephone, cell phone).
- Confirm and post emergency telephone numbers, evacuation routes, assembly areas, and route to hospital; communicate the information to on-site personnel.
- Field trailers: Post “Exit” signs above exit doors, and post “Fire Extinguisher” signs above locations of extinguishers. Keep areas near exits and extinguishers clear.
- Establish a clear and simple protocol to communicate if, or when, there is an emergency (e.g., shouting “We have an emergency” on the radio).
- Inform emergency room supervisors and the chief of the local emergency response team(s) that site work has resumed, ambulance access points and the potential types of site emergencies.
- Designate one vehicle as the emergency vehicle at each major operational area; place hospital directions and map inside; keep keys in ignition during field activities.
- Check site emergency equipment, supplies, and potable water are present and/or functional.
- Communicate emergency procedures to the workers for personnel injury, exposures, fires, explosions, and releases.
- Supervisors are to rehearse the emergency response plan before site activities begin, including a “practice run” by driving the route to the hospital.
- Brief new workers on the emergency response plan.
- The PM and SSHO will evaluate emergency response actions and initiate appropriate follow-up actions.

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- Throughout the project, the SSHO will review changes in site conditions, on-site operations, and personnel in relation to emergency response procedures.

2.0 SITE COMMUNICATIONS

- Post emergency numbers near the Site telephones and in all field vehicles.
- Ensure that personnel work under the use of a “buddy” system.
- Furnish selected personnel (typically supervisors) with two-way radios.
- Each major subcontractor shall assign a person who shall report directly to the TES, SSHO. This person shall be responsible for keeping safety equipment and facilities clean and properly equipped and maintained for their personnel and for their subcontractors. This person may, most likely, perform other duties for the contractor, but the first priority shall be maintenance of protective equipment and the personnel decontamination area.

3.0 EMERGENCY EQUIPMENT AND SUPPLIES

The SSHO will ensure that the locations of emergency equipment will be marked on the site map and the map is posted.

Emergency Equipment and Supplies	Location
Fire extinguishers (ABC type dry chemical)	Gas Powered Equipment
First aid kits	Office Trailers
Portable Emergency Eye Wash	Office Trailers
Hand held emergency Air Horns	Office Trailers
Blood borne-pathogen kit	Office Trailers
Stretcher	Office Trailers
Blankets and towels	Office Trailers
Additional equipment (specify):	Office Trailers

At a minimum two TES, or subcontractor employees on each shift will be qualified to administer first aid and CPR when work activities are in progress. This person is expected to perform other duties, but shall be immediately available to render first aid when needed.

4.0 INCIDENT RESPONSE

In fires, explosions, or major chemical releases (spills), actions to be taken include the following:

- Shut down TES, and subcontractor operations and evacuate the immediate work area.

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- Notify appropriate response personnel.
- Account for personnel at the designated assembly area(s).
- Assess the need for site evacuation, and evacuate the site as warranted.

Instead of implementing a work area evacuation, note that small fires or spills posing minimal safety or health hazards may be controlled.

5.0 EMERGENCY MEDICAL TREATMENT

The procedures listed below may also be applied to non-emergency incidents.

Injuries and illnesses (including overexposure to chemicals or fuels) must be reported to the TES, SSHO. If there is doubt about whether medical treatment is necessary, or if the injured person is reluctant to accept medical treatment, contact the TES, PM and SSHO.

- If appropriate, notify emergency response authorities (e.g., 911).
- The TES PM/or the SSHO will assume charge during a medical emergency until the ambulance arrives or until the injured person is admitted to the emergency room.
- Secure the cause of the injury, if possible, to prevent further injury and/or injury to others. **REMEMBER:** lifesaving, first aid and/or medical treatment take priority over everything else.
- Initiate first aid and CPR where feasible.
- Get medical attention immediately.
- Perform decontamination where appropriate and feasible.
- Make certain that the injured person is accompanied to the emergency room, preferably by his/her crew supervisor
- When communicating the emergency medical professional, state your name and telephone number, the name of the injured person, the extent of the injury or exposure (if known), what caused the injury (if known) and the on-site location where the injury occurred.
- Report incident as outlined in the section entitled “Incident Notification Reporting”.

6.0 EVACUATION

- Evacuation routes and assembly areas (and alternative routes and assembly areas) are specified before work begins and are identified on the site map for each major operational area.

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- Evacuation route(s) and assembly area(s) will be designated by the SSHO based on information from the various supervisors before work begins. These routes and areas will be posted at each major operational area.
- Immediately upon hearing the emergency signal for evacuation, all personnel will shut down their equipment (if any) and assemble at the pre-determined location for their operational area.
- The SSHO and or PM is to confirm all of their personnel are present and accounted for in their assembly area before performing any other task.
- The PM, SSHO and/or a “buddy” will remain on the site after the site has been evacuated (if safe) to assist local responders and advise them of the nature and location of the incident.
- A designated person will account for personnel at alternate assembly area(s),(if any established).
- The PM, SSHO will document the incident as soon as possible after it occurs and submit a report to the Project Manager.

7.0 EVACUATION SIGNALS

Non-verbal signals are often necessary to communicate in emergency situations. The project will use the signal methods listed in this table during evacuations.

Signal	Meaning
Grasping throat with hand	Emergency-help me.
Thumbs up	OK; understood.
Grasping buddy’s wrist	Leave area now.
Continuous sounding of horn	Emergency; leave site now.

8.0 SPILL CONTAINMENT AND RESPONSE PLAN

Each piece of heavy equipment (i.e. excavator, backhoe) that holds hydraulic fluid or diesel fuel will have a spill kit to aid in the event of an oil or fuel spill. Each kit contains an oil absorbent and oil diapers to contain the fluid. If a hydraulic line breaks, the activity will be shut down immediately. In the event of a spill, the site supervisor will notify the TES PM and/or SSHO.

9.0 INCIDENT NOTIFICATION AND REPORTING

- All personnel are to immediately notify the PM and/or SSHO in the event of an incident, serious illness, fire, spill, accident, injury, near loss, or loss.

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- For TES work-related injuries or illnesses, the injury/illness report must be completed within 24 hours of incident.
- For TES, subcontractor incidents, complete the subcontractor Accident/Illness Report Form and submit to HSD.
- Notify and submit reports to client as required.

10.0 LIST OF EMERGENCY CONTACTS AND ROUTE TO HOSPITAL

Lewiston Police Department

145 N.4th street
 Lewiston, NY
 (716)754-8477

Lewiston Fire Dept

145 N.6th Street
 Lewiston, New York
 (716) 754-8177

New York EPA

186 Exchange Street
 Buffalo, NY 14204
 To report an Emergency or Spill Call
 1-800-282-9378

New York Dept. of Health

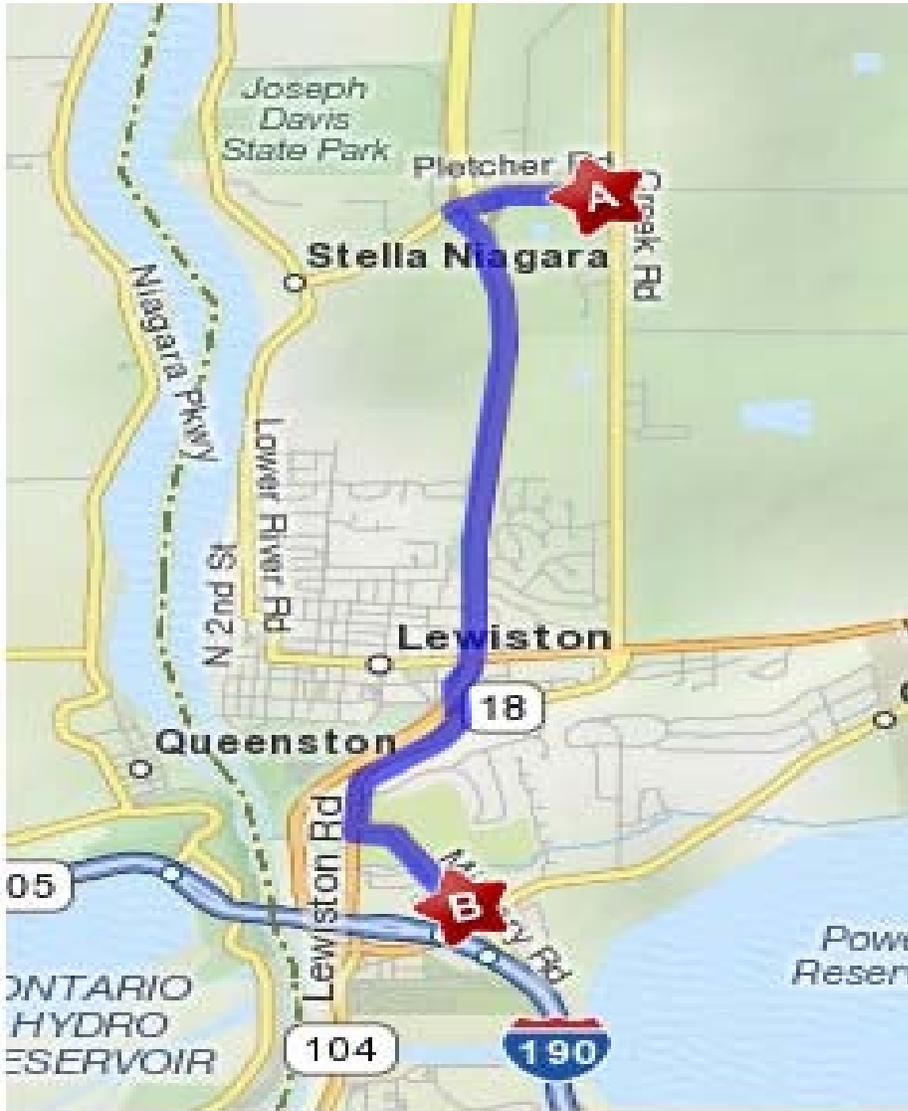
584 Delaware Avenue
 Buffalo, NY 14202-1295
 (716) 847-4302

Mount St. Mary's Hospital and Health Center

5300 Military Road
 Lewiston, NY
 (716) 297-4800

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11.0 MAP TO HOSPITAL



- | | |
|--|-----------|
| 1. Start out going West to Pletcher Road toward Scenic Drive | 0.6 miles |
| 2. Turn left and take Robert Moses PKWY ramp towards Niagara Falls | 0.1 miles |
| 3. Merge onto Robert Moses State Pkwy | 2.4 miles |
| 4. Take the RT-104 W ramp towards I-190 W/Canada/Buffalo | 0.3 miles |
| 5. Merge onto NY-104/Lewiston Rd | 0.8 miles |
| 6. Turn left onto Military Road/NY-265 | 0.6 miles |
| 7. 5300 Military Road | |

Total distance: 4.77 miles

Total driving time: 7 minutes

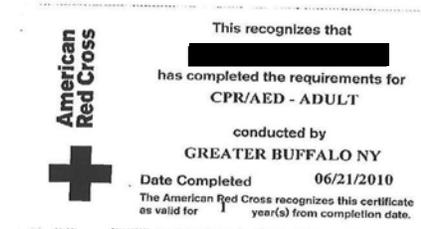
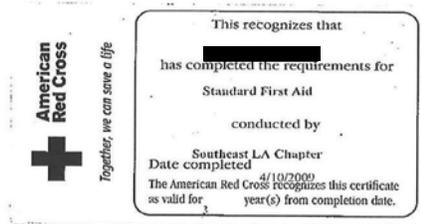
	<p align="center">Title Accident Prevention Plan / Site Safety and Health Plan</p>	<p align="center">Document No. NFSS-0011</p>	<p align="center">Revision REV.0</p>
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ATTACHMENT 3: FIRST AID AND CPR CERTIFICATIONS

The following project personnel have current certification in First Aid and CPR. Copies of certification are included on the pages immediately following.



Site Safety and Health Officer



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ATTACHMENT 4: SAFETY DEFICIENCY TRACKING FORM

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Contract No. W912P4-07-D-0003-0002

Niagara Falls Storage Site

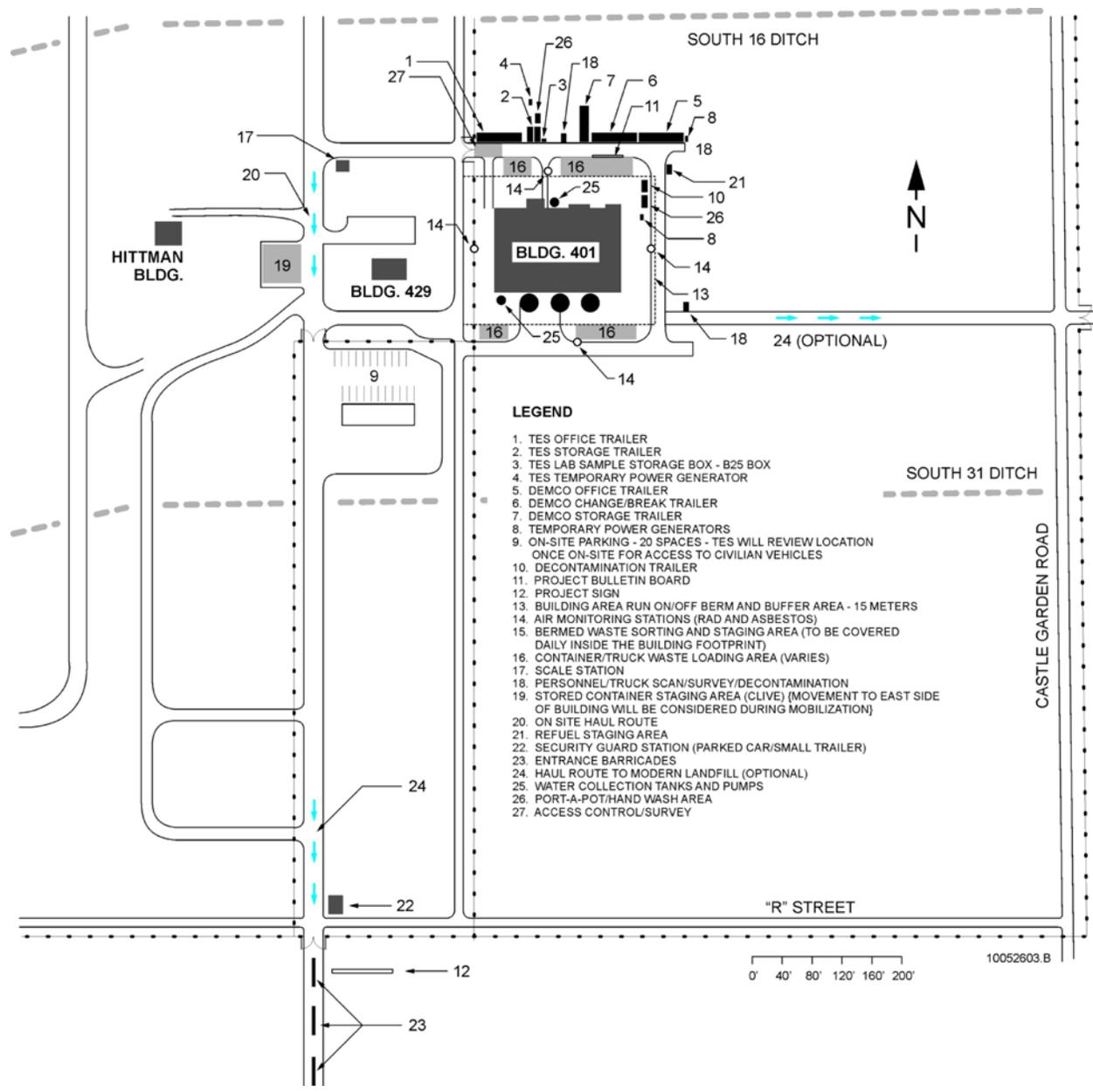
TES

SAFETY DEFICIENCY TRACKING FORM

ITEM NO.	DESCRIPTION	DATE NOTED	DATED SCHEDULED FOR CORRECTION	DATE CORRECTED

 <p>TES TSMC Environmental Solutions Environmental Services, LLC</p>	<p align="center">Title Accident Prevention Plan / Site Safety and Health Plan</p>	<p align="center">Document No. NFSS-0011</p>	<p align="center">Revision REV.0</p>
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ATTACHMENT 5: LAYOUT PLAN



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ATTACHMENT 6: PLAN FOR PREVENTION OF AND POLICY ON DRUG AND ALCOHOL ABUSE

	<p style="text-align: center;">Title</p> <p style="text-align: center;">Accident Prevention Plan / Site Safety and Health Plan</p>	<p style="text-align: center;">Document No.</p> <p style="text-align: center;">NFSS-0011</p>	<p style="text-align: center;">Revision</p> <p style="text-align: center;">REV.0</p>
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1.0 STATEMENT OF POLICY ON DRUG AND ALCOHOL ABUSE

The use of alcohol or drugs can lead to serious health problems and frequently does affect an individual's judgment, work habits and personal relationships. An individual under the influence of alcohol or drugs constitutes a potential safety hazard to themselves, their fellow workers, third parties and to property, equipment and vessels. In short, an individual under the influence of alcohol or drugs can easily undermine public confidence in the company. Alcohol and drug abuse are serious illnesses that require diagnosis and treatment at the earliest possible stage. The following statement of policy is intended to advise employees of their responsibilities in this area.

We believe that employees having drug and alcohol abuse problems make up only a small fraction of the work force and the company regrets any inconvenience that may be caused to the many non-abusers. The benefits to be derived from the reduction in number of accidents, the greater safety of all employees, and the termination and treatment of those who, because of alcohol or drugs, are a burden upon others, will more than outweigh the inconvenience to non-abusers. The company earnestly solicits the cooperation of all TES and subcontractor employees in implementing the policies described below, many of which are required by United States statutes and regulations.

2.0 OPERATIONAL POLICY

2.1. **NO ALCOHOL.** The use or possession of alcohol by any employee on a work site or while on company property, equipment or vessels or the use of alcohol at any time that would manifest itself while on a work site or while operating company equipment or while on company property, equipment or vessels, is absolutely prohibited. Alcohol for purposes of this policy means any form or derivative or ethyl alcohol (ethanol) including any beverage that may be legally sold and consumed and that has alcohol content. Manifest for purposes of this policy shall include in addition to actually being under the influence of alcohol while on duty, the use of alcohol, which affects performance, results in excessive absenteeism or tardiness or is the cause of an accident. A person displays evidence of intoxication by observation of manner, disposition, speech, general appearance, behavior or if such person has a blood alcohol concentration (BAC) of .04% or greater. No TES or subcontractor shall perform any scheduled duties within eight (8) hours of consuming any alcohol, be intoxicated at any time or consume any intoxicant while on duty. Intoxicant means any form of alcohol, drug or combination thereof.

2.2. **NO UNLAWFUL DRUGS.** The unlawful, manufacture, distribution, dispensation, use, sale or possession of marijuana, narcotics, or controlled substance at any time, on or off duty, is absolutely prohibited. A controlled substance means a controlled substance in schedules through V of section 202 of the Controlled Substance Act (21 U.S.C, 812) and as further defined in Regulation 21 CFR 1308.11-1308.15, which includes, but is not limited to marijuana, cocaine, opiates, narcotics, phencyclidine (PCP), hallucinogens, amphetamines, barbiturates, and tranquilizers.

2.3. **PRESCRIPTION DRUGS.** Employees undergoing prescribed medical treatment with a legal drug or controlled substance must report this fact and present satisfactory written evidence from

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their treating physician, that such drug or controlled substance will not adversely affect behavior or work performance, to their supervisor prior to starting any work shift. Under these circumstances, it may be necessary to restrict an employee’s work activity during the course of such treatment. No prescription drug shall be brought upon a work site or upon company property, equipment or vessel by any person other than the person for whom the drug is prescribed by a licensed medial practitioner, and shall be used only in the manner, combination and quantity prescribed. No prescription drug shall be contained in any container other than that in which it was originally obtained bearing the pharmacist’s label. Abuse of prescription drugs which affects performance or results in excessive absenteeism or tardiness or is the cause of an accident will result in disciplinary action up to and including discharge. In this regard, the disciplinary action taken shall be solely determined by the company.

2.4. **SUPERVISOR RESPONSIBILITY.** TES and subcontractor supervisors are required to monitor the behavior and work patterns of their employees and all other employees on the work site. Emotional mood or behavior changes, repeated absenteeism or general behavior consistent with intoxication from alcohol or drugs should be report to the TES SSHO and HSD. Failure to do so will result in disciplinary action up to and including discharge. In this regard, the disciplinary action taken shall be determined solely by the company.

2.5. **WORK RULES.** In order to insure the safety of the work place and work force, the following work rules will apply to all employees immediately upon their hiring.

2.5.1 *Searches.* Each employee, as a condition of employment, will be required, upon request of the company supervisory personnel, to:

- Submit to a search of any vehicle brought upon or parked upon company premises;
- Submit to a search of any pocket, package, purse, briefcase, toolbox, or other container brought upon any work site, company premises or company vessel or equipment
- Submit to search of desk, locker, office, cabin, stateroom, berth or similar item or Place

2.5.2 *Random and reasonable cause testing.* Each employee, as a condition of continued employment will also be required, upon request of company supervisory personnel, to promptly submit to a urinalysis and/or a blood alcohol concentration (BAC) test for determining use of alcohol and/or drugs. Any employee whose blood and/or urine test positive for a controlled substance or alcohol shall be discharged. Such testing may be done on a random basis or upon “reasonable cause.”

- Reasonable cause means a probability exists, based on some evidence, that a crew member is intoxicated by or has used drugs, or is intoxicated by alcohol. Alcohol intoxication on a commercial vessel or any BAC of .04% or greater. In the case of drugs, there need not be evidence of intoxication pre se; evidence of use is sufficient to require testing.
- Generally the following elements must be present to have “reasonable cause” to require drug and/or alcohol testing:

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- Direct observation of the suspected crew member and/or physical evidence by one and where practicable, two persons in supervisory positions. This means the supervisor must personally see the evidence.
- There must be some physical, behavioral or performance indication of use or intoxication. Indicators include but are not limited to an individual's person. Drugs and drug paraphernalia as well as alcoholic beverage containers in clothing and personal property, concealed in staterooms or elsewhere may also provide reasonable cause since these too are physical indicators. An injury to any person or damage occurring to any vessel, equipment or property may provide evidence sufficient for reasonable cause testing. Smoke, breath and body odors may provide evidence. Slurred and incoherent speech, lack of coordination and balance, nodding and dozing off on watch, inability to report for duty, frequent or extended unexplained absences from assigned duties, sudden and wide changes of mood or attitude and many other observable variables are examples of some conditions which could constitute reasonable cause. IT should be noted that a BAC of .04% or greater could be reached by consumption of less than three drinks an hour. Observed odor of alcohol on a person's body or breath is reasonable cause to test.
- When it is determined that reasonable cause to require a test exists, the individual will be informed of the fact and directed to test as soon as practicable. The company will specify whether or not urine, BAC testing or both are being required.

2.5.3 Pre-Employment Testing. All applicants for employment may be required to take a pre-employment physical examination including urinalysis and/or blood alcohol concentration (BAC) test. Applicants whose examinations and interviews, combined with general reference and background checks, indicate present alcohol or drug abuse will not be hired. Whenever the physical follows an individual's hiring, the company reserves the right to discharge the employee upon notification that such individual failed a urinalysis and/or blood alcohol concentration (BAC) test. With respect to vessel members, no person shall be hired who has not passed a pre-employment chemical test before the individual reports for work aboard a vessel. (Pre-employment testing may be waived in accordance with 46 CFR 16.210 (b) (1) and (2). A "chemical test" means a test which analyzes an individual's breath, blood, urine, saliva and/or bodily fluids or tissues for evidence of drug or alcohol use.

TES subcontractors will be required to develop and implement a plan for prevention and policy on drug and alcohol abuse consistent with the requirements specified in the TES Plan for Protection and Policy on Drug and Alcohol Abuse.

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Exhibit "A"

Certification and Declaration

1. I have been provided a written copy of the TES's Policy on Drug and Alcohol Abuse. I am aware that this policy forbids the use of or dealing in illegal drugs, on or off duty and the violation of this policy is cause for termination.

2. I understand that as a condition of my employment, I may from time to time, be required to promptly submit to searches as outlined in TES's policy on Drug and Alcohol Abuse or to urinalysis and/or blood alcohol concentration (BAC) test. I hereby consent to said searches and/or tests. However, I further, understand that I may refuse to submit to such searches or tests and if so, such refusal shall constitute misconduct and be grounds for immediate dismissal.

3. I understand that switching, tampering with or adulterating a urine, blood, saliva or breath specimen, or otherwise interfering with the collection and testing process is prohibited.

4. I understand that violation of any of the provisions of the company policy shall constitute misconduct and will result in disciplinary action up to and including termination.

5. I have read the TES policy on Drug and Alcohol Abuse. I have been given the opportunity to ask about any provisions that I don't understand and I accept and agree to its provisions.

Print Name _____

Signed: _____

Date: _____

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ATTACHMENT 7: SANITATION PLAN

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1.0 GENERAL REQUIREMENTS

TES and subcontractor will establish and maintain basic sanitation provisions for all employees in all places of employment as specified in the following paragraphs.

1.1 DRINKING WATER

1.1.1 An adequate supply of drinking water will be provided in all places of employment. Cool water will be provided during hot weather.

1.1.2 Drinking water for field activities will be provided according to the procedures defined in Army Regulation (AR) 700-136; Field Manual (FM) 10-52; FM 21-10/Marine Corps Reference Publication (MCRP) 4-11.1D; and Technical Bulletin, Medical (TB MED) 577, and section 2.0 of EM 385-1-1.

1.1.3 Only approved potable water systems will be used for the distribution of drinking water.

1.1.4 Drinking water will be dispensed by means that prevent contamination between the consumer and the source.

1.1.5 Portable drinking dispensers will be designed, constructed, and serviced to ensure sanitary conditions; shall be capable of being closed; and shall have a tap. Containers shall be clearly marked as **“DRINKING WATER”** and shall not be used for other purposes. Water shall not be dipped from containers.

1.1.6 Fountain dispensers shall have a guarded orifice.

1.1.7 Use of a common cup (a cup shared by more than one worker) is prohibited without the cup being sanitized between uses. Employees will use cups when drinking from portable water coolers/containers. Unused disposable cups shall be kept in sanitary containers and a waste receptacle shall be provided for used cups.

1.2 NON-POTABLE WATER

1.2.1 Outlets dispensing non-potable water will be conspicuously posted **“CAUTION – WATER UNSAFE FOR DRINKING, WASHING, OR COOKING”**.

1.2.2 Cross-connection – open or potential – between a system furnishing potable water and a system furnishing non-potable water is prohibited.

1.3 TOILETS

1.3.1 Since sanitary sewers are not available, one of the following facilities, unless prohibited by local codes, will be provided: chemical toilets, re-circulating toilets, combustion toilets, or other toilet systems as approved by State/local governments.

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- 1.3.2 Each toilet facility shall be equipped with a toilet seat and toilet seat cover. Each toilet facility – except those specifically designed and designated for females – shall be equipped with a metal, plastic, or porcelain urinal trough. **All shall be provided with an adequate supply of toilet paper and a holder for each seat.**
- 1.3.3 Toilet facilities shall be so constructed that the occupants shall be protected against weather and falling objects; all cracks shall be sealed and the door shall be tight-fitting, self-closing, and capable of being latched.
- 1.3.4 Adequate ventilation will be provided and all windows and vents screened; seat boxes will be vented to the outside (minimum vent size 4 inches (in) (10.1 centimeters (cm) inside diameter) with vent intake located 1 inch (2.5 cm) below the seat.
- 1.3.5 Toilet facilities will be constructed so that the interior is lighted.
- 1.3.6 Toilets at construction job sites. (The requirements of this paragraph shall not apply to mobile crews having transportation readily available to nearby toilet facilities.
- 1.3.6.1 Toilets shall be provided according to Table 2-1. Where toilet rooms maybe occupied by no more than one person at a time, can be locked from the inside, and contain at least one toilet seat, separate toilet rooms for each sex need not be provided.
- 1.3.6.2 Under temporary field conditions, provision will be made to assure that at least one toilet facility is available.

TABLE 2-1

Number of Employees	Minimum Facilities (per sex)
20 or less	One
21 – 199	One toilet seat and one urinal for every 40 workers
200 or more	One toilet seat and one urinal for every 50 workers

- 1.3.7 Provisions for routinely servicing and cleaning all toilets and disposing of the sewage will be established before placing toilet facilities into operation. The method of sewage disposal and location selected will be in accordance with Federal, State and local health regulations.

1.4 WASHING FACILITIES

- 1.4.1 Washing facilities will be provided at toilet facilities and as needed to maintain healthful and sanitary conditions. Washing facilities for persons engaged in operations where

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contaminants may be harmful will be at or near the work site and will adequate for removal of the harmful substance.

1.4.2 Each washing facility will be maintained in a sanitary condition and provided with water (either hot and cold running water or tepid running water), soap, and individual means of drying. However, where it is not practical to provide running water, hand sanitizers may be used as a substitute.

1.4.3 Whenever employees are required by a particular standard to shower, showers shall be provided in accordance with the following:

- One shower will be provided for every ten employees (or fraction thereof) of each sex who are required to shower during the same shift;
- Body soap or other appropriate cleansing agent convenient to the shower shall be provided;
- Showers will have hot and cold running water feeding a common discharge line; and
- Employees using showers will be provided with individual clean towels.

1.4.5 Whenever employees are required by a particular standard to wear protective clothing, change rooms with storage facilities for street clothes and separate storage facilities for protective clothing will be provided.

1.4.6 Whenever working clothes are provided by an employer and become wet or are washed between shifts, provision will be made to ensure such clothing is dry before reuse.

1.5 FOOD SERVICE

1.5.1 Food will be eaten in designed break rooms/lunch room. All food items will not be kept in the same refrigerator as other work chemicals that need to be kept cool.

1.5.2 Break rooms/lunch rooms will be kept clean and free of debris, left over food items or rubbish.

1.5.3 No food or beverage will be consumed or stored in a toilet room or in any area exposed to a toxic material.

1.5.4 An adequate number of waste receptacles will be provided in the break room/lunch room area. Receptacles will be constructed of corrosion resistant or disposable material, provided with solid tight-fitting covers (covers may be omitted where sanitary conditions can be maintained without the use of a cover), emptied at least daily, maintained in a sanitary condition.

1.6 WASTE DISPOSAL

1.6.1 Receptacles used for putrescible or liquid waste material will be so constructed as to prevent leakage and to allow thorough cleaning and sanitary maintenance. These

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receptacles will be equipped with solid tight-fitting covers, unless they can be maintained in sanitary condition without covers.

1.6.2 Solid and liquid waste will be removed in a way that avoids creating a menace to health and as often as necessary to maintain a sanitary environment.

1.7 VERMIN CONTROL

1.7.1 Enclosed workplaces will be constructed and maintained, as far as practical, to prevent the entrance or harborage of rodents, insects, and other vermin. An effective program will be instituted where the presence of vermin is detected.

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**ATTACHMENT 8: HAZARD CONTROL PLAN SAFE
WORK PRACTICES AND CONTROLS**

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1.0 INTRODUCTION

This program provides safe work practices and control measures used to reduce or eliminate potential hazards at the Niagara Falls Storage Site (NFSS) FUSRAP location. This program addresses a wide range of the common/routine hazardous that can be encountered on a site. However, not all of the presented hazards/controls apply to the NFSS site. This hazard control program should be used by the SSHO to identify the hazards/control applicable to the NFSS site. Based on the expected work scope/activities. These practices and *controls* are to be implemented by the party in control of either the site or the particular hazard. TES employees must remain aware of the hazards affecting them regardless of who is responsible for controlling the hazards. TES employees and subcontractors who do not understand any of these provisions should contact the PM, or the SSHO for clarification.

TES subcontractors are required to identify project-specific general hazards for their assigned work and to develop and implement SOPs to ensure work will be carried out in the safest manner possible.

In addition to the controls specified in this program, selected TES SOPs may contain checklists that are to be used in identifying and controlling potential hazards and assess the adequacy of TES site-specific safety requirements. Checklists should be completed at the beginning of tasks, when tasks or conditions change, and/or or when otherwise specified by the SSHO. The checklists, including documented corrective actions, should be made part of the permanent project records, and be promptly submitted to the PM.

2.0 PROJECT-SPECIFIC HAZARDS

Project-specific hazards include the items presented in the following sections, s applicable. SOPs have been developed for these tasks. Employees working on the task are required to review all task-applicable SOPs prior to proceeding with the work. Any task that does not have an applicable SOP shall be brought immediately to the attention of the PM and the SSHO. A variance must be issued by the SSHO and/or the PM, prior to beginning work, for any task that does not have an approved SOP and/or must deviate from the approved SOP in order to complete the task.

A summary of the Hazard Analysis project activities is presented in Table 1.

TABLE 1: HAZARD ANALYSIS – SUMMARY

Potential Hazards	Mobilization	Building 401 Survey	Hazardous Material Abatement	Demolition
Falling/Flying debris/objects/overhead hazards	X	X	X	X
Noise > 85dBa	X			X
Cold/Heat Stress	X	X	X	X

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Potential Hazards	Mobilization	Building 401 Survey	Hazardous Material Abatement	Demolition
Radiological/Hazardous Contaminants		X	X	X
Buried utilities, drums, tanks		X	X	X
Slip, trip, fall	X	X	X	X
Body sprains/strains	X	X	X	
Poor illumination		X	X	
Severe Weather	X	X	X	X
Fires	X	X	X	X
Entanglement		X	X	X
Heavy equipment	X		X	X
Biological	X	X	X	X

3.0 GENERAL WORKER PROTECTION REQUIREMENTS

All personnel who enter the areas designated by the PM and/or SSHO as Active Work Areas shall have the following as a minimum.

- Sleeved Shirt (no sleeveless “tank top”)
- Long Pants
- Hardhat
- Safety Glasses
- High Visibility Reflective Vests
- Steel Toe Boots
- Access to Hearing Protection (keep a pair of ear plugs nearby)

4.0 WORKING ABOVE, ON OR NEAR WATER

All personnel who work above, on or near the water shall have adequate protection against falling and drowning. This also applies to land-based personnel working near a shoreline (typically within 20 feet) where a fall could result in contacting the water.

- Fall protection should be provided to prevent personnel from falling into water for all work above the water.

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- When working from the deck of a vessel (where fall protection systems are not provided) and the danger of drowning exists, U.S. Coast Guard-approved personal flotation devices (PFDs), shall be worn. (NOTE: not all PFD’s will provide sufficient buoyancy for “geared” workers (i.e.,work belts, heavy clothing, etc). Ensure that buoyancy ratings are adequate for the work. Refer to the “Boating and Watercraft” and “Man Overboard” SOPs for a description of PFDs and procedures for working on the water, and appropriate emergency response/rescue actions.
- Details of the man overboard SOP must be posted as a Station Bill.
- Inspect PFDs prior to each use. Do not use defective PFDs.
- Always have operating communication equipment (project or marine radios, cell phones, etc).
- NEVER overload the rated capacity of a vessel for any reason.
- A life-saving skiff must be provided for emergency rescue.
- A minimum of one ring buoy with 100 feet of 3/8-inch solid-braid polypropylene (or equal) rope must be provided for emergency rescue.
- Personnel working above, on or near the water are to never work alone. Always have a “Buddy”.
- Use sampling and other equipment according to the manufacturers’ instructions.

5.0 SURVEY LASERS

- Laser beams used in surveying may be hazardous to the eyes. The severity of the hazard depends on the type of laser and its power.
- Avoid direct eye contact with the beam. This is most important when wearing corrective eyeglasses, which can intensify the beam’s focus on the retina.
- Lasers used in surveying are usually low power.
- Lasers must be posted with safety warning signs.

6.0 AERIAL LIFTS

Refer to following SOPS prior to beginning a task using Aerial Lifts: “Powered Industrial Trucks”; Personal Protective Equipment”; “Lifting Devices” and “Unsafe Condition Tag-Out”. Only authorized and trained personnel are permitted to operate aerial lifts and/or powered industrial trucks.

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- Inspect aerial lifts and test lift controls prior to each use. The last lift may have damaged something.
- Wear a full body harness with lanyard attached to the boom or platform.
- Do not attach lanyard to any adjacent structures or equipment while working from an aerial lift.
- Stand firmly on the floor of the platform and do not sit or climb on the railings of the platform. NEVER use planks, ladders, or other devices to increase working height.
- Remain in the platform at all times and do not leave the platform to climb to adjacent structures.
- Position aerial lifts on firm, level surfaces when possible, with the brakes set. Use wheel chocks on inclines. If outriggers are provided, position on solid surfaces or cribbing.
- Maintain safe clearance distances (minimum 10 feet) between overhead power lines and any part of the aerial lift or conducting material.
- If work must occur within 10 feet, or less, of an overhead power line and/or energized device, the power lines must be de-energized, grounded and locked-out/tagged-out.
- Never exceed the boom and basket load limits.
- Never use aerial lifts as cranes, unless specifically designed and approved by the lift manufacturer.
- Never work or stand below aerial lift operations.
- Do not use aerial lifts out of doors when winds exceed 30 miles per hour.
- The Aerial Lift Inspection Form is provided in the Powered Industrial Truck SOP.

7.0 CRANES, HOISTS, AND RIGGING

Refer to following SOPS prior to beginning a task using Aerial Lifts: “Powered Industrial Trucks”; Personal Protective Equipment”; “Lifting Devices” and “Unsafe Condition Tag-Out”. Only authorized and trained personnel are permitted to operate aerial lifts and/or powered industrial trucks.

- Crane operation shall be performed in accordance with the requirements specified by OSHA in 29 CFR 1926, Subpart N and the USACE per EM-385-1-1, Chapter 16. A Certificate of Compliance shall be completed and included in this Attachment (Section 39) as well as being posted on the Crane Cab.

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- Only certified crane operators and riggers are permitted to operate cranes and complete rigging. TES employees are expressly forbidden from operating cranes or assist in completing rigging unless granted a variance by Senior Management.
- A crane should be kept as far as possible from overhead electrical lines or energized equipment.
- Maintain safe distance from operating cranes and stay alert of crane movement.
- Avoid positioning between fixed objects and operating cranes and crane pinch points.
- Remain outside of the crane swing and turning radius.
- Never turn your back on operating cranes.
- Approach cranes only after receiving the operator's attention. The operator shall acknowledge your presence and stop movement of the crane. Never approach operating cranes from the side or rear where the operator's vision is limited or blocked completely.
- When required to work in proximity to operating cranes, wear high-visibility vests made of reflective material or include a reflective stripe or panel to increase visibility to operators.
- Stay as clear as possible of all hoisting operations. Loads shall never be hoisted overhead of personnel.
- Cranes shall never be used to lift or lower personnel.
- If crane becomes electrically energized, personnel shall be instructed not to touch any part of the crane and to "clear" the area. Personnel should never attempt to touch any person who may be inside the crane and/or in contact with the electrical current. The utility company or appropriate party shall be contacted to have line de-energized prior to approaching the crane.
- Do not exceed hoist load limits.
- Ensure load is level and stable before hoisting. Use tag lines to stabilize load during hoisting.
- Inspect all rigging equipment prior to use. Slings and cables must be labeled and inspected by a certified inspector prior to use, in accordance with OSHA requirements. Do not use defective rigging for any reason.
- Only use rigging equipment for the purpose it was designed and intended.

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8.0 RIGGING

Refer to SOP “Lifting Devices” prior to using rigging or hoists. Only properly trained riggers are to complete rigging operations. TES employees are expressly forbidden to assist in completing rigging unless granted a variance by Senior Management.

- Stay clear of all hoisting operations.
- Inspect all powered equipment prior to use
- Inspect all rigging-related items (straps, wire ropes, chokers, chains, etc.) before each use. The last lift may have damaged it and rendered it unsafe for use. Do not use defective rigging for any reason.
- Loads shall never be hoisted overhead of personnel.
- Hoists shall never be used to lift or lower personnel.
- Never exceed hoist load limits.
- Ensure load is level and stable before hoisting.
- Only use rigging equipment for the purpose it was designed and intended.

9.0 ENERGIZED ELECTRICAL

Refer to the following SOPs prior to beginning any task involving energized lines or equipment: “Lockout/Tagout”; “Electrical Safety”; “Fire Protection”; ‘Personnel Protective Equipment’; and “General Safety Rules”.

- Only qualified personnel, as determined by the PM and/or the SSHO, are permitted to work on unprotected energized electrical systems.
- Only authorized personnel are permitted to enter high-voltage areas.
- Do not tamper with electrical wiring and equipment unless qualified to do so. All electrical wiring and equipment must be considered energized until lockout/tagout procedures are implemented.
- Inspect electrical equipment, power tools, and extension cords for damage prior to use. Do not use defective electrical equipment, remove from service. Defective equipment will be tagged and brought to the attention of the SSHO.
- All temporary wiring, including extension cords and electrical power tools, must have ground fault circuit interrupters (GFCIs) installed.

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- Extension cords must be:
 - Equipped with third-wire grounding.
 - Covered, elevated, or protected from damage when passing through work areas.
 - Protected from pinching if routed through doorways.
 - Not fastened with staples, hung from nails, or suspended with wire.
- Electrical power tools and equipment must be effectively grounded or double-insulated UL approved.
- Operate and maintain electric power tools and equipment according to manufacturers' instructions.
- Maintain safe clearance distances between overhead power lines and any electrical conducting material unless the power lines have been de-energized and grounded, or where insulating barriers have been installed to prevent physical contact. Maintain at least 10 feet from overhead power lines for voltages of 50 kV or less, and 10 feet plus 0.5 inch for every 1 kV over 50 kV.
- Temporary lights shall not be suspended by their electric cord unless designed for suspension. Lights shall be protected from accidental contact or breakage.
- Protect all electrical equipment, tools, switches, and outlets from environmental elements.
- Electrical wiring and equipment shall be de-energized in accordance with Lockout/Tagout SOPs and standard industry practices prior to conducting work.
- A variance shall be obtained from the SSHO for situations where it can be demonstrated that de-energizing introduces additional or increased hazards or is unfeasible due to equipment design or operational limitations.
- All electrical systems shall be considered energized until lockout/tagout procedures are implemented.
- Always “double-check” to ensure power is not flowing through the line or equipment by using a voltage tester or similar device.
- The Energized Electrical Work Permit provided in the Lockout/Tagout SOP must be completed prior to working on unprotected energized electrical systems.
- Follow all control measures and procedures identified on the Energized Electrical Work Permit and all applicable SOPs, industry and OSHA practices.

10. LOCKOUT/TAGOUT

- 10.1 Refer to the following SOPs: “Lockout/Tagout”; and “Unsafe Condition Tagout”. Lockout/Tagout refers to all electrical and/or mechanically energized equipment.

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- 10.2 Ensure the equipment cannot “start” while work is occurring on that equipment by disconnecting battery terminals, unplugging the device from power and/or other methods recommended by the manufacturer.
- 10.3 Never work on equipment when the unexpected operation could result in injury, unless lockout/tagout procedures are implemented.
- 10.4 Standard lockout/tagout procedures include the following six steps:
- Notify all personnel in the affected area of the lockout/tagout,
 - Shut down the equipment using normal operating controls,
 - Isolate all energy sources,
 - Apply individual lock and tag to each energy isolating device,
 - Relieve or restrain all potentially hazardous stored or residual energy (e.g., hydraulic pressure, residual electrical charges in capacitors, etc.).
 - Verify through the use of a measurement device (if possible) that isolation and de-energizing of the equipment has been accomplished. Once verified that the equipment is at the zero energy state, work may begin.
- 10.5 NEVER remove another person’s lock or tag. If the work extends over a shift change, and under the direct supervision of the PM, the next crew shall replace the previous crews’ locks with their own, one worker at a time. Work shall not resume until the PM is confident the requirements of the SOPs have been followed and it is safe to return to work.
- 10.6 All safeguards must be put back in place, all affected personnel notified that lockout/tagout has been removed, and controls positioned in the safe mode prior to lockout/tagout removal.

11.0 EXCAVATION

Refer to the following SOPs prior to beginning excavation tasks: “Excavation”; and “Heavy Equipment”;

- Do not enter the excavations unless necessary, and only after the competent person has completed the required inspection and has authorized entry.
- Follow all excavation entry requirements established by the competent person.
- Do not enter excavations where protective systems are damaged or unstable.

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- Do not enter excavations where objects or structures above the work location may become unstable and fall into the excavation.
- Do not enter excavations with the potential for a hazardous atmosphere until the air has been tested and found to be at safe levels.
- Do not enter excavations with accumulated water unless precautions have been taken to prevent excavation cave-in.

12.0 FORKLIFTS

Refer to the following SOPs prior to using a forklift: “Powered Industrial Trucks”; “Personal Protective Equipment”; and “General Safety Rules”.

- Only authorized and trained personnel may operate forklifts.
- Forklifts shall be inspected by the operator prior to use.
- Complete the Forklift Inspection Form found in the Powered Industrial truck SOP
- The operator shall use a seat belt (if available).
- Only the operator may ride on the forklift. Passengers are expressly forbidden.
- No part of a load must pass over any personnel.
- Forklifts left unattended must be immobilized and secured against accidental movement and forks, buckets or other attachments must be in the lowered position or be firmly supported.
- No load may exceed the maximum rated load and loads must be handled in accordance with the height and weight restrictions on the load chart.
- When a load is in the raised position, the controls must be attended by an operator.
- If an operator does not have a clear view of the path, a signaler must be used.
- Loads must be carried as close to the ground or floor as the situation permits.
- Loads that may tip or fall must be secured.
- Where a forklift is required to enter or exit a vehicle to load or unload, the vehicle must be immobilized and secured against accidental movement.
- Forklifts shall not be used to support, raise, or lower workers.
- Forklifts operators shall wear seatbelts at all times.

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- Concentrations of carbon monoxide created by forklift operation indoors, or in and near excavations, must be monitored when the potential exists for reaching or exceeding permissible exposure limits.
- Barriers, warning signs, designated walkways or other safeguards must be provided where pedestrians are exposed to the risk of collision.

13.0 SCAFFOLDS

Refer to the following SOPs prior to erecting and performing any work on scaffolds”: “Fall Protection”; “Ladder Safety”; “Personal Protective Equipment”; and “General Safety Rules”.

- Scaffolding must be designed and constructed by a competent person.
- Do not access scaffolds until the competent person has completed the work shift inspection and has authorized access.
- Follow all requirements established by the competent person or as identified on the scaffold tag.
- Do not access scaffolds that are damaged or unstable at any time and for any reason.
- Only access scaffolds by means of a ladder, stair tower, ladder stand, ramp, integral prefabricated scaffold access, or other equivalent safe means of access. Scaffold cross bracing shall not be used to access scaffold platforms.
- Remain within the scaffold guardrail system when provided. Leaning over or stepping across a guardrail system is not permitted.
- Use personal fall arrest systems when required by the competent person and when working from suspension scaffolds or boatswains’ chairs.
- Do not stand on objects (boxes, buckets, bricks, blocks, etc.) or ladders on top of scaffold platforms to increase working height unless the platform covers the entire floor area of the room.
- Do not work on scaffolds covered with snow, ice, or other slippery material or work on scaffolds during storms or high winds unless personal fall arrest systems or wind screens are provided and the competent person determines it is safe to remain on the scaffold.

14.0 WELDING AND CUTTING

Refer to the following SOPs prior to performing “Burning and Welding”; “Fire Protection”; “Eye/Face Protection”; Powered Hand Tools”; “Personal Protective Equipment”; and “General Safety rules”.

- Only trained personnel are permitted to operate welding/cutting equipment.

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- Do not enter areas where welding/cutting operations are taking place unless completely necessary and only after receiving permission from the welding/cutting operator.
- If you must be present in an area during welding/cutting operations, position yourself behind flash screens or wear glasses/goggles with lenses of appropriate darkness.
- Do not look directly at the welding/cutting flash or at reflective surfaces surrounding welding/cutting operations.
- Avoid contacting compressed gas cylinders. Cylinders should be properly and firmly secured in an upright position at all times.
- Be aware of tripping hazards created by welding hoses, power cables, leads, and cords positioned on walking surfaces.
- The Hot Work Permit is provided in the Burning and Welding SOP.

15.0 COMPRESSED GAS CYLINDERS

Refer to the following SOPs: “Burning and Welding”; “Eye/Face Protection; and “General Safety Rules”.

- Valve caps must be in place when cylinders are transported, moved, or stored.
- Cylinder valves must be closed when cylinders are not being used and when cylinders are being moved.
- Cylinders must be secured in an upright position at all times.
- Cylinders must be shielded from welding and cutting operations and positioned to avoid being struck or knocked over; contacting electrical circuits; or exposed to extreme heat sources.
- Cylinders must be secured on a cradle, basket, or pallet when hoisted; they may not be hoisted by choker slings.

16.0 FALL PROTECTION

16.1 Refer to the following SOP prior to beginning tasks that have fall potential: “Fall Protection”, “ Ladder Safety”; and “General safety Rules”.

16.2 Fall protection systems must be used to eliminate fall hazards when performing construction activities or general industry activities at a height of 4 feet or greater.

16.3 All project personnel that may be exposed to fall hazards must review the Fall Protection SOP.

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16.4 Never use fall protection systems on which you have not been trained.

- The PM and/or SSHO shall act as competent person and shall inspect and oversee the use of fall protection systems.
- Follow all requirements established by the competent person for the use and limitation of fall protection systems.
- A registered professional engineer shall oversee the use of horizontal lifelines.
- Only one person shall be simultaneously attached to a vertical lifeline.
- Remain within the guardrail system when provided. Leaning over or stepping across a guardrail system is not permitted.
- Do not stand on objects (boxes, buckets, bricks, blocks, etc.) or ladders to increase working height on top of platforms protected by guardrails.
- Inspect personal fall arrest systems prior to each use. Do not use damaged fall protection systems at any time, or for any reason.
- Set up personal fall arrest systems so that you can neither free-fall more than 4 feet or contact any lower level.
- Only attach personal fall arrest systems to anchorage points capable of supporting at least 5,000 pounds.
- Use fall protection equipment for fall protection only and not to hoist materials. Do not use personal fall arrest systems that have been subjected to impact loading.

17.0 EARTHMOVING EQUIPMENT

Reference the following SOPs prior to performing earth moving related tasks: “Heavy Equipment” and “General Safety Rules”.

- Only authorized personnel are permitted to operate earthmoving equipment.
- Maintain a safe distance from operating equipment and stay alert of equipment movement. Avoid positioning between fixed objects and operating equipment and equipment pinch points, remain outside of the equipment swinging and turning radius. Pay attention to backup alarms, but do not rely on them for protection. Never turn your back on operating equipment.
- Approach operating equipment only after receiving the operator’s attention. The operator shall acknowledge your presence and stop movement of the equipment. Caution shall be used when standing next to idle equipment; when equipment is placed in gear it can lurch

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forward or backward. Never approach operating equipment from the side or rear where the operator's vision is limited or blocked.

- When required to work in proximity to operating equipment, wear high-visibility vests to increase visibility to equipment operators.
- Do not ride on earthmoving equipment unless it is specifically designed to accommodate passengers. Only ride in seats that are provided for transportation and that are equipped with seat belts.
- Unless directly involved with the work activity, stay clear of all hoisting operations. Loads shall not be hoisted overhead of personnel.
- Earthmoving equipment shall not be used to lift or lower personnel.
- If equipment becomes electrically energized, personnel shall be instructed not to touch any part of the equipment or attempt to touch any person who may be in contact with the electrical current. The utility company or appropriate party shall be contacted to have line de-energized prior to approaching the equipment.

18.0 HAND TOOLS

Refer to the following SOPs prior to using hand tools: “Eye and Face Protection”; “Powered Hand Tools”; “Hearing Protection”; “Unsafe Condition Tagout” and “General Safety Rules”.

- Operate all tools according to the manufacturers' instructions, within design limitations and only to perform tasks for which they were designed.
- All hand and power tools shall be maintained in a safe condition.
- Tools are to be inspected and tested before use. If a tool is found to be defective it is to be tagged “Do Not Use” and removed from service until repaired.
- Personal protective equipment (PPE), such as gloves, safety glasses, earplugs, and face shields, are to be used when exposed to a hazard from the tool.
- Power tools are not to be carried or lowered by the cord or hose.
- Disconnect tools from energy sources when not in use, before servicing and cleaning, and when changing accessories such as blades, bits, and cutters.
- Safety guards on tools are to remain installed while the tool is in use and promptly replaced after repair or maintenance has been performed.
- Tools are to be stored properly, where they will not be damaged or come in contact with hazardous materials.

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- If a cordless tool is connected to its recharge unit, both pieces of equipment must conform strictly with electrical standards and manufacturer’s specifications.
- Tools used in an explosive environment must be rated (e.g., intrinsically safe, spark proof, etc.) for work in that environment.
- When using a knife or blade tool, stroke or cut away from the body with a smooth motion taking care not to use excessive force that could damage tool, material being cut, or unprotected hands.
- Wrenches, including adjustable, pipe, end, and socket wrenches, shall not be used when jaws are sprung to the point that slippage occurs.
- Impact tools, such as drift pins, wedges, and chisels, shall be kept free of mushroomed heads.
- The wooden handles of tools shall be kept free of splinters or cracks and shall be kept tight in the tool.
- Manual and pistol-grip hand tools may involve work with highly repetitive movement, extended elevation, constrained postures, or positioning of body members (e.g., hand, wrist, arm, shoulder, neck, etc.). Consider alternative tool design, improved posture, selection of appropriate materials, work organization, and sequencing to prevent muscular skeletal, repetitive motion, and cumulative trauma stressors.
- Tools with safety devices shall be tested each day before use to see that the safety devices are in proper working condition. The method of testing shall be in accordance with the manufacturer’s recommended procedure.
- Belts, gears, shafts, pulleys, sprockets, spindles, drums, fly wheels, chains, or other reciprocating, rotating or moving parts of equipment shall be guarded if such parts are exposed to contact by employees or otherwise create a hazard.
- All liquid fuel-powered tools shall be stopped while being refueled, serviced, or maintained.

19.0 BOATING/DREDGE OPERATIONS (NOT ANTICIPATED FOR THIS WORK)

Refer to the following SOPs prior to any boating/dredge operations: “SOPs for Boating and Watercraft”; “Man Overboard” and “General Safety Rules”

- All operations involving boating will be directed by qualified and experienced boater as the team leader.
- All marine vessels shall be in compliance with USCG standards and be in compliance with the National Fire Protection Association (NFPA) Standard 302 “Fire Protection Standard for Pleasure and Commercial Motor Craft.”

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- Fuel transfers shall be in general accordance with the provisions of USCG regulations 46 CFR and 33 CFR parts 155 and/or 156. The engine shall be shut off before refueling. Do not smoke while refueling.
- All persons participating in boating operations will coordinate with the SS.
- All personnel shall wear appropriate PFDs with sufficient buoyancy at all times while they are on the water.
- PFDs must be inspected prior to each use.
- The boating team will include at least one person qualified in First Aid.
- All personnel shall wear bright colored PFDs (for example: Blaze orange, Safety Yellow, etc.) to enhance their visibility to one another.
- Never exceed the rated load capacity posted on the vessel.
- Team Leader has final authority on operations with regards to personnel, loads (capacity), weather and water conditions.
- At least 2 people will have means of communicating with shore based personnel and other vessels (e.g., cell phones, project radios, marine radios, etc)
- Safe means of boarding or leaving a boat will be provided to prevent slipping and falling.
- Employees shall be instructed on safe use of the boat for day and night time operations.
- Dredging is scheduled to operate 24 hours per day. Land based side may need to access to the water at any time day or night.
- Details of the Man Overboard SOP must be posted as a Station Bill.
- Night time personnel must have operational lighting on their person (e.g., flashlights, headlamps, etc.) They must also carry emergency lights (e.g., glow-sticks, emergency strobe, or similar) in their PFDs.
- The boat must be operated according to U.S. Coast Guard regulations for:
 - speed
 - lighting
 - right-of-way, etc.
- Since conditions are generally wet and muddy, care will be taken to keep work area as clean as possible to avoid slips, trips and falls.
- No “Horse Play” will be permitted and may serve as grounds for immediate dismissal.

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- The “Boating and Watercraft” and “Man Overboard” SOPs must be reviewed by all personnel who may be required to use a boat in performing their assigned tasks.

20.0 GENERAL HAZARDS

20.1 HOUSEKEEPING

Refer to the “Housekeeping” SOP.

- Site work should be performed during daylight hours whenever possible. Work conducted during hours of darkness requires sufficient illumination intensity to read a newspaper without difficulty.
- Good housekeeping must be maintained at all times in all project work areas.
- Common paths of travel should be established and kept free from the accumulation of materials.
- Keep access to aisles, exits, ladders, stairways, scaffolding, and emergency equipment free from obstructions.
- Provide slip-resistant surfaces, ropes, and/or other devices to be used.
- Specific areas should be designated for the proper storage of materials.
- Tools, equipment, materials, and supplies shall be stored in an orderly manner.
- As work progresses, scrap and unessential materials must be neatly stored or removed from the work area.
- Containers should be provided for collecting trash and other debris and shall be removed at regular intervals.
- All spills shall be quickly cleaned up. Oil and grease shall be cleaned from walking and working surfaces. Spill kits and fire extinguishers will be maintained in fuel storage areas and fueling stations.

20.2 HAZARD COMMUNICATION

Refer to the following SOPs: “Hazard Communication Program”; “Materials Handling Program”; “General Safety Rules”; “Personal Protective Equipment”; “Respiratory Protection”;

The SSHO is to perform the following:

- Complete an inventory of chemicals brought on site by TES using Attachment A in the Hazard Communications SOP.

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- Confirm that an inventory of chemicals, and their MSDSs, brought on site by subcontractors is available.
- TES shall obtain MSDSs from the client, contractors, and subcontractors for chemicals to which TES employees and subcontractors potentially are exposed.
- Before or as the chemicals arrive on site, obtain an MSDS for each hazardous chemical and retain a copy with the HSP on site.
- Label chemical containers with the identity of the chemical and with hazard warnings, and store properly.
- Give the employees necessary chemical-specific HAZCOM training.
- Store all materials properly, giving consideration to compatibility, quantity limits, secondary containment, fire prevention, and environmental conditions.

21.0 SHIPPING AND TRANSPORTATION OF CHEMICAL PRODUCTS

Refer to the appropriate regulations found in the US Department of Transportation (USDOT) 49 CFR Parts 100-185. In the event wastes are being shipped off-site, the following regulations may be applicable: US Environmental Protection agency regulations (USEPA) that pertain to Resource Conservation and Recovery Act (RCRA) 40 CFR Parts 256,261, 262 and the Toxic Substances Control Act (TSCA) 40 CFR 700-789.

- Any person who offers hazardous materials for transportation must label the package or container
- Chemicals brought to the site might be defined as hazardous materials by the USDOT.
- All staff who ship the materials or transport them by road must receive appropriate training in shipping dangerous goods.
- All hazardous materials that are shipped (e.g., via Federal Express) or are transported by road must be properly identified, labeled, packed, manifested and documented by authorized staff.
- Contact the PM, or the SSHO for additional information.

22.0 LIFTING

Refer to the following SOPs prior to beginning a lifting related task: ‘Lifting and Carrying’; and “General Safety Rules”.

- Proper lifting techniques must be used when lifting any object.

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- Plan storage and staging to minimize lifting or carrying distances.
- Get assistance when moving any materials weighing greater than 50 pounds.
- Split heavy loads into smaller loads.
- Use mechanical lifting aids whenever possible.
- Have someone assist with the lift, regardless of weight, for any awkward loads.
- Make sure the path of travel is clear prior to the lift.

23.0 FIRE PREVENTION

Refer to the following SOPs: “Fire Protection”; “Housekeeping”; and “Burning and Welding”.

- Fire extinguishers shall be provided so that the travel distance from any work area to the nearest extinguisher is less than 100 feet. When 5 gallons or more of a flammable or combustible liquid is being used, an extinguisher must be within 50 feet. Extinguishers must:
 - Be maintained in a fully charged and operable condition,
 - Be of the proper type to extinguish a potential fire from the material used, stored, or encountered,
 - Be visually inspected each month, and
 - Undergo a maintenance check each year.
- The area in front of extinguishers must be kept clear.
- Post “Exit” signs over exiting doors, and post “Fire Extinguisher” signs over extinguisher locations.
- Combustible materials stored outside should be at least 10 feet from any building.
- Solvent waste and oily rags must be kept in a fire resistant, covered container until removed from the site.
- Flammable/combustible liquids must be kept in approved containers, and must be stored in an approved storage cabinet.
- Obtain a Hot Work Permit prior to any activity involving welding, cutting, grinding, or similar, activities.

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24.0 LADDERS

Refer to the following SOPs prior to using a ladder in a task: “Ladders”; “Unsafe Condition Tag Out”; and General Safety Rules”.

- Ladders must be inspected by a competent person for visible defects prior to each day’s use.
- Defective ladders must be tagged-out and removed from service.
- Ladders must be used only for the purpose for which they were designed and shall not be loaded beyond their rated capacity.
- Only one person at a time shall climb on, or work from, an individual ladder.
- User must face the ladder when climbing up and down; keep belt buckle between side rails.
- Ladders shall not be moved, shifted, or extended while in use.
- User must use both hands to climb; use rope to raise and lower equipment and materials.
- Straight and extension ladders must be placed on a firm surface, secured to prevent the base from slipping and secured at the top.
- Ladders that may be displaced by work activities or traffic must be secured or barricaded.
- Portable ladders must extend at least 3 feet above landing surface.
- Straight and extension ladders must be positioned at such an angle that the ladder base to the wall is one-fourth of the working length of the ladder.
- Stepladders are to be used in the fully opened and locked position.
- Users are not to stand on the top two steps of a stepladder; nor are users to sit on top or straddle a stepladder.
- Fixed ladders > 24 feet in height must be provided with fall protection devices.
- Fall protection should be considered when working from extension, straight, or fixed ladders greater than six feet from lower levels and both hands are needed to perform the work, or when reaching or working outside of the plane of ladder side rails.

25.0 HEAT STRESS

Refer to the “Heat Stress” SOP.

- Stay hydrated. Disposable cups and water maintained at 50 to 60oF should be available. Under severe heat conditions, drink 1 to 2 cups every 20 minutes, for a total of 1 to 2 gallons per day.

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- Never use alcohol in place of water or other nonalcoholic fluids. Decrease your intake of coffee and caffeinated soft drinks during working hours.
- Acclimate yourself by slowly increasing workloads (i.e., do not begin with extremely demanding activities).
- Use cooling devices, such as cooling vests, to aid natural body ventilation. These devices add weight, so their use should be balanced against efficiency.
- Use mobile showers or hose-down facilities to reduce body temperature and cool protective clothing.
- Conduct field activities in the early morning or evening and rotate shifts of workers, if possible.
- Avoid direct sun whenever possible, which can decrease physical efficiency and increase the probability of heat stress. Take regular breaks in a cool, shaded area.
- Provide adequate shelter/shade to protect personnel against radiant heat (sun, flames, hot metal).
- Maintain good hygiene standards by frequently changing clothing and showering.
- Observe one another for signs of heat stress. Persons who experience signs of heat syncope, heat rash, or heat cramps should consult the SS to avoid progression of heat-related illness.

SYMPTOMS AND TREATMENT OF HEAT STRESS					
	Heat Syncope	Heat Rash	Heat Cramps	Heat Exhaustion	Heat Stroke
Signs and Symptoms	Sluggishness or fainting while standing erect or immobile in heat.	Profuse tiny raised red blister-like vesicles on affected areas, along with prickling sensations during heat exposure.	Painful spasms in muscles used during work (arms, legs, or abdomen); onset during or after work hours.	Fatigue, nausea, headache, giddiness; skin clammy and moist; complexion pale, muddy, or flushed; may faint on standing; rapid thready pulse and low blood pressure; oral temperature normal or low	Red, hot, dry skin; dizziness; confusion; rapid breathing and pulse; high oral temperature.
Treatment	Remove to cooler area. Rest lying down. Increase fluid intake. Recovery usually is prompt and complete.	Use mild drying lotions and powders, and keep skin clean for drying skin and preventing infection.	Remove to cooler area. Rest lying down. Increase fluid intake.	Remove to cooler area. Rest lying down, with head in low position. Administer fluids by mouth. Seek medical attention.	Cool rapidly by soaking in cool—but not cold—water. Call ambulance, and get medical attention immediately!

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25.1 MONITORING HEAT STRESS

These procedures should be considered when the ambient air temperature exceeds 70°F, the relative humidity is high (greater than 50 percent), or when workers exhibit symptoms of heat stress. The heart rate (HR) should be measured by the radial pulse for 30 seconds, as early as possible in the resting period. The HR at the beginning of the rest period should not exceed 100 beats/minute, or 20 beats/minute above resting pulse. If the HR is higher, the next work period should be shortened by 33 percent, while the length of the rest period stays the same. If the pulse rate still exceeds 100 beats/minute at the beginning of the next rest period, the work cycle should be further shortened by 33 percent. The procedure is continued until the rate is maintained below 100 beats/minute, or 20 beats/minute above resting pulse.

25.2 MONITORING COLD STRESS

Refer to the “Cold Temperature Work” SOP.

- Be aware of the symptoms of cold-related disorders, and wear proper, layered clothing for the anticipated fieldwork. Appropriate rain gear is a must in cool weather.
- Personnel who are required to work outside must have their own cold weather apparel and are required to have this apparel with them at the project site during the cold weather months.
- Consider monitoring the work conditions and adjusting the work schedule using guidelines such as the wind-chill index.
- Wind-chill index is used to estimate the combined effect of wind and low air temperatures on exposed skin. The wind-chill index does not take into account the body part that is exposed, the level of activity, or the amount or type of clothing worn. For those reasons, it should only be used as a general guideline to warn workers of situations that could cause cold-related illnesses.
- Observe one another for initial signs of cold-related disorders. Persons who experience initial signs of immersion foot, frostbite, hypothermia should consult the PM and/or SSO and seek proper treatment to avoid progression of cold-related illness.
- Review the weather forecast—be aware of predicted weather systems along with sudden drops in temperature, increase in winds, and precipitation.

SYMPTOMS AND TREATMENT OF COLD STRESS			
	Immersion (Trench)Foot	Frostbite	Hypothermia
Signs and Symptoms	Feet discolored and painful; infection and swelling present.	Blanched, white, waxy skin, but tissue resilient; tissue cold and pale.	Shivering, apathy, sleepiness; rapid drop in body temperature; glassy stare; slow pulse; slow respiration.

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<p align="center">Treatment</p>	<p align="center">Seek medical treatment immediately.</p>	<p align="center">Remove victim to a warm place. Re-warm area quickly in warm – but not hot – water. Have victim drink warm fluids, but not coffee or alcohol. Do not break blisters. Elevate the injured area, and get medical attention.</p>	<p align="center">Remove victim to a warm place. Have victim drink warm fluids, but not coffee or alcohol. Get medical attention.</p>
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26.0 PROCEDURES FOR LOCATING BURIED UTILITIES

26.1 LOCAL UTILITY MARK-OUT SERVICE

Name: USACE

Phone: 716-879-4444

26.2 UNDERGROUND UTILITIES

TES will perform a geophysical survey to locate all underground utility lines within the work perimeter prior to the start of demolition. In addition, The USACE may be contacted for as-built drawings or other assistance to identify underground utilities. The located underground utility lines (gas, electric, water, sewer, telephone, etc.) will be shown on a drawing that will be presented to the USACE. After USACE acceptance, TES will disconnect and terminate all existing utility lines as required for building demolition. Basic utilities including electric and water will be provided to TES by USACE at existing sources as available. TES will coordinate and be responsible for all hookup and drop services associated with provided utilities. TES will prepare a description of its utility requirements and submit them to the USACE for approval. After receiving USACE’s written approval, TES will arrange for utility hookups and have an USACE person onsite whenever a representative of any utility is present to extend or modify services.

Currently, there are no sewer (sanitary or storm) connections at the site; they have been disconnected. TES will remove liquids and solids from site drains and sumps as needed to prevent overflow prior and during grouting. TES will then plug all drains and sumps and fill to grade to prevent any liquid from migrating off-site. TES will collect all water from demolition activities, test for compliance with discharge requirements, and transport the wastewater to an acceptable, off-site treatment facility.

27.0 CONFINED SPACE ENTRY

Refer to the “Confined Space Entry” SOP. Refer to additional SOPs applicable to the work and environment of the planned task.

27.1 THE FOLLOWING REQUIREMENTS MUST BE MET PRIOR TO CONFINED SPACE ENTRY:

- Confined space entrants, attendants, and entry supervisors must complete the Confined Space Entry training.

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- A Confined Space Entry Permit (CSEP), must be completed and posted near the space entrance point for review.
- Each confined space entrant and attendant must attend a pre-entry briefing conducted by the entry supervisor and SSHO.
- Each confined space entrant and attendant must verify that the entry supervisor has authorized entry and that all permit or certificate requirements have been satisfied.
- Only individuals listed on the Authorization/Accountability Log are permitted to enter the space.
- Each confined space entrant and attendant must verify that atmospheric monitoring has been conducted at the frequency specified on the permit or certificate and that monitoring results are documented and within acceptable safe levels.

27.2 THE FOLLOWING REQUIREMENTS MUST BE MET DURING CONFINED SPACE ENTRY:

- Communication must be maintained between the attendant and entrants to enable the attendant to monitor entrant status.
- Entrants must use equipment specified on the permit or certificate accordingly.
- All permit or certificate requirements must be followed.
- Entrants must evacuate the space upon orders of the attendant or entry supervisor, when an alarm is sounded, or when a prohibited condition or dangerous situation is recognized.
- Entrants and attendants must inform the entry supervisor of any hazards confronted or created in the space or any problems encountered during entry.

28.0 VEHICLE SAFETY—OPERATOR SAFETY

- Operate vehicle only when in possession of valid driver's license.
- Employees shall not operate vehicles while under the influence of drugs or alcohol. Consumption of drugs or alcoholic beverages before or during work shift/driving is prohibited, as is possession of them within vehicle.
- All vehicle occupants must use seat belts at all times. Familiarize yourself with rental vehicle features (e.g., mirror & seat adjustments).
- Adjust headrest to proper position.
- Always drive within the speed limit.
- Do not drive if you are fatigued.

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- Tie down loose items when driving a pickup, truck or van.
- Exercise caution when exiting traveled way or parking along street—avoid sudden stops, use flashers when stopping at work areas.
- Park in a manner that will allow for safe exit from vehicle, and where practicable, park vehicle so the vehicle can pull forward to leave the parking space.
- Pull off the road, and put the car in park before talking on a mobile phone.
- Maintain both a First Aid kit and Fire Extinguisher in the field vehicle at all times.
- Park vehicle in a location where it can be accessed easily in the event of an emergency. Maintain a copy of emergency contact numbers and hospital directions in the vehicle.

29.0 WORKING/WALKING ADJACENT TO VEHICLE TRAFFIC

- When possible, walk along edge of parking lots and roads, or in designated pedestrian ways.
- All personnel must wear reflective/high-visibility ANSI Class 2 safety vests in active work areas (exception: office area.)
- To protect from flying debris, eye protection should be worn while walking/working near or on highways.
- Work as far from traveled way as possible to avoid creating confusion for drivers.
- Remain aware of factors that influence traffic related hazards and required controls—sun glare, rain, wind, flash flooding, limited sight-distance, hills, curves, guardrails, width of shoulder (i.e., breakdown lane), etc.
- Always remain aware of an escape route—behind an established barrier, parked vehicle, guardrail, etc.
- Always pay attention to moving traffic—never assume drivers see you.
- Remain aware of approaching traffic for signs of erratic driver behavior.
- When workers must face away from traffic, a “buddy system” should be used, where one worker, typically a flagman, is looking towards traffic.
- A Flagman should be used when physical barriers are not available or practical. The Flagman continually watches approaching traffic for signs of erratic driver behavior and warns workers.
- All vehicles should be parked at least 40 feet away from the work zone and traffic except for those vehicles in direct support of the work activity.

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- All Field vehicles must be equipped with flashing lights.
- Obtain the proper traffic control devices to ensure that they are adequate to protect your work area. Traffic control devices should: (1) convey a clear meaning/warning, (2) be understood by the typical driver, and (3) be placed to give drivers adequate time for proper response (e.g., one orange cone beside an open excavation is not adequate traffic control)
- Flagmen should be used when (1) two-way traffic is reduced to using one common lane, (2) driver visibility is impaired or limited by project activities, (3) project vehicles enter or exit street traffic in an unexpected manner, or (4) the use of a flagger enhances established traffic warning.

30.0 VEHICLES ENTERING/EXITING SITE

- If heavy equipment must be backed into the site, a flagman/spotter must be used.
- If vehicle will impede (is slow-moving) the normal flow of traffic when pulling into/out of the site, a flagger must also be used. Once the vehicle is on the road way, a field vehicle equipped with flashing lights will follow the heavy equipment vehicle.
- It is imperative that truck operations do not pose a traffic hazard to pedestrians and normal road traffic.

31.0 UNEVEN WALKING/WORKING SURFACES

- Employees walking in ditches, swales and other drainage structures adjacent to roads or across undeveloped land must use caution to prevent slips and falls, which can result in twisted or sprained ankles, knees, and backs.
- Whenever possible, work or observe the from a flat surface and do not enter a steep ditch or side of a steep road bed.
- If steep terrain must be negotiated, sturdy shoes or boots with good traction that provide ankle support should be used.

32.0 SLIPS, TRIPS, AND FALLS

Refer to the following SOPs: “General Safety Rules”; “Houskeeping” and any additional SOPs specifically related to the planned task. Sprained and strained joints can require a long recovery period.

- Institute and maintain good housekeeping practices at all times.
- Pick up tools, remove debris and eliminate tripping hazards in the work area.
- Place extension cords, air lines, ropes, etc., under a barricade to eliminate tripping hazards.
- Walk or climb only on equipment and/or surfaces specifically designed for personnel access.

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- Watch for slippery/poor footing and other potential slipping and tripping hazards in the work area that could result in a fall or serious injury.

33.0 PRESSURE WASHING OPERATIONS

Refer to the following SOPs: “Eye and Face Protection”; “Hearing Protection”; “Personal Protective Equipment”; and “General Safety Rules”

- Wear appropriate personal protective equipment when operating a pressure washer that includes a face shield, hearing protection, gloves and other protective clothing.
- Follow manufacturer’s safety and operating instructions.
- Use extended pressure wash wands to minimize contact with overspray.
- Inspect pressure washer before use and confirm deadman switch is fully operational.
- NEVER wash your hands, boots or other items with a pressure washer.

34.0 VACUUM TRUCK OPERATIONS

Refer to the following SOPs: “Eye and Face Protection”; “Hearing Protection”; “Fire Prevention”; “Personal Protective Equipment”; and “Powered Industrial Trucks”.

- Qualified subcontractors are the only personnel authorized to operate a vacuum truck.
- Locate the observers upwind of the tank or container being emptied.
- Keep hands from vacuum hose inlet.
- Wear protective gloves and hearing protection in the immediate vicinity.

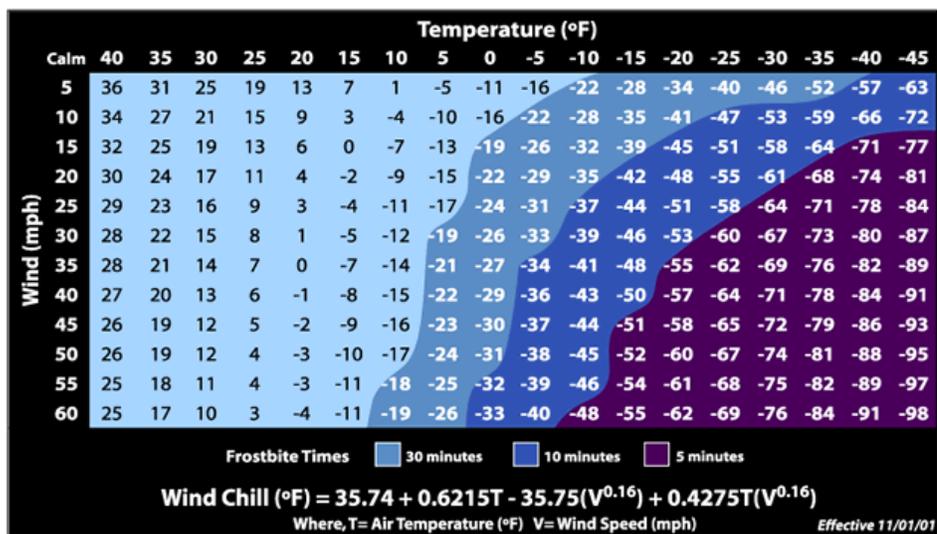
35.0 INCLEMENT WEATHER

Adverse weather conditions and work situations requiring immediate suspension of field work activities are defined in the following list:

- Any observable thunder or lightning means stop work and immediately go to shelter. Remember, if you can hear thunder you can be struck by lightning.
- Use thunderstorm watches or warnings issued by the National Weather Service as an alert to potential electric activity.
- Typically, when thunder and/or lightning are observed, a 30-minute stand-down occurs to allow the storm cell to pass the area.
- If lightning or thunder is observed within the stand down period, the 30-minute time frame is extended until electrical activity ceases.

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- The PM and/or SSHO can monitor multiple sources to track developing potential for lightning. These are the following:
 - Doppler radar reports from the Internet
 - National Weather Service radio reports
- Field crews are to immediately report any observations of lightning or thunder in their area to the PM and/or SSHO.
- Cease boating operations when sustained wind speeds of 20 miles per hour (mph) or wind gusts of 25 mph are observed.
- Cease high profile work when sustained wind speeds of 25 mph or wind gusts of 35 mph are observed and where wind chill is not a factor, i.e., greater than 60°F.
- Cease all other land-based work when sustained wind speeds of 40 mph or wind gusts of 45 mph are observed.
- Cease hoisting operations during moderate to heavy rain and/or snow fall events. Freezing rain is also cause for suspension of hoist use.
- An equivalent wind chill factor of -24°F on the wind chill factor chart (below) will trigger systematic shut down of all non-emergency work activities.
- A tornado warning for the general area or county will result in a site work stoppage. Move immediately to a proper shelter until the threat has passed and the PM informs you it is safe to return to work.



36.0 RADIOLOGICAL HAZARDS AND CONTROLS

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The soils on the NFSS FUSRAP site have the potential to contain low levels of radiological materials. Radiological Contaminants of Concern (COCs) during field investigation activities are Radium-226, Thorium-230, Uranium-234, and Uranium 238.

Radiological monitoring and surveying of the NFSS site will be performed by TES Health Physics technicians.

37.0 BIOLOGICAL HAZARDS AND CONTROLS

37.1 SNAKES

Snakes typically are found in underbrush and tall grassy areas. If you encounter a snake, stay calm and look around; there may be other snakes. Turn around and walk away on the same path you used to approach the area. If a person is bitten by a snake, wash and immobilize the injured area, keeping it lower than the heart if possible. Seek medical attention immediately. **DO NOT** apply ice, cut the wound, or apply a tourniquet. Try to identify the type of snake: note color, size, patterns, and markings.

37.2 POISON IVY AND POISON SUMAC

Poison ivy, poison oak, and poison sumac typically are found in brush or wooded areas. They are more commonly found in moist areas or along the edges of wooded areas. Become familiar with the identity of these plants. Wear protective clothing that covers exposed skin and clothes. Avoid contact with plants and the outside of protective clothing. If skin contacts a plant, wash the area with soap and water immediately. If the reaction is severe or worsens, seek medical attention.

37.3 TICKS

Ticks typically are in wooded areas, bushes, tall grass, and brush. Ticks are black, black and red, or brown and can be up to ¼-inch in size. Wear tightly woven light-colored clothing with long sleeves and pant legs tucked into boots; spray **only outside** of clothing with permethrin or permanone and spray skin with only DEET; and check yourself frequently for ticks.

If bitten by a tick, grasp it at the point of attachment and carefully remove it. After removing the tick, wash your hands and disinfect and press the bite areas. Save the removed tick. Report the bite to human resources. Look for symptoms of Lyme disease or Rocky Mountain spotted fever (RMSF). Lyme: a rash might appear that looks like a bull's-eye with a small welt in the center. RMSF: a rash of red spots under the skin 3 to 10 days after the tick bite. In both cases, chills, fever, headache, fatigue, stiff neck, and bone pain may develop. If symptoms appear, seek medical attention.

37.4 WASPS, BEES AND OTHER STINGING INSECTS

Wasps, Bee and other stinging insects may be encountered almost anywhere and may present a serious hazard, particularly to people who are allergic. Watch for and avoid nests. Keep exposed skin to a minimum.

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- Carry a “Sting Kit “if you have had allergic reactions in the past and immediately seek help if you are stung. In severe allergic reaction cases, the time from
- Inform the SS, the foreman and your work buddy if you are allergic to wasp and bee stings.
- If a stinger is present, remove it carefully with tweezers. Wash and disinfect the wound, cover it, and apply ice.
- If you have never experienced an allergic reaction to a sting, do not assume you will not have one. Watch the sting area for an allergic reaction (excessive swelling,difficult breathing, light headed, etc). Inform your supervisor and seek medical attention if a reaction develops.

37.5 BLOOD BORNE PATHOGENS

- Refer to the following SOPs: “Exposure Control Plan for Blood Borne Pathogens”; and “Personal Protective Equipment”.
- Exposure to blood borne pathogens may occur when rendering first aid to a co-worker who has been injured and bleeding and/or through giving CPR. Exposure controls and personal protective equipment (PPE) are required as specified in the SOP.
- Individuals who know they have an easily communicable disease shall discuss this condition, and the work they are expected to perform, with their medical professional. These individuals must have specific written permission from their medical professional before reporting to the site to work. Hepatitis B vaccination must be offered to each employee before the person participates in a task where exposure is a possibility.

37.6 MOSQUITOES AND WEST NILE VIRUS

Human illness from West Nile virus is rare, even in areas where the virus has been reported. On rare occasions, West Nile virus infection can result in a severe and sometimes fatal illness known as West Nile encephalitis (an inflammation of the brain). The risk of severe disease is higher for persons 50 years of age and older.

Most infections of West Nile encephalitis are mild, and symptoms include fever, headache, and body aches, occasionally with skin rash and swollen lymph glands. More severe infection may be marked by headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, paralysis, and rarely, death. The incubation period in humans (i.e., time from infection to onset of disease symptoms) for West Nile encephalitis is usually 3 to 15 days. If symptoms occur, see your doctor immediately.

You can reduce your chances of becoming ill by protecting yourself from mosquito bites. To avoid mosquito bites:

- Apply insect repellent containing DEET (N,N-diethyl-meta-toluamide) when you’re outdoors. Apply sparingly to exposed skin. DEET in high concentrations (greater than 35 percent) provides no additional protection.

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- Spray clothing with repellents containing permethrin/DEET since mosquitoes may bite through clothing.
- Read and follow the product directions whenever you use insect repellent, particularly if they contain permethrin.
- Wear long-sleeved clothes and long pants treated with repellent and stay indoors during peak mosquito feeding hours (dusk until dawn) to further reduce your risk.

37.7 BIRD/ANIMAL WASTE

There are many diseases associated with birds and other animals. While their waste materials are a source of strong and unpleasant odors, animal remains and their waste products (feces, urine, etc) are known as habitats for disease-breeding parasites. Hanta virus, Newcastle disease, ornithosis, are recognized as human health concerns. Serious illness including fatalities, have been associated with exposures to these contaminants. Therefore, precautions are necessary when working in areas where these materials may be present.

Appropriate hand protection as well as thorough washing immediately upon leaving the affected areas is necessary. Coveralls and booties (disposable) may also be used to ensure any contamination is not spread passed the control zones. It is important that dust from these materials is maintained to as low as reasonably achievable, as they represent an inhalation hazard when activities in the area can cause small particles from the source to become airborne. Based on an assessment of the quantity of animal waste material, appropriate respiratory protection may be required.

38.0 CONTAMINANTS OF CONCERN

38.1 Refer to the following SOPs: “Personal Protective Equipment”; “Hazard Communication Program”; “Materials Handling Program”; and “General Safety Rules”.

38.2 The surface/subsurface soils on the NFSS FUSRAP site have the potential to contain levels of Lead, Thorium-230, and Uranium-234 and Uranium-238 above regulatory concern and pose an unacceptable risk to human health. Workers who have the potential to be in direct contact with the surface/subsurface soils will be provided PPE in accordance with the referenced SOPs.

38.3 POTENTIAL ROUTES OF EXPOSURE

Refer to the following SOPs: ‘Personal Protective Equipment’; “Respiratory Protection”; “Materials Handling”; and “General Safety Rules”.

The following are the primary routes of exposure:

- **Dermal:** Contact with contaminated media. This route of exposure is minimized through proper use of PPE, as specified in the SOP.

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- **Inhalation:** Vapors and contaminated particulates. This route of exposure is minimized through proper respiratory protection and monitoring.
- **Other:** Inadvertent ingestion of contaminated media. This route should not present a concern if good hygiene practices are followed (e.g., wash hands and face before drinking or smoking)

39.0 CERTIFICATIONS (CRANE, MACHINE OPERATORS)

CERTIFICATE OF COMPLIANCE	
<p>This certificate shall be signed by an official of the company that provides cranes for any application under this contract. Post a completed certificate on each crane utilized during this contract</p>	
<p>CONTRACTING OFFICER'S POINT OF CONTACT [REDACTED]</p>	<p>PHONE [REDACTED]</p>
<p>PRIME CONTRACTOR/PHONE [REDACTED]</p>	<p>CONTRACT NUMBER W912P4-07-0003</p>
<p>CRANE SUPPLIER/PHONE DEMCO Inc 238 Lein Road West Seneca, NY 14224</p>	<p>CRANE(S) NUMBER 14894</p>
<p>CRANE MANUFACTURER/TYPE/CAPACITY Terex-80 Ton RT</p>	
<p>CRANE OPERATOR'S NAME(S) [REDACTED]</p>	
<p>I certify that</p> <ol style="list-style-type: none"> 1. The above noted crane and associated rigging gear conform to applicable USACE & OSHA regulations and applicable ASME B30 standards. The following USACE, OSHA regulations and ASME standards apply: <u>EM 385-1-1, 29 CFR 1910.180 & B30.8-2004</u> 2. The operators noted above have been trained and are qualified for the operation of the above noted crane(s). 3. The operators noted above have been trained not to bypass safety devices during lifting operations. 	
<p>COMPANY OFFICIAL SIGNATURE [REDACTED]</p>	<p>DATE 07/21/10</p>
<p>COMPANY OFFICIAL NAME/TITLE [REDACTED] Corporate Safety Director</p>	
<p>POST ON CRANE (IN CAB OR VEHICLE)</p>	

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ATTACHMENT 9: HAZARD COMMUNICATION PROGRAM

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HAZARD COMMUNICATION PROGRAM

1.0 HAZARD COMMUNICATION PROGRAM

Refer to the following SOPs “Hazard Communication Program”; “Materials Handling Program”; “General Safety Rules” Personal Protective Equipment”; “Respiratory Protection”.

1.1 THE SSHO WILL ENSURE THE FOLLOWING ARE PERFORMED:

- Complete an inventory of chemicals brought on site by TES using Attachment A in the Hazard Communications SOP.
- Confirm that an inventory of chemicals, and their MSDS, brought on site by subcontractors is available.
- TES shall obtain material safety data sheets (MSDSs) from the client, contractors, and subcontractors for chemicals to which TES employees and subcontractors potentially are exposed.
- Before or as the chemicals arrive on site, obtain an MSDS for each hazardous chemical and retain a copy on site. Attachment B
- Label chemical containers with the identity of the chemical and with hazard warnings, and store properly.
- Give the employee necessary chemical-specific HAZCOM training. (See Attachment C.)
- Store all materials properly, giving consideration to compatibility, quantity limits, secondary containment, fire prevention, and environmental conditions.
- MSDSs will be located in the PM trailers office or the ES&H Manager office in a Highly visible location clearly mark MSDS for rapid retrieval

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HAZARD COMMUNICATION PROGRAM

ATTACHMENT B

Applicable Material Safety Data Sheets

MSDS file will be kept on site in TES, LLC's field offices and /or subcontractor and made available for review by contacting the TES, LLC SSO

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ATTACHMENT C

Chemical- Specific Training Form

Location: NFSS, NY	Project #: W912P4-07-D-0003-0002
Trainer:	

Training Participants:

Name	Signature	Name	Signature

Regulated Products/Tasks covered by This Training:

1.2 TRAINING SHALL INCLUDE THE FOLLOWING:

- The trainer shall use the product MSDS to provide the following information concerning each of the products listed above.
- Physical and health hazards
- Control measures that can be used to provide protection (including appropriate work practices, emergency procedures and personal protective equipment to be used)
- Methods and observations used to detect the presence or release of the regulated product in the Regulated product in the workplace (including periodic monitoring, continuous

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monitoring devices, visual appearance or odor of regulated product when being released, etc.)

- Training participants shall have the opportunity to ask questions concerning these products and, upon completion of this training, will understand the product hazards and appropriate control measures available for their protection.
- Copies of MSDSs, chemical inventories, and TES, LLC written hazard communication program shall be made available for employee review in the facility/project hazard communication file.
- TES, LLC subcontractor will be required to comply with the requirements of the TES, LLC Hazard Communication Program.

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ATTACHMENT 10: FIRE PREVENTION PLAN

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Refer to the following SOPs: “Fire Protection”; “Housekeeping”; and “Burning and Welding”.

- Fire extinguishers will be provided so that the travel distance from any work area to the nearest extinguisher is less than 100 feet. When 5 gallons or more of a flammable or combustible liquid is being used, an extinguisher must be within 50 feet. Extinguishers must:
 - ✓ Be maintained in a fully charged and operable condition,
 - ✓ Be of the proper type to extinguish a potential fire form the material used, stored, or encountered,
 - ✓ Be visually inspected each month, and
 - ✓ Undergo a maintenance check each year.
- The area in front of extinguishers must be kept clear.
- SSHO will be responsible for ensuring that the fire extinguishers and systems are maintained.
- SSHO will identify major work place fire hazards, potential ignition sources, and types of fire suppression/extinguishers appropriate to control a fire.
- All employees will be responsible for controlling fuel source hazards and complying with housekeeping procedure including removal of waste material in their work area.
- Post “Exit” signs over exiting doors, and post “Fire Extinguisher” signs over extinguisher locations.
- Combustible materials stored outside should be at least 10 feet from any building.
- Solvent waste and oily rags must be kept in a fire resistant, covered container until removed from the site.
- Flammable/combustible liquids must be kept in approved containers, and must be stored in an approved storage cabinet.
- Obtain a Hot Work Permit prior to any activity involving welding, cutting, grinding, or similar, activities.
- This plan and related SOPs will be used to brief employees and emergency first responders on the fire hazard materials/processes exposed and emergency procedures.

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ATTACHMENT 11: HAZARDOUS ENERGY CONTROL PLAN

(LOCKOUT/TAG-OUT) Refer to the following SOPs: “Lockout/Tagout”; and “Unsafe Condition Tagout”. Lockout/Tagout refers to all electrical and/or mechanically energized equipment.

- 1.0 According to Section 3.5.4 of the SOW: The Contractor shall disconnect and properly terminate all existing utility hookups as required for building demolition (electric, gas, water, sewer, etc.) according to the appropriate codes and regulations, if applicable.
- 2.0 Ensure the equipment cannot “start” while work is occurring on that equipment by disconnecting battery terminals, unplugging the device from power and/or other methods recommended by the manufacturer.
- 3.0 Never work on equipment when the unexpected operation could result in injury, unless lockout/tagout procedures are implemented.

Standard lockout/tagout procedures include the following six steps:

- Notify all personnel in the affected area of the lockout/tagout,
- Shut down the equipment using normal operating controls,
- Isolate all energy sources,
- Apply individual lock and tag to each energy isolating device,
- Relieve or restrain all potentially hazardous stored or residual energy (e.g., hydraulic pressure, residual electrical charges in capacitors, etc.).
- Verify through the use of a measurement device (if possible) that isolation and de-energizing of the equipment has been accomplished. Once verified that the equipment is at the zero energy state, work may begin.

NEVER remove another person’s lock or tag. If the work extends over a shift change, and under the direct supervision of the PM, the next crew shall replace the previous crews’ locks with their own, one worker at a time. Work shall not resume until the PM and/or SSHO is confident the requirements of the SOPs have been followed and it is safe to return to work.

All safe guards must be put back in place, all affected personnel notified that lockout/tagout has been removed, and controls positioned in the safe mode prior to lockout/tagout removal.

Training will be provided to ensure an understanding of the hazardous energy control procedures by TES, Inc. and subcontractor employees and to ensure employees possess the knowledge and skills required for the safe application, usage and removal of energy control. Training will

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include, recognition of hazardous energy source, type of magnitude of energy available in the work place and the methods and means for energy isolation and control. Retraining will be required as specified.

Periodic inspections (daily, weekly) will be conducted and documented to ensure all requirements of the hazardous energy control procedures are being followed.

Use proper lockout/tagout devices capable of withstanding exposure to the local environment.

LOCKOUT/TAGOUT CHECKLIST

Step 1 - Achieving Zero Energy

- Authorized employees received training prior to conducting lockout./tagout activities.
- Identified and located all sources of energy that could affect individuals involved.
- Notified all affected personnel that equipment is going to be de-energized and accessed.
- Disconnected the main sources of power by breaking the primary power circuit, valve, pipe, etc. Locking out a low voltage control circuit is not considered breaking a main power source.
- Disconnected each separate power source of multiple power systems, e.g., air over hydraulic, electric over hydraulic, etc.
- Released all residual energy remaining behind the power source, e.g., hydraulic or air pressure, etc.
- Secured all power sources in the de-energized position with a lockout device. Used multiple lock devices when more than one lock is required. Ensure that each person who is protected by the lockout:
 1. Places a signed lock and tag on source locations(s).
 2. Keeps the key to his/her own lock.
 3. Removed own lock (only exception: person not on site and person is contacted).
 4. Worked **ONLY** on protected sources.
 5. Removes lock at completion for work shift or transfer.
- Blocked or blanked any machinery, device or piping system that can move on its own or deliver energy without the power source.

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- Tested equipment, prior to working on it, to ensure that all sources of energy have been isolated and that it is "safe"

Step 2 - Preparing to Re-energize

- Once the task has been completed:
- Picked up tools. Safety chains replaced, guards, guard rails, warning signs, etc. Notified affected personnel that the lockout device is going to be removed.
- Removed locks and tags.
- Once all lockout devices have been removed, the equipment or process may be restarted.

4.0 Temporary operation of locked out source.

- a. Make sure everyone is clear of the system.
- b. Make sure tools are clear.
- c. Remove lock(s)
- d. Energize the system and conduct check.
- e. Immediately de-energize the system and replace locks.

5.0 Unauthorized removal of lock and tag is prohibited. Use the following procedure to Supervisor or Qualified Person to remove lock/tag when employee is not available.

- a. Verify authorized employee is not on site and available to remove own tag.
- b. Check that employees are not exposed to hazards.
- c. Verify equipment is safe to operate, tools have been removed and guards have been replaced.
- d. Remain with affected equipment so that no one returns while equipment or process is being restarted.
- e. Remove lock/tag and energize equipment.
- f. Require that affected employee knows the lockout device(s) has been removed before he/she resumes work.

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ATTACHMENT 12: CONTINGENCY PLAN FOR SEVERE/INCLEMENT WEATHER

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Adverse weather conditions and work situations requiring immediate suspension of field work activities are defined in the following list:

- Any observable thunder or lightning means stop work and immediately go to shelter. Remember, if you can hear thunder you can be struck by lightning.
- Use thunderstorm watches or warnings issued by the National Weather Service as an alert to potential electric activity.
- Typically, when thunder and/or lightning are observed, a 30-minute stand-down occurs to allow the storm cell to pass the area.
- If lightning or thunder is observed within the stand down period, the 30-minute time frame is extended until electrical activity ceases.
- The SSHO and or PM can monitor multiple sources to track developing potential for lightning. These are the following:
 - Doppler radar reports from the Internet
 - National Weather Service radio reports
- Field crews are to immediately report any observations of lightning or thunder in their area to the PM and/or SSHO.
- Cease high profile (critical) work when sustained wind speeds of 25 mph or wind gusts of 35 mph are observed and where wind chill is not a factor, i.e., greater than 60°F.
- Cease all other land-based work when sustained wind speeds of 40 mph or wind gusts of 45 mph are observed.
- An equivalent wind chill factor of -24°F on the wind chill factor chart (below) will trigger systematic shut down of all non-emergency work activities.
- A tornado warning for the general area or county will result in a site work stoppage. Move immediately to a proper shelter until the threat has passed and the PM and/or SSHO informs you it is safe to return to work.



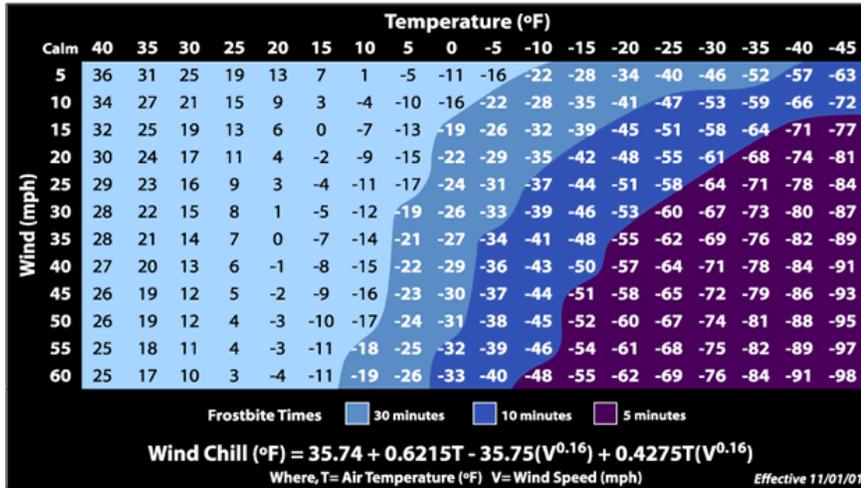
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Wind Chill Chart



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ATTACHMENT 13: DEMOLITION PLAN

The Demolition Plan will be submitted by TES as a stand-alone document.

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ATTACHMENT 14: EXCAVATION AND TRENCHING PLAN

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1.0 EXCAVATION CONTROLS

This Plan is designed to meet the requirements for work at the NFSS, demolition project for Building 401, Lewiston, NY. Refer to the following SOPs prior to beginning excavation tasks: “Excavation”; and “Heavy Equipment”.

- Do not enter the excavations unless necessary, and only after the competent person has completed the required inspection and has authorized entry.
- Follow all excavation entry requirements established by the competent person.
- Do not enter excavations where protective systems are damaged or unstable.
- Do not enter excavations where objects or structures above the work location may become unstable and fall into the excavation.
- Do not enter excavations with the potential for a hazardous atmosphere until the air has been tested and found to be at safe levels.
- Do not enter excavations with accumulated water unless precautions have been taken to prevent excavation cave-in.

1.1 EXCAVATION APPROACH

TES will construct trenches to allow for safe access/egress in order for personnel to perform scans and collect soil samples. The competent person requirement for excavating is addressed in the NFSS Site health and Safety Plan. Trench walls will be sloped and/or benched in accordance with EM 385-1-1, Section 25, OSHA requirement 29 CFR 1926.650 through 29 CFR 1926.653 and other applicable local, state, and federal regulations and requirements to maintain stable side walls for field personnel to safely enter the trench to perform radiological scans, record visual observations and collect samples, if necessary.

TES will maintain stable sides and slopes and/or benches of the field investigative trenches in safe conditions until excavated soils are returned to the field investigative trench or the trench is backfilled with USACE accepted backfill.

The slopes and configurations of the sloping benching systems will be selected and constructed by TES in accordance with 1926.652 (b)(1) or acceptable alternative. Slopes will be excavated to form configurations that are in accordance with the slopes shown for type C soil and Appendix B to subpart P.

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ATTACHMENT 15: ACTIVITY HAZARD ANALYSES

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 US Army Corps of Engineers	<p align="center">ACTIVITY HAZARD ANALYSIS</p>		<p align="center">Date Prepared</p>	<p align="center">Date Revised</p>	<p align="center">Revision No.</p>
			<p align="center">3/24/2010</p>		
<p align="center">Project Niagara Falls Storage Site</p>	<p align="center">Analysis prepared by: [REDACTED]</p>	<p align="center">Reviewed by:</p>	<p align="center">Accepted by:</p>		
<p align="center">Activity</p>	<p align="center">Hazard</p>	<p align="center">Recommended Controls</p>			
<p>Mobilization</p>	<p>Heavy Equipment: Strike bys</p>	<p>All persons need to yield to heavy equipment. Make eye contact with the operator. Stay off of equipment paths. Equipment Operators need back-up alarms. Spotters shall be used in high trafficked and tight areas.</p>			
	<p>Heavy Equipment: Noise exposure</p>	<p>Hearing protection (ear plugs) shall be available to all project employees. IH assessment of high noise areas/equipment shall be conducted to determine controls</p>			
	<p>Installation of Fence: cuts/Lacerations, eye injuries (loose wire poking eyes)</p>	<p>Personnel shall wear leather gloves and safety glasses</p>			
	<p>Uneven Surfaces (Slip, Trip & Falls)</p>	<p>Project personnel shall perform a "2-minute drill" prior to commencement of work activities to identify hazards such as uneven surfaces, obstructions in walkways, etc.</p>			
	<p>Potential electrical hazards from contact with overhead lines</p>	<p>Safe distances from overhead power lines shall be shall maintained, based on requirements established in EM-385-1-1, Table 11-1.</p>			
	<p>Strike-bys and overhead hazards from crane operations</p>	<p>Persons shall not work or position themselves under a suspended load.</p>			
		<p>Crane operators shall be certified and work within the requirements specified in EM 385-1-1, Chapter 16</p>			

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				"Cranes and Hoisting Equipment."	
Equipment to be used.		Inspection Requirements		Training Requirements	
Standard PPE: hard hat, safety glasses, steel-toe (or equivalent) shoes, leather gloves.		Heavy equipment needs to be inspected beginning of each shift. 2-minute drill for employees to notice potential hazards, changed conditions, etc.		Pre-job briefs to present hazard and controls.	
 US Army Corps of Engineers	ACTIVITY HAZARD ANALYSIS			Date Prepared	Date Revised
				3/24/2010	
Project Niagara Falls Storage Site	Analysis prepared by: [REDACTED]	Reviewed by:		Accepted by:	
Activity	Hazard		Recommended Controls		
Walk-down of facility (hazard identification)	Poor visibility due to no electricity in the facility resulting in potential Slip, trip & falls.		Personnel shall carry flashlights and/or lighting (via generator) will be installed throughout the building.		
	Low-lying equipment/materials causing head bumps/injuries		Hard hats will be required		
	Bird/animal waste disease		Personnel shall be protected with disposable coveralls with disposable booties, nitrile gloves and N-95 disposable masks.		
Survey on roof for ACM	Fall hazards		Personnel shall work per TES fall protection program. (SOP 12)		
	Bird/animal waste disease		Personnel shall be protected with disposable coveralls with disposable booties, nitrile gloves and N-95 disposable masks.		

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Equipment to be used.	Inspection Requirements	Training Requirements
PPE: disposable coveralls with disposable booties, nitrile gloves and N-95 disposable masks.	Inspect PPE prior to donning per SOP 27. Inspect roof to determine appropriate Fall protection process (SOP 12)	PPE training Respiratory protection training (SOP 28) Pre-job brief regarding animal waste health affects Qualified Asbestos Inspectors

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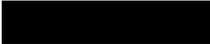
 <p>US Army Corps of Engineers</p>	<p align="center">ACTIVITY HAZARD ANALYSIS</p>	<p align="center">Date Prepared</p>	<p align="center">Date Revised</p>	<p align="center">Revision No.</p>
		<p align="center">3/24/2010</p>		
<p align="center">Project Niagara Falls Storage Site</p>	<p align="center">Analysis prepared by: [REDACTED]</p>	<p align="center">Reviewed by:</p>	<p align="center">Accepted by:</p>	

Activity	Hazard	Recommended Controls
Remove liquids/solids in drains/sumps	Chemical exposure: skin contact	Personnel shall be protected with disposable coveralls with disposable booties, nitrile gloves
	Chemical exposure: inhalation	Full Face or ½ Face APR with P-100/OV cartridges.
Remove/abate mercury switches, PCB-containing capacitors	Lacerations	Leather gloves
	Chemical exposure: skin contact	Gloves (nitrile or leather)
	Chemical exposure: inhalation	Full Face or ½ Face APR with Hg-vapor/P-100/OV cartridges (respiratory protection may be downgraded per IH assessment).
	Radiological contamination	Personnel shall be protected with disposable coveralls with disposable booties, nitrile gloves
Equipment to be used.	Inspection Requirements	Training Requirements
PPE: disposable coveralls with disposable booties, nitrile gloves and air-purifying respirators.	Inspect PPE Perform 2-minute drill	PPE training Respiratory Protection Training (SOP 28) TES Radiation Control Program (rad worker)

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<p align="center">Project Niagara Falls Storage Site</p>	<p align="center">Analysis prepared by: [REDACTED]</p>	<p align="center">Reviewed by:</p>	<p align="center">Accepted by:</p>	
<p align="center">Activity</p>	<p align="center">Hazard</p>	<p align="center">Recommended Controls</p>		
<p>Asbestos Abatement on roof</p>	<p>Fall protection</p>	<p>Personnel shall work per TES fall protection program. (SOP 12)</p>		
	<p>Asbestos inhalation exposure and skin contact.</p>	<p>Full Face or ½ Face APR with P-100 cartridges. Personnel shall be protected with disposable coveralls with disposable booties, nitrile gloves</p>		
		<p>Work shall be performed by “qualified” asbestos workers (received asbestos abatement training)</p>		
	<p>Strike-bys and overhead hazards from crane operations</p>	<p>Persons shall not work or position themselves under a suspended load.</p>		
		<p>Crane operators shall be certified and work within the requirements specified in EM 385-1-1, Chapter 16 “Cranes and Hoisting Equipment.”</p>		
<p align="center">Equipment to be used.</p>	<p align="center">Inspection Requirements</p>	<p align="center">Training Requirements</p>		
<p>PPE: disposable coveralls with disposable booties, nitrile gloves and air-purifying respirators.</p>	<p>Inspect PPE Perform 2-minute drill</p>	<p>PPE training Respiratory Protection Training (SOP 28)</p>		

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<p align="center">Activity</p>	<p align="center">Hazard</p>	<p align="center">Recommended Controls</p>			
<p>Asbestos Abatement on roof</p>	<p>Fall protection</p>	<p>Personnel shall work per TES fall protection program. (SOP 12)</p>			
	<p>Asbestos inhalation exposure and skin contact.</p>	<p>Full Face or ½ Face APR with P-100 cartridges. Personnel shall be protected with disposable coveralls with disposable booties, nitrile gloves</p>			
<p align="center">Equipment to be used.</p>	<p align="center">Inspection Requirements</p>	<p align="center">Training Requirements</p>			
<p>PPE: disposable coveralls with disposable booties, nitrile gloves and air-purifying respirators.</p>	<p>Inspect PPE Perform 2-minute drill</p>	<p>PPE training Respiratory Protection Training (SOP 28) Qualified Asbestos Abatement Workers</p>			

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 <p>US Army Corps of Engineers</p>	<p align="center">ACTIVITY HAZARD ANALYSIS</p>		<p align="center">Date Prepared</p>	<p align="center">Date Revised</p>	<p align="center">Revision No.</p>
			<p align="center">3/24/2010</p>		
<p align="center">Project Niagara Falls Storage Site</p>	<p align="center">Analysis prepared by: </p>	<p align="center">Reviewed by:</p>	<p align="center">Accepted by:</p>		
<p align="center">Activity</p>	<p align="center">Hazard</p>	<p align="center">Recommended Controls</p>			
<p>Demolition</p>	<p>Flying debris</p>	<p>Personnel shall be stationed away from demolition, outside of established boundaries. Equipment operator shall be inside enclosed cab (or wearing hard hat, face shield w/safety glasses)</p>			
	<p>Noise</p>	<p>Ear plugs shall be available worn per IH assessment</p>			
	<p>Material falling/crushing hazards</p>	<p>Personnel shall be stationed away from demolition, outside of established boundaries.</p>			
	<p>Airborne exposure (ACM, particulate)</p>	<p>Equipment operator may wear N-95 particulate mask per IH assessment Area shall be monitored for airborne particulate to ensure airborne concentrations remain within OSHA exposures limits per 29 CFR 1926.55 Wetting method shall be used (based on IH assessment) to control airborne particulate concentrations.</p>			
	<p>Strike-bys and overhead hazards from crane operations</p>	<p>Persons shall not work or position themselves under a suspended load.</p>			
		<p>Crane operators shall be certified and work within the requirements specified in EM 385-1-1, Chapter 16 "Cranes and Hoisting Equipment."</p>			

	<p align="center">Title Accident Prevention Plan / Site Safety and Health Plan</p>	<p align="center">Document No. NFSS-0011</p>	<p align="center">Revision REV.0</p>
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Activity	Hazard	Recommended Controls
Equipment to be used.	Inspection Requirements	Training Requirements
Heavy equipment/front-end loader	Daily inspection of heavy equipment	Pre-job briefing

 <p>TES <small>TPMC - Energy Solutions Environmental Services, LLC</small></p>	<p align="center">Title Accident Prevention Plan / Site Safety and Health Plan</p>	<p align="center">Document No. NFSS-0011</p>	<p align="center">Revision REV.0</p>
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 <p>US Army Corps of Engineers</p>	<p align="center">ACTIVITY HAZARD ANALYSIS</p>		<p align="center">Date Prepared</p>	<p align="center">Date Revised</p>	<p align="center">Revision No.</p>
<p align="center">Project Niagara Falls Storage Site</p>		<p align="center">Analysis prepared by: </p>	<p align="center">Reviewed by:</p>	<p align="center">Accepted by:</p>	
<p align="center">Activity</p>		<p align="center">Hazard</p>	<p align="center">Recommended Controls</p>		
<p>Waste removal/transportation</p>		<p>Strike-bys from heavy equipment/trucks</p>	<p>All persons need to yield to heavy equipment. Make eye contact with the operator. Stay off of equipment paths. Equipment Operators need back-up alarms. Spotters shall be used in high trafficked and tight areas.</p>		
		<p>Hand crushing/pinch-points</p>	<p>Wear leather gloves Perform 2-minute drill to identify physical hazards/changed conditions.</p>		
		<p>Noise exposure</p>	<p>Hearing protection (ear plugs) shall be available to all project employees. IH assessment of high noise areas/equipment shall be conducted to determine controls</p>		
		<p>Chemical exposure: inhalation/skin absorption</p>	<p>Respiratory protection per IH assessment Personnel shall be protected per IH assessment. Requirements may include disposable coveralls with disposable booties, nitrile gloves</p>		
		<p>Radiological exposures</p>	<p>Personnel shall be protected per RadCon assessment which may require disposable coveralls with disposable booties, nitrile gloves</p>		

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Equipment to be used.	Inspection Requirements	Training Requirements
PPE (hard hats, safety glasses, steel-toe (or equivalent) shoes)	Inspect PPE 2-minute drill of work area	PPE-training Radiological worker training

 <p>TES TPMC - Energy Solutions Environmental Services, LLC</p>	<p align="center">Title Accident Prevention Plan / Site Safety and Health Plan</p>	<p align="center">Document No. NFSS-0011</p>	<p align="center">Revision REV.0</p>
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 <p>US Army Corps of Engineers</p>	<p align="center">ACTIVITY HAZARD ANALYSIS</p>		<p align="center">Date Prepared</p>	<p align="center">Date Revised</p>	<p align="center">Revision No.</p>
			<p align="center">Project</p>	<p align="center">Analysis prepared by:</p>	<p align="center">Reviewed by:</p>
<p align="center">Activity</p>		<p align="center">Hazard</p>		<p align="center">Recommended Controls</p>	
<p>Demobilization</p>		<p>Heavy Equipment: Strike bys</p>		<p>All persons need to yield to heavy equipment. Make eye contact with the operator. Stay off of equipment paths. Equipment Operators need back-up alarms. Spotters shall be used in high trafficked and tight areas.</p>	
		<p>Heavy Equipment: Noise exposure</p>		<p>Hearing protection (ear plugs) shall be available to all project employees. IH assessment of high noise areas/equipment shall be conducted to determine controls</p>	
		<p>Removal of Fence</p>		<p>Personnel shall wear leather gloves and safety glasses</p>	
		<p>Uneven Surfaces (Slip, Trip & Falls)</p>		<p>Project personnel shall perform a "2-minute drill" prior to commencement of work activities to identify hazards such as uneven surfaces, obstructions in walkways, etc.</p>	
<p align="center">Equipment to be used.</p>		<p align="center">Inspection Requirements</p>		<p align="center">Training Requirements</p>	
<p>Standard PPE: hard hat, safety glasses, steel-toe (or equivalent) shoes, leather gloves.</p>		<p>Heavy equipment needs to be inspected beginning of each shift. 2-minute drill for employees to notice potential hazards, changed conditions, etc.</p>		<p>Pre-job briefs to present hazard and controls.</p>	

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ATTACHMENT 16: ACCIDENT PREVENTION PLAN CHECKLIST

CONTRACTOR ACCIDENT PREVENTION PLAN (APP) CHECKLIST (EM 385-1-1, Appendix - A, dated; 15 Sept. 08)

Minimum Basic Outline for Accident Prevention Plan

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NOTE: 1. Contractor will complete Checklist and Submit with their APP.

NOTE: 2. Contractor APP WILL be submitted in format below.

NOTE: 3. Safety Office will review Contractor APP and return to PM / COR.

NOTE: 4. Contractor APP's ARE NOT APPROVED by the USACE, only found as Acceptable or Non-Acceptable.

Safety Office Review Status: ACCEPTED BY/DATE: _____ NOT ACCEPTED BY/DATE: _____

Contractor Name: TPMC EnergySolutions Environmental Services, LLC Contract No: W912P4-07-D-0003-0002

Project Title & Location: Niagara Falls Storage Site, Building 401 Demolition	Included ?			Location:
	Yes	No	N/A	Page(s)
ALL CHECKLIST ITEMS WILL BE COMPLETED!				
1. SIGNATURE SHEET. Title, signature, and phone number of the following:	Y			Sig Sheet
a. Plan Preparer (qualified person, Competent Person such as corporate safety staff person, QC).	Y			i
b. Plan Approval by company/corporate officers authorized to obligate the company (e.g. owner company president, regional vice president etc.)	Y			i
c. Plan Concurrence (e.g. Chief of Operations, Corporate Chief of Safety, Corporate Industrial Hygienist, project manager or superintendent, project safety professional, project QC). Provide concurrence of other applicable corporate and project personnel (Contractor).	Y			i
2. BACKGROUND INFORMATION. List the following:				
a. Contractor;	Y			1
b. Contract number;	Y			1

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Contractor Name: TPMC EnergySolutions Environmental Services, LLC Contract No: W912P4-07-D-0003-0002

Project Title & Location: Niagara Falls Storage Site, Building 401 Demolition	Included ?			Location:
	Yes	No	N/A	Page(s)
c. Project name;	Y			1
d. Brief project description, description of work to be performed, and location; phases of work anticipated (these will require an AHA).	Y			1
3. STATEMENT OF SAFETY AND HEALTH POLICY. Provide a copy of your current corporate/company Safety & Health Policy Statement, detailing commitment to providing a safe and healthful workplace for all employees. The Contractor's written safety program goals, objectives, and accident experience goals for this contract should be provided.	Y			5
4. RESPONSIBILITIES AND LINES OF AUTHORITIES. Provide the following:				
a. A statement of the employer's ultimate responsibility for the implementation of his SOH program;	Y			7
b. Identification and accountability of personnel responsible for safety at both corporate and project level. Contracts specifically requiring safety or industrial hygiene personnel shall include a copy of their resumes. Qualifications shall include the OSHA 30-hour course or equivalent course areas as listed here:	Y			7
(1) OSH Act/General Duty Clause;	Y			Att 1
(2) 29 CFR 1904, Recordkeeping;	Y			Att 1
(3) Subpart C: General Safety and Health Provisions, Competent Person	Y			Att 1

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Contractor Name: TPMC EnergySolutions Environmental Services, LLC Contract No: W912P4-07-D-0003-0002

Project Title & Location: Niagara Falls Storage Site, Building 401 Demolition	Included ?			Location:
	Yes	No	N/A	Page(s)
(4) Subpart D: Occupational Health and Environmental Controls, Citations and Safety Programs;	Y			Att 1
(5) Subpart E: PPE, types and requirements for use;	Y			Att 1
(6) Subpart F: understanding fire protection in the workplace;	Y			Att 1
(7) Subpart K: Electrical;	Y			Att 1
(8)Subpart M: Fall Protection;	Y			Att 1
(9) Rigging, welding and cutting, scaffolding, excavations, concrete and masonry, demolition; health hazards in construction, materials handling, storage and disposal, hand and power tools, motor vehicles, mechanized equipment, marine operations, steel erection, stairways and ladders, confined spaces or any others that are applicable to the work being performed.	Y			Att 1
c. The names of Competent and/or Qualified Person(s) and proof of competency/qualification to meet specific OSHA Competent/Qualified Person(s) requirements must be attached. The District SOHO will review the qualifications for acceptance;	Y			Att 1
d. Requirements that no work shall be performed unless a designated competent person is present on the job site;	Y			11
e. Requirements for pre-task safety and health analysis;	Y			11
f. Lines of authority;	Y			11
g. Policies and procedures regarding noncompliance with safety requirements (to include disciplinary actions for violation of safety requirements) should be identified;	Y			11

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Contractor Name: TPMC EnergySolutions Environmental Services, LLC Contract No: W912P4-07-D-0003-0002

Project Title & Location: Niagara Falls Storage Site, Building 401 Demolition	Included ?			Location:
	Yes	No	N/A	Page(s)
h. Provide written company procedures for holding managers and supervisors accountable for safety.	Y			13
5. SUBCONTRACTORS AND SUPPLIERS. If applicable, provide procedures for coordinating SOH activities with other employers on the job site:				
a. Identification of subcontractors and suppliers (if known);	Y			16
b. Safety responsibilities of subcontractors and suppliers.	Y			16
6. TRAINING.				
a. Requirements for new hire SOH orientation training at the time of initial hire of each new employee.	Y			17
b. Requirements for mandatory training and certifications that are applicable to this project (e.g., explosive actuated tools, confined space entry, crane operator, diver, vehicle operator, HAZWOPER training and certification, PPE) and any requirements for periodic retraining/recertification.	Y			18
c. Procedures for periodic safety and health training for supervisors and employees.	Y			18
d. Requirements for emergency response training. > See 9.b. below for a list of requirements that may require emergency response training.	Y			18
7. SAFETY AND HEALTH INSPECTIONS.				

	<p style="text-align: center;">Title Accident Prevention Plan / Site Safety and Health Plan</p>	<p style="text-align: center;">Document No. NFSS-0011</p>	<p style="text-align: center;">Revision REV.0</p>
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Project Title & Location: Niagara Falls Storage Site, Building 401 Demolition	Included ?			Location:
	Yes	No	N/A	Page(s)
a. Specific assignment of responsibilities for a minimum daily job site safety and health inspection during periods of work activity: Who will conduct (e.g., SSHO, PM, safety professional, QC, supervisors, employees – depends on level of technical proficiency needed to perform said inspections), proof of inspector's training/qualifications, when inspections will be conducted, procedures for documentation, deficiency tracking system, and follow-up procedures;	Y			19
b. Any external inspections/certifications that may be required (e.g., USCG).			N/A	
8. ACCIDENT REPORTING. The Contractor shall identify person(s) responsible to provide the following:				
a. Exposure data (man-hours worked);	Y			19
b. Accident investigations, reports, and logs: Report all accidents as soon as possible but not more than 24 hours afterwards to the Contracting Officer/Representative (CO/COR). The contractor shall thoroughly investigate the accident and submit the findings of the investigation along with appropriate corrective actions to the CO/COR in the prescribed format as soon as possible but no later than five (5) working days following the accident. Implement corrective actions as soon as reasonably possible;	Y			19
c. The following require immediate accident notification:	Y			19
(1) A fatal injury;	Y			19
(2) A permanent total disability;	Y			19
(3) A permanent partial disability;	Y			19
(4) The hospitalization of three or more people resulting from a single occurrence;	Y			19

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Contractor Name: TPMC EnergySolutions Environmental Services, LLC Contract No: W912P4-07-D-0003-0002

Project Title & Location: Niagara Falls Storage Site, Building 401 Demolition	Included ?			Location:
	Yes	No	N/A	Page(s)
(5) Property damage of \$200,000 or more.	Y			19
<p>9. PLANS (PROGRAMS, PROCEDURES) REQUIRED BY THE SAFETY MANUAL. Based on a risk assessment of contracted activities and on mandatory OSHA compliance programs, the Contractor shall address all applicable occupational risks and compliance plans.</p> <p>Using the EM 385-1-1 as a guide, plans may include but not be limited to:</p>				
a. Layout plans (04.A.01);	Y			20
b. Emergency response plans:	Y			20
(1) Procedures and tests (01.E.01);	Y			20
(2) Spill plans (01.E.01, 06.A.02);	Y			20
(3) Firefighting plan (01.E.01, Section 19);	Y			20
(4) Posting of emergency telephone numbers (01.E.05);	Y			20
(5) Man overboard/abandon ship (Section19.A.04);			N/A	
(6) Medical Support. Outline on-site medical support and offsite medical arrangements including rescue and medical duties for those employees who are to perform them, and the name(s) of on-site Contractor personnel trained in first aid and CPR. A minimum of two employees shall be certified in CPR and first aid per shift/site (Section 03.A.02; 03.D);	Y			20

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Project Title & Location: Niagara Falls Storage Site, Building 401 Demolition	Included ?			Location:
	Yes	No	N/A	Page(s)
c. Plan for prevention of alcohol and drug abuse (01.C.02);	Y			21
d. Site sanitation plan (Section 02);	Y			21
e. Access and haul road plan (4.B);	Y			21
f. Respiratory protection plan (05.G);	Y			21
g. Health hazard control program (06.A);	Y			21
h. Hazard communication program (06.B.01);	Y			22
i. Process Safety Management Plan (06.B.04);			N/A	
j. Lead abatement plan (06.B.05 & specifications);			N/A	
k. Asbestos abatement plan (06.B.05 & specifications);	Y			23
l. Radiation Safety Program (06.E.03.a);	Y			23
m. Abrasive blasting (06.H.01);			N/A	
n. Heat/Cold Stress Monitoring Plan (06.I.02)	Y			23
o. Crystalline Silica Monitoring Plan (Assessment) (06.M) ;			N/A	
p. Night operations lighting plan (07.A.08);			N/A	

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Project Title & Location: Niagara Falls Storage Site, Building 401 Demolition	Included ?			Location:
	Yes	No	N/A	Page(s)
q. Fire Prevention Plan (09.A);	Y			23
r. Wild Land Fire Management Plan (09.K);			N/A	
s. Hazardous energy control plan (12.A.01);	Y			23
t. Critical lift Plan (16.H);			N/A	
u. Contingency plan for Floating Plants for severe weather (19.A.03);	Y			24
v. Float Plan (19.F.04);			N/A	
w. Site-Specific Fall Protection & Prevention Plan (21.C);	Y			24
x. Demolition plan (to include engineering survey) (23.A.01);	N			Separate Submittal
y. Excavation/trenching plan (25.A.01);	Y			24
z. Emergency rescue (tunneling) (26.A.);			N/A	
aa. Underground construction fire prevention and protection plan (26.D.01);			N/A	
bb. Compressed air plan (26.I.01);			N/A	
cc. Formwork and shoring erection and removal plans (27.C);			N/A	
dd. PreCast Concrete Plan (27.D);			N/A	

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Project Title & Location: Niagara Falls Storage Site, Building 401 Demolition	Included ?			Location:
	Yes	No	N/A	Page(s)
ee. Lift slab plans (27.E);			N/A	
ff. Steel erection plan (27.F.01);			N/A	
gg. Site Safety and Health Plan for HTRW work (28.B);	Y			25
hh. Blasting Safety Plan (29.A.01);			N/A	
ii. Diving plan (30.A.13);			N/A	
jj. Confined space Program (34.A).			N/A	
10. RISK MANAGEMENT PROCESSES. Detailed project-specific hazards and controls shall be provided by an Activity Hazard Analysis (01.A.13) for each major phase/activity of work.	Y			25
11. ABBREVIATED APP for LIMITED-SCOPE SERVICE, SUPPLY AND R&D CONTRACTS. If service, supply and R&D contracts with limited scopes are awarded, the contractor may submit an abbreviated Accident Prevention Plan. This APP shall address the following areas at a minimum. If other areas of the EM 385-1-1 are pertinent to the contract, the contractor must assure these areas are addressed as well.			N/A	
a. Title, signature, and phone number of the plan preparer.			N/A	

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Project Title & Location: Niagara Falls Storage Site, Building 401 Demolition	Included ?			Location:
	Yes	No	N/A	Page(s)
b. Background Information to include: Contractor; Contract number; Project name; Brief project description, description of work to be performed, and location (map); The project description shall provide a means to evaluate the work being done (see AHA requirements in 01.A.13) and associated hazards involved. Contractor's APP shall address the identified hazards involved and the control measures to be taken.			N/A	
c. Statement of Safety and Health Policy detailing their commitment to providing a safe and healthful workplace for all employees.			N/A	
d. Responsibilities and Lines of Authorities – to include a statement of the employer's ultimate responsibility for the implementation of his SOH program; Identification and accountability of personnel responsible for safety at all levels to include designated site safety and health officer (SSHO) and associated qualifications. The District SOHO will review the qualifications for acceptance.			N/A	
e. Training - new hire SOH orientation training at the time of initial hire of each new employee and any periodic retraining/recertification requirements.			N/A	
f. Procedures for job site inspections - assignment of responsibilities and frequency.			N/A	
g. Procedures for reporting man-hours worked and reporting and investigating any accidents as soon as possible but not more than 24 hours afterwards to the Contracting Officer/Representative (CO/COR). An accident that results in a fatal injury, permanent partial or permanent total disability shall be immediately reported to the Contracting Officer.			N/A	
h. Emergency Planning. Employees working alone shall be provided an effective means of emergency communication. This may be cellular phone, two-way radio or other acceptable means. The selected means of communication must be readily available and must be in working condition.			N/A	

	<p align="center">Title Accident Prevention Plan / Site Safety and Health Plan</p>	<p align="center">Document No. NFSS-0011</p>	<p align="center">Revision REV.0</p>
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CONTRACTOR ACCIDENT PREVENTION PLAN (APP) CHECKLIST (EM 385-1-1, Appendix - A, dated: 15 Sept. 08)

Minimum Basic Outline for Accident Prevention Plan

The APP is the Contractor Safety and Health Program Document. The following Site Specific Areas will be addressed:

NOTE: 1. Contractor will complete Checklist and Submit with their APP.

NOTE: 2. Contractor APP WILL be submitted in format below.

NOTE: 3. Safety Office will review Contractor APP and return to PM / COR.

NOTE: 4. Contractor APP's ARE NOT APPROVED by the USACE, only found as Acceptable or Non-Acceptable.

Safety Office Review Status: ACCEPTED BY/DATE: _____ NOT ACCEPTED BY/DATE: _____

Contractor Name: TPMC EnergySolutions Environmental Services, LLC Contract No: W912P4-07-D-0003-0002

Project Title & Location: Niagara Falls Storage Site, Building 401 Demolition	Included ?			Location:
	Yes	No	N/A	Page(s)
i. Drinking Water provisions, toilet and washing facilities.			N/A	
j. First Aid and CPR training (at least two employees on each shift shall be qualified/certified to administer first aid and CPR) and provision of first aid kit (types/size).			N/A	
k. Personal Protective Equipment.			N/A	
(1) WORK CLOTHING - Minimum Requirements. Employees shall wear clothing suitable for the weather however minimum requirements for work shall be short-sleeve shirt, long pants (excessively long or baggy pants are prohibited) and leather work shoes. If analysis determines that safety-toed (or other protective) footwear is necessary (i.e., mowing, weed eating, chain saw use, etc), they shall be worn.			N/A	
(2) Eye and Face Protection. Eye and face protection shall be worn as determined by an analysis of the operations being performed HOWEVER, all involved in chain saw use, chipping, stump grinding, pruning operations, grass mowing, weed eating and blowing operations shall be provided safety eyewear (Z87.1) as a minimum.			N/A	
(3) Hearing Protection. Hearing protection must be worn by all those exposed to high noise activities (to include grass mowing and trimming, chainsaw operations, tree chipping, stump grinding and pruning).			N/A	
(4) Head Protection. Hard hats shall comply with ANSI Z89.1 and shall be worn by all workers when a head hazard exists. At a minimum, hard hats shall be worn when performing activities identified in (2) above.			N/A	
(5) High Visibility Apparel shall comply with ANSI/ISEA 107, Class 2 requirements at a minimum and shall be worn by all workers exposed to vehicular or equipment traffic.			N/A	
(6) Protective Leg chaps shall be worn by all chainsaw operators.			N/A	

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Contractor Name: TPMC EnergySolutions Environmental Services, LLC Contract No: W912P4-07-D-0003-0002

Project Title & Location: Niagara Falls Storage Site, Building 401 Demolition	Included ?			Location:
	Yes	No	N/A	Page(s)
(7) Gloves of the proper type shall be worn by persons involved in activities that expose the hands to cuts, abrasions, punctures, burns and chemical irritants.			N/A	
(8) If work is being performed around water and drowning is a hazard, PFDs must be provided and worn as appropriate.			N/A	
1. Machine Guards and safety devices. Lawn maintenance equipment must have appropriate guards and safety devices in place and operational.			N/A	
m. Hazardous Substances. When any hazardous substances are procured, used, stored or disposed, a hazard communication program must be in effect and MSDSs shall be available at the worksite. Employees shall have received training in hazardous substances being used. When the eyes or body of any person may be exposed to corrosives, irritants or toxic chemicals, suitable facilities for quick drenching or flushing of the eyes and body shall be provided within 10 seconds of the worksite.			N/A	
n. Traffic control shall be accomplished in accordance with DOT's MUTCD.			N/A	
o. Control of Hazardous Energy (Lockout/Tagout). Before an employee performs any servicing or maintenance on any equipment where the unexpected energizing or startup of the equipment could occur, procedures must be in place to ensure adequate control of this energy.			N/A	
p. Driving, working on (i.e., working with equipment/mowers) while on slopes, working from/in boats/skiffs, etc shall also be considered and dealt with accordingly.			N/A	

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Contractor Name: TPMC EnergySolutions Environmental Services, LLC Contract No: W912P4-07-D-0003-0002

Project Title & Location: Niagara Falls Storage Site, Building 401 Demolition	Included ?			Location:
	Yes	No	N/A	Page(s)
HTRW Projects Additional Requirements (EM 385-1-1, Section 28 HAZWOPER): HASP (Health and Safety Plan) shall be attached to the APP as an Appendix. The HASP shall cover the following in project-specific detail. General information adequately covered in the APP need not be duplicated.				
a. Site description and contamination characterization	Y			1
b. Hazard/Risk Analysis - AHA for each task	Y			Att. 14 of APP
c. Staff Organization; Qualifications; Responsibilities	Y			33
d. Training - General, Supervisor and Project Specific	Y			Att. 1 of APP
e. PPE Personal Protective Equipment	Y			39
f. Medical Surveillance	Y			SSHP; page 53
g. Exposure Monitoring/ Air Sampling Program	Y			41
h. Heat and Cold Stress - Procedures and Practices	Y			22
i. SOPs Standard Operating Procedures; Engineering Controls; Work Practices:	Y			SSHP Attachment A

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Contractor Name: TPMC EnergySolutions Environmental Services, LLC Contract No: W912P4-07-D-0003-0002

Project Title & Location: Niagara Falls Storage Site, Building 401 Demolition	Included ?			Location:
	Yes	No	N/A	Page(s)
(1) Site rules/prohibitions (buddy system, eating/drinking/smoking restrictions, etc.)	Y			Appendix B, SSHP. SOP 14
(2) Work permit requirements (rad work, excavation, hot work, confined space etc.)	Y			Appendix A Rad Protection Plan Appendix B SSHP SOPs 3, 5, 10, 13
(3) Material handling procedures (soil, liquid, rad materials, spill contingency)	Y			Appendix B SSHP SOP 24 APP, attachment 2, section 8
(4) Drum/container/tank handling (opening, sampling, draining, removal, etc.)			N/A	
(5) Comprehensive AHA of treatment technologies employed at site			N/A	
j. Site Control Measures: Clearly Defined EZ, SZ, CRZ	Y			45
k. Personal Hygiene and Decontamination	Y			42

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Safety Office Review Status: ACCEPTED BY/DATE: _____ NOT ACCEPTED BY/DATE: _____

Contractor Name: TPMC EnergySolutions Environmental Services, LLC Contract No: W912P4-07-D-0003-0002

Project Title & Location: Niagara Falls Storage Site, Building 401 Demolition	Included ?			Location:
	Yes	No	N/A	Page(s)
l. Equipment Decontamination	Y			42
m. Emergency Equipment and First Aid	Y			47
n. Emergency Response and Contingency Procedures:	Y			SOP 9 – p.44
(1) Pre-emergency planning	Y			46
(2) Personnel and lines of authority for emergency situations	Y			50
(3) Criteria and procedures for emergency recognition and site evacuation (alarms, etc.)	Y			49
(4) Decontamination and medical treatment of injured personnel	Y			48
(5) A route map to emergency medical facilities and phone numbers for emergency responders	Y			APP - 52
(6) Criteria for alerting the local community responders	Y			APP - 50

 <p>TES TPAC Energy Solutions Environmental Services, LLC</p>	<p>Title Accident Prevention Plan / Site Safety and Health Plan</p>	<p>Document No. NFSS-0011</p>	<p>Revision REV.0</p>
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APPENDICES

Appendix A – Health and Safety Plan

The *Health and Safety Plan* is included in a separate binder.

Appendix B – Radiation Safety Plan

The *Radiation Safety Plan* is included in a separate binder.

	Title Health and Safety Plan	Document No. NFSS-0011-1	Revision REV.0
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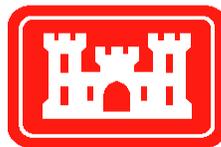
Health and Safety Plan (Appendix A to the *Accident Prevention Plan*)

**Niagara Falls Storage Site
Building 401 Demolition
Lewiston, New York
Contract No. W912P4-07-D-0003-0002**

**Prepared by:
TPMC-EnergySolutions Environmental Services, LLC**



For:



**US Army Corps
of Engineers®
Buffalo District**

AUGUST 2010

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**Building 401 Demolition
Niagara Falls Storage Site
Health and Safety Plan**

Prepared By:

[Redacted Name]

[Redacted Name], Corporate S&H MS, CIH

09 AUGUST 2010

Date

Reviewed By:

[Redacted Name]

[Redacted Name] Program Manager PhD, CHP

09 AUGUST 2010

Date

Approved By:

[Redacted Name]

[Redacted Name], PM / CQM System Manager

09 AUGUST 2010

Date

- New Plan
- Title Change
- Plan Revision
- Plan Rewrite

Effective
Date _____

	Title Health and Safety Plan	Document No. NFSS-0011-1	Revision REV.0
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CERTIFICATION OF INDEPENDENT TECHNICAL REVIEW

COMPLETION OF INDEPENDENT TECHNICAL REVIEW

TES, LLC (TES) has DRAFTED the *Health and Safety Plan* for the Niagara Falls Storage Site Building 401 Demolition Project located in Lewiston, New York. Notice is hereby given that an independent technical review has been conducted that is appropriate to address all regulatory and compliance issues appropriate to the Niagara Falls Storage Site Building 401 demolition, as defined in the TES NFSS Health and Safety Plan (HASP). During the independent technical review, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of assumptions; methods, procedures, and material used in analyses; alternatives evaluated; the appropriateness of data used and level of data obtained; and reasonableness of the results, including whether the product meets the customer's needs consistent with existing USACE policy.

Signature/ TES Report Preparer

[Redacted Signature]

Date 20 JULY 2010

Signature/ TES Independent Technical Reviewer

[Redacted Signature]

Date 20 JULY 2010

Signature/ TES Independent Technical Reviewer

[Redacted Signature]

Date 20 JULY 2010

Signature/ TES Independent Technical Reviewer

[Redacted Signature]

Date 20 JULY 2010

Independent Technical Review Team Members: [Redacted]

CERTIFICATION OF INDEPENDENT TECHNICAL REVIEW

Significant concerns and the explanation of the resolution are as follows:

Item	Technical Concerns	Possible Impact	Resolutions
APP/SSHP			
1	See attached sheets		

As noted above, all concerns resulting from independent technical review of the plan have been resolved.

[Redacted Signature]

Signature/ [Redacted]

Date 20 JULY 2010

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ACRONYMS

AHA	Activity Hazard Analysis
ALARA	As Low as Reasonably Achievable
APP	Accident Prevention Plan
CFR	Code of Federal Regulations
CO/COR	Contracting Officer/Representative
COC	Contaminants of Concern
CQC	Contractor Quality Control
EMR	Experience Modification Rates
FUSRAP	Formerly Utilized Sites Remedial Action Program
HAZWOPER	Hazardous Waste Operations and Emergency Response
HS&E	Health Safety and Environment
IDW	Investigation-Derived Waste
HASP	Health and Safety Plan
MSDS	Material Safety Data Sheets
OSHA	Occupational Safety and Health Administration
PPE	Personal Protective Equipment
RSP	Radiation Safety Plan
RWP	Radiation Work Permits
SOP	Standard Operating Procedures
SOW	Scope of Work
SSHO	Site Safety and Health Officer
SSHP	Site Safety and Health Plans
TES	TPMC-EnergySolutions Environmental Services, LLC
USACE	U.S. Army Corps of Engineers

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1.0 HEALTH & SAFETY AND PLAN - INTRODUCTION

This Health and Safety Plan (HASP) has been developed to support work activities for the Niagara Falls Storage Site (NFSS) located in the Town of Lewiston, Niagara County, New York. This HASP will be kept on the site during field activities and reviewed as necessary. The plan adopts, by reference, the Standards of Practice (SOPs) in the *TES Corporate Health and Safety Program*, as appropriate. In addition, this plan adopts procedures in the project Work Plan. The Site Supervisor and Site Safety Officer are to be familiar with these SOPs and the contents of this plan. TES personnel and its subcontractors must sign as acknowledgment they have become familiar with the contents of this HASP.

1.1 Project Information and Description

PROJECT/SITE NAME: Niagara Falls Storage Site Building 401 Demolition, Lewiston, New York

SITE ADDRESS: 1397 Pletcher Road in Lewiston, New York

WORK AREA: The work area is Building 401 and adjacent silos. The site consists of an engineered Interim Waste Containment Structure (IWCS). Building 401 is a multi-story, steel-framed structure with a ridge height of approximately 76.5 feet and enclosing approximately 100,000 square feet of floor area. Building 401 has steel and concrete load bearing walls that support a roof that is suspect transite-containing. There are three large concrete silos associated with Building 401, which are scheduled to be demolished under this contract.

1.2 Key Individuals Responsible For Safety

TES Program Manger: [REDACTED]

TES Project manager: [REDACTED]

TES Corporate Health and Safety Manager: [REDACTED]

TES Site Supervisor: [REDACTED]

TES Site Safety and Health Officer: [REDACTED]

1.3 DATES OF SITE WORK: June/July – November, 2010

1.4 SITE ACCESS: Sign in at the TES Office

PREVAILING WEATHER: Niagara County, New York has an average annual temperature of 56.8 °F with the highest temperatures occurring in July (average high at 81.8 °F) and the coldest month being January (average low at 18 °F). The annual rainfall is 32.5 inches and the annual snow fall is 52.1 inches. Niagara County has an average of 134 days each year of precipitation and 157 days of sun. It has a comfort index of 54 (100 being the highest/most comfortable; compared to the U.S. comfort index of 44) and an UV index of 3.2 (scale of 0 -10, indicating a low UV exposure).

1.5 SITE DESCRIPTION AND HISTORY:

Niagara Falls Storage Site (NFSS) is part of the United States Army Corps of Engineers (USACE) Formerly Utilized Sites Remedial Action Program (FUSRAP). FUSRAP was established to identify, investigate, and clean up or control sites contaminated by activities of the Atomic Energy Commission (AEC) and its predecessor, the Manhattan Engineer District (MED). All work shall conducted under the Buffalo District's Multiple Award Remediation Contract (MARC) for the Demolition of Building 401 at the NFSS.

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NFSS is located at 1397 Pletcher Road, Lewiston, New York, and the site is owned by the Federal Government. The site consists of an engineered Interim Waste Containment Structure (IWCS), various buildings, and open areas (refer to Attachment 1). The site was originally a part of the Lake Ontario Ordnance Works (LOOW). The primary use of the site from early 1940s through mid 1950s was for storage, trans-shipment, and disposal of radioactive waste from various sources. Building 401 was initially the powerhouse for the production of TNT at LOOW, and it was also used to store radioactive materials in support of MED activities during World War II. It was used for the production of Boron-10 from 1953 to 1959 and from 1965 to 1971 and then became a waste storage facility used by the Atomic Energy Commission/Department of Energy (AEC/DOE). In 1971, Building 401 was gutted and its instrumentation and hardware were disposed of as surplus materials. This building has been largely inactive since, and evidence of bird and animal occupation has been observed. An asbestos abatement was performed on Building 401 in the spring and summer of 2002, resulting in the removal of interior asbestos containing material (ACM). Potential exterior ACM was not included as part of this abatement.

As a result of previous field investigative activities, the USACE has identified the following concerns that require mitigation activities:

- Bird and animal waste inside of Building 401 and silos.
- Potential ACM in roofing and siding materials.
- Potential lead based paint on surfaces within and outside Building 401.
- Potentially contaminated concrete floors inside of Building 401.
- Potentially contaminated steel beams and rafters inside of Building 401.
- Potentially contaminated floor drains and sumps inside of Building 401.
- Potentially contaminated soils around the perimeter of Building 401.
- Miscellaneous debris inside of Building 401.

1.6 Description of Specific Tasks to be Performed:

TES shall be responsible for engineering, procurement, waste characterization, building demolition, and waste transportation and disposition for all work to be performed under this contract, as described herein. The work activities include furnishing to the job site all necessary labor, equipment, materials, tools, supplies, office space, sanitary facilities, decontamination facilities, and clerical, supervisory, and technical and professional services to commence and sustain all operations necessary to complete the work authorized under this contract.

Work under this contract includes, but is not limited to, the following activities:

- Development of required work plans.
- Demolition of Building 401 and adjacent silos.
- Characterization, segregation, volume reduction, and appropriate packaging of the wastes generated during the performance of demolition activities.
- Loading, transportation, and disposal of packaged wastes at licensed/permitted disposal facilities.
- Performance of pre and post-construction radiological surveys of all work areas, including 15 meters outside of actual work areas, to ensure that previous activities did not result in radiological contamination of the work areas. TES shall also conduct radiological surveys to determine the appropriate disposal method for demolition debris and materials.

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1.6.1 Listing of Phases of Work and Activity Hazards Analyses

An Activity Hazard Analysis (AHA) will be prepared for to address tasks/activities as presented in the Scope of Work (October, 2009). AHAs will be prepared in accordance with the format shown in Figure 1-2 on page 10 of EM 385-1-1 (September 15, 2008).

The tasks anticipated are:

Task 1 – Write Work Plans

- Contractor Quality Control Plan
- Engineering survey
- Site operations Plan
- Demolition Plan
- Accident Prevention Plan/Health and Safety Plan (APP/HASP)
- Sampling and Analysis Plan
- Waste Management, Transportation and Disposal Plan

Task 2 – Mobilization and Materials

- Submittals for pre-work and pre-mobilization activities for review/approval
- Procurement of necessary equipment and materials required to perform abatement/demolition, decontamination, air monitoring and waste packaging.
- Procure office space and sanitary facilities for TES employees.
- Provide decontamination facilities
- Provide qualified and trained personnel
- Prepare laydown and other support areas
- Design/prepare storage areas for generated wastes from demolition/decontamination activities
- Obtain required permits
- Notification of appropriate Federal, State and local agencies
- Install temporary fencing around the work zone
- Attend USACE NFSS site-specific health and safety orientation (prior to commencement of work)
- Identification and establish quantities of hazardous materials
- Check overhead utilities for proper clearances of heavy equipment movement.
- Solicitation and selection of qualified transportation and disposal facilities.

Task 3 – Demolition of Building 401 (and associated Silos)

- Completion of all required pre-demolition surveys
 - ACM survey of roof structures and walls
 - Inspect for hazardous materials (mercury-containing thermostats, PCB-containing ballasts, bird/animal wastes, etc.)

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- Location of underground utilities
- Plugging drains
- Fill drains/sumps to grade
- Protection of existing site structures
 - Prevention of surface water from entering storm water/sanitary water systems
 - Ensure fire protection/prevention system operates per NFPA 241)
- Remove/abate miscellaneous waste and debris from Building 401
 - Remove ACM (as directed by USACE)
 - Remove solids/liquids from drains/sumps (solvents, metals, etc.) as necessary to prevent overflow during grouting/plugging operations
 - Remove hazardous wastes/materials (mercury-containing thermostats, PCB-containing capacitors, Hg/Na vapor lights, etc.)
 - Remove windows and glass materials (ACM)
- Physical demolition of Building 401 (concrete slab and footer to remain) and three silos
- Waste characterization, segregation, packaging, transport and disposal
- Radiological monitoring and scanning

Phase 4 – Post Demolition Activities

- Post-construction radiological surveys
- Decontamination of radiological contaminated equipment and supplies
- Decontamination of the Building 401 concrete
- Site clean-up and demobilization
- Preparation of a comprehensive Project Completion Report

1.7 Revision of the HASP

The plan will be amended or revised as project activities or conditions change or when supplemental information becomes available.

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2.0 TASKS ADDRESSED UNDER THIS PLAN

2.1 Description of Major Tasks

The major work activities that will occur at the Project are: 1) Planning and Preparation 2) Mobilization 3) On-site survey of contaminants and hazardous materials and abatement/removal of hazardous materials, 4) Demolition of Building 401 and Silos, and 5) close-out and demobilization.

Health and safety risk analyses for each work activity (as listed above) will be performed via a Activity Hazard Analysis (AHA). As such, each task shall be incorporated in this plan by reference. The AHAs address through task-specific hazard recognition, hazard controls and equipment/labor requirements for worker protection. The AHAs will be maintained in a binder at the project office. This Health and Safety Plan will be amendment or revised, as necessary, to incorporate any additional tasks or requirements.

2.2 Employee Orientation

Employees expecting to access the site are required to attend an employee orientation. The training provided to the employees in the employee orientation needs to include:

- Review this Health and Safety and Plan (HASP).
- Present an overall site safety briefing (general site safety).
- Review employee responsibilities including TES Drug Policy applicability.
- Review emergency procedures and evacuation plan.
- Review injury and incident reporting procedures.
- Review reporting procedures for hazardous conditions and/or hazardous activities.
- Empower all employees with “stop work authority” when they observe a potentially dangerous condition or work practice.

2.3 Employee Training

Training documentation will be provided to the TES Site Supervisor (SS) and/or Site Safety Officer (SSHO) prior to start of work operations. This documentation/certification includes areas such as HAZWOPER, hazard communication (HAZCOM), forklift, crane, heavy equipment, fall protection, scaffold, ladder, etc.

TES will ensure that its employees do not perform a given task without the required training. If it is determined that an employee has been allowed to perform work without the prerequisite training, he/she will not be allowed to continue to perform that task until training has been satisfactorily completed.

2.4 HAZWOPER-Related Tasks

- Entry onto site (Building 401 and Silos) for hazard identification
- Survey for ACM Materials
- Plug drains/sumps
- Abatement/removal of drains/sumps
- Sampling activities

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- Abatement of hazardous materials (animal wastes, mercury/metal fixtures, PCB-containing capacitors, etc.)
- Removal of windows and other glass materials
- Trenching and Survey/Soil Sampling
- Demolition of Building 401 and Silos
- Handling of Investigative Derived-Waste
- Disposal of project-generated waste

2.5 Non-HAZWOPER-Related Tasks

Under specific circumstances, the training and medical monitoring requirements of Federal or State HAZWOPER regulations are not applicable. In order to use non-HAZWOPER-trained personnel, it must be demonstrated that the tasks can be performed without the possibility of exposure. Prior approval from the SS and/or SSHO is required before these tasks are conducted on the regulated areas of the site.

Potential Tasks	Controls
<ul style="list-style-type: none"> • Mobilization • General heavy equipment work • Electrical installation • Mechanical installations (equipment, pumps, etc.) outside of controlled areas • Equipment/material delivery • Engineering testing/evaluation • Demobilization 	<ul style="list-style-type: none"> • Brief personnel on hazards, limits of access, and emergency procedures • Identify &/or mark perimeter of contaminant areas as appropriate • Observe, sample and monitor as appropriate

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Task Hazard Analysis—Field Activities

(Refer to Section 3.0 for Hazard Controls)								
POTENTIAL HAZARDS	TASKS							
	Mobilization / Demob	On-site Hazard Identification Walkover Survey	Remove liquids/solids from drains/sumps	Bird/animal waste removal	Removal of hg-switches, PCB capacitors	Asbestos abatement	Demolition	IDW Handling
Flying debris/objects			X	X	X	X	X	X
Noise > 85dBA		X	X	X	X		X	X
Electrical	X	X				X	X	X
Lockout/tagout	X				X	X	X	
Heat Stress/Cold Stress	X	X	X	X	X	X	X	X
Suspended loads	X		X	X	X	X	X	X
Buried utilities, drums, tanks	X				X		X	X
Slip, trip, fall	X	X	X	X	X	X	X	X
Back injury	X	X	X	X	X	X	X	X
Trenches / excavations					X			X
Visible lightning	X	X	X	X	X	X	X	X
Vehicle traffic	X	X	X	X	X	X	X	X
Radiological and Chemical	X	X	X	X	X	X	X	X
Fires	X	X	X	X	X	X	X	X
Entanglement			X	X	X	X	X	X
Heavy equipment	X		X	X	X	X	X	X
High Pressure Washing/Decon				X	X		X	

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Note: A list of Activity Hazard Analyses (AHAs) for this project is provided in Attachment 14 of the TES Accident Prevention Plan (APP). New AHAs will be incorporated into this list when new and/or un-reviewed tasks which have safety concerns and or hazards are identified.

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3.0 HAZARD CONTROLS

This section provides safe work practices and control measures used to reduce or eliminate potential hazards during project activities. These practices and controls are to be implemented by the party in control of either the site or the particular hazard. TES employees must remain aware of the hazards affecting them regardless of who is responsible for controlling the hazards. TES employees who do not understand any of these provisions should contact the Site Supervisor (SS), or the SSHO for clarification.

In addition to the controls specified in this section, selected Standard Operating Procedures (SOPs) may contain checklists that are to be used in identifying and controlling potential hazards and assess the adequacy of TES site-specific safety requirements (See Attachment A). Checklists should be completed at the beginning of tasks, when tasks or conditions change, and/or or when otherwise specified by the SSHO. The checklists, including documented corrective actions, should be made part of the permanent project records, and be promptly submitted to the SS.

3.1 Project-Specific Hazards

Project-specific hazards include the items presented in the following sections. SOPs have been developed for these tasks. Employees working on the task are required to review all task-applicable SOPs prior to proceeding with the work. Any task that does not have an applicable SOP shall be brought immediately to the attention of the SS and the SSHO. A variance must be issued by the SSHO and/or the SS, prior to beginning work, for any task that does not have an approved SOP and/or must deviate from the approved SOP in order to complete the task.

3.1.1 General Worker Protection Requirements

All personnel who enter the areas designated by the SS and/or SSHO as Active Work Areas shall have the following as a minimum.

- Sleeved Shirt (no sleeveless “tank top”)
- Long Pants
- Hardhat (per 29 CFR 1910.135 requirements)
- Safety Glasses with side shields (per 29 CFR 1910.133 requirements)
- High Visibility Reflective Vests
- Steel Toe Boots (per 29 CFR 1910.136 requirements)
- Access to Hearing Protection (in the work area)

3.1.2 Aerial Lifts

Refer to following SOPS prior to beginning a task using Aerial Lifts: “Powered Industrial Trucks”; Personal Protective Equipment”; “Lifting Devices” and “Unsafe Condition Tag-Out”. Only authorized and trained personnel are permitted to operate aerial lifts and/or powered industrial trucks.

- Inspect aerial lifts and test lift controls prior to each use. The last lift may have damaged something.
- Wear a full body harness with lanyard attached to the boom or platform.

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- Do not attach lanyard to any adjacent structures or equipment while working from an aerial lift.
- Stand firmly on the floor of the platform and do not sit or climb on the railings of the platform. NEVER use planks, ladders, or other devices to increase working height.
- Remain in the platform at all times and do not leave the platform to climb to adjacent structures.
- Position aerial lifts on firm, level surfaces when possible, with the brakes set. Use wheel chocks on inclines. If outriggers are provided, position on solid surfaces or cribbing.
- Maintain safe clearance distances (minimum 10 feet) between overhead power lines and any part of the aerial lift or conducting material.
- If work must occur within 10 feet, or less, of an overhead power line and/or energized device, the power lines must be de-energized, grounded and locked-out/tagged-out.
- Never exceed the boom and basket load limits.
- Never use aerial lifts as cranes, unless specifically designed and approved by the lift manufacturer.
- Never work or stand below aerial lift operations.
- Do not use aerial lifts out of doors when winds exceed 30 miles per hour.
- The Aerial Lift Inspection Form is provided in the Powered Industrial Truck SOP.

3.1.3 Cranes, Hoists, and Rigging

Refer to following SOPS prior to beginning a task using Aerial Lifts: “Powered Industrial Trucks”; Personal Protective Equipment”; “Lifting Devices” and “Unsafe Condition Tag-Out”. Only authorized and trained personnel are permitted to operate aerial lifts and/or powered industrial trucks.

Only certified crane operators and riggers are permitted to operate cranes and complete rigging. TES employees are expressly forbidden from operating cranes or completing rigging unless granted a variance by Senior Management.

- A crane should be kept as far as possible from overhead electrical lines or energized equipment.
- Maintain safe distance from operating cranes and stay alert of crane movement.
- Avoid positioning between fixed objects and operating cranes and crane pinch points.
- Remain outside of the crane swing and turning radius.
- Never turn your back on operating cranes.
- Approach cranes only after receiving the operator’s attention. The operator shall acknowledge your presence and stop movement of the crane. Never approach operating cranes from the side or rear where the operator’s vision is limited or blocked completely.
- When required to work in proximity to operating cranes, wear high-visibility vests made of reflective material or include a reflective stripe or panel to increase visibility to operators.
- Stay as clear as possible of all hoisting operations. Loads shall never be hoisted overhead of personnel.

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- Cranes shall never be used to lift or lower personnel.
- If crane becomes electrically energized, personnel shall be instructed not to touch any part of the crane and to “clear” the area. Personnel should never attempt to touch any person who may be inside the crane and/or in contact with the electrical current. The utility company or appropriate party shall be contacted to have line de-energized prior to approaching the crane.
- Do not exceed hoist load limits.
- Ensure load is level and stable before hoisting. Use tag lines to stabilize load during hoisting.
- Inspect all rigging equipment prior to use. Slings and cables must be labeled and inspected by a certified inspector prior to use, in accordance with OSHA requirements. Do not use defective rigging for any reason.
- Only use rigging equipment for the purpose it was designed and intended.

3.1.4 Rigging

Refer to SOP “Lifting Devices” prior to using rigging or hoists. Only properly trained riggers are to complete rigging operations. TES employees are expressly forbidden to complete rigging unless granted a variance by Senior Management.

- Stay clear of all hoisting operations.
- Inspect all powered equipment prior to use
- Inspect all rigging-related items (straps, wire ropes, chokers, chains, etc.) before each use. The last lift may have damaged it and rendered it unsafe for use. Do not use defective rigging for any reason.
- Loads shall never be hoisted overhead of personnel.
- Hoists shall never be used to lift or lower personnel.
- Never exceed hoist load limits.
- Ensure load is level and stable before hoisting.
- Only use rigging equipment for the purpose it was designed and intended.

3.1.5 Energized Electrical

Refer to the following SOPs prior to beginning any task involving energized lines or equipment: “Lockout/Tagout”; “Electrical Safety”; “Fire Protection”; “Personnel Protective Equipment”; and “General Safety Rules”.

- Only qualified personnel, as determined by the SS and/or the SSHO, are permitted to work on unprotected energized electrical systems.
- Only authorized personnel are permitted to enter high-voltage areas.
- Do not tamper with electrical wiring and equipment unless qualified to do so. All electrical wiring and equipment must be considered energized until lockout/tagout procedures are implemented.

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- Inspect electrical equipment, power tools, and extension cords for damage prior to use. Do not use defective electrical equipment, remove from service. Defective equipment will be tagged and brought to the attention of the SSHO.
- All temporary wiring, including extension cords and electrical power tools, must have ground fault circuit interrupters (GFCIs) installed.
- Extension cords must be:
 - - Equipped with third-wire grounding.
 - - Covered, elevated, or protected from damage when passing through work areas.
 - - Protected from pinching if routed through doorways.
 - - Not fastened with staples, hung from nails, or suspended with wire.
- Electrical power tools and equipment must be effectively grounded or double-insulated UL approved.
- Operate and maintain electric power tools and equipment according to manufacturers' instructions.
- Maintain safe clearance distances between overhead power lines and any electrical conducting material unless the power lines have been de-energized and grounded, or where insulating barriers have been installed to prevent physical contact. Maintain at least 10 feet from overhead power lines for voltages of 50 kV or less, and 10 feet plus 0.5 inch for every 1 kV over 50 kV.
- Temporary lights shall not be suspended by their electric cord unless designed for suspension. Lights shall be protected from accidental contact or breakage.
- Protect all electrical equipment, tools, switches, and outlets from environmental elements.
- Electrical wiring and equipment shall be de-energized in accordance with Lockout/Tagout SOPs and standard industry practices prior to conducting work.
- A variance shall be obtained from the Safety Officer for situations where it can be demonstrated that de-energizing introduces additional or increased hazards or is unfeasible due to equipment design or operational limitations.
- All electrical systems shall be considered energized until lockout/tagout procedures are implemented.
- Always “double-check” to ensure power is not flowing through the line or equipment by using a voltage tester or similar device.
- The Energized Electrical Work Permit provided in the Lockout/Tagout SOP must be completed prior to working on unprotected energized electrical systems.
- Follow all control measures and procedures identified on the Energized Electrical Work Permit and all applicable SOPs, industry and OSHA practices.

3.1.6 Lockout/Tagout

Refer to the following SOPs: “Lockout/Tagout”; and “Unsafe Condition Tagout”. Lockout/Tagout refers to all electrical and/or mechanically energized equipment.

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- Ensure the equipment cannot “start” while work is occurring on that equipment by disconnecting battery terminals, unplugging the device from power and/or other methods recommended by the manufacturer.
- Never work on equipment when the unexpected operation could result in injury, unless lockout/tagout procedures are implemented.
- Standard lockout/tagout procedures include the following six steps:
 1. Notify all personnel in the affected area of the lockout/tagout,
 2. Shut down the equipment using normal operating controls,
 3. Isolate all energy sources,
 4. Apply individual lock and tag to each energy isolating device,
 5. Relieve or restrain all potentially hazardous stored or residual energy (e.g., hydraulic pressure, residual electrical charges in capacitors, etc.).
 6. Verify through the use of a measurement device (if possible) that isolation and de-energizing of the equipment has been accomplished. Once verified that the equipment is at the zero energy state, work may begin.
- NEVER remove another person’s lock or tag. If the work extends over a shift change, and under the direct supervision of the SS, the next crew shall replace the previous crews’ locks with their own, one worker at a time. Work shall not resume until the SS is confident the requirements of the SOPs have been followed and it is safe to return to work.
- All safe guards must be put back in place, all affected personnel notified that lockout/tagout has been removed, and controls positioned in the safe mode prior to lockout/tagout removal.

3.1.7 Excavation

Refer to the following SOPs prior to beginning excavation tasks: “Excavation”; and “Heavy Equipment”;

- Do not enter the excavations unless necessary, and only after the competent person has completed the required inspection and has authorized entry.
- Follow all excavation entry requirements established by the competent person.
- Do not enter excavations where protective systems are damaged or unstable.
- Do not enter excavations where objects or structures above the work location may become unstable and fall into the excavation.
- Do not enter excavations with the potential for a hazardous atmosphere until the air has been tested and found to be at safe levels.
- Do not enter excavations with accumulated water unless precautions have been taken to prevent excavation cave-in.

3.1.8 Forklifts

Refer to the following SOPs prior to using a forklift: “Powered Industrial Trucks”; “Personal Protective Equipment”; and “General Safety Rules”.

- Only authorized and trained personnel may operate forklifts.

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- Forklifts shall be inspected by the operator prior to use.
- Complete the Forklift Inspection Form found in the Powered Industrial truck SOP
- The operator shall use a seat belt (if available).
- Only the operator may ride on the forklift. Passengers are expressly forbidden.
- No part of a load must pass over any personnel.
- Forklifts left unattended must be immobilized and secured against accidental movement and forks, buckets or other attachments must be in the lowered position or be firmly supported.
- No load may exceed the maximum rated load and loads must be handled in accordance with the height and weight restrictions on the load chart.
- When a load is in the raised position, the controls must be attended by an operator.
- If an operator does not have a clear view of the path, a signaler must be used.
- Loads must be carried as close to the ground or floor as the situation permits.
- Loads that may tip or fall must be secured.
- Where a forklift is required to enter or exit a vehicle to load or unload, the vehicle must be immobilized and secured against accidental movement.
- Forklifts shall not be used to support, raise, or lower workers.
- Forklifts operators shall wear seatbelts at all times.
- Concentrations of carbon monoxide created by forklift operation indoors, or in and near excavations, must be monitored when the potential exists for reaching or exceeding permissible exposure limits.
- Barriers, warning signs, designated walkways or other safeguards must be provided where pedestrians are exposed to the risk of collision.

3.1.9 Scaffolds

Refer to the following SOPs prior to erecting and performing any work on scaffolds”: “Fall Protection”; “Ladder Safety”; “Personal Protective Equipment”; and “General Safety Rules”.

- Scaffolding must be designed and constructed by a competent person.
- Do not access scaffolds until the competent person has completed the work shift inspection and has authorized access.
- Follow all requirements established by the competent person or as identified on the scaffold tag.
- Do not access scaffolds that are damaged or unstable at any time and for any reason.
- Only access scaffolds by means of a ladder, stair tower, ladder stand, ramp, integral prefabricated scaffold access, or other equivalent safe means of access. Scaffold cross bracing shall not be used to access scaffold platforms.
- Remain within the scaffold guardrail system when provided. Leaning over or stepping across a guardrail system is not permitted.

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- Use personal fall arrest systems when required by the competent person and when working from suspension scaffolds or boatswains' chairs.
- Do not stand on objects (boxes, buckets, bricks, blocks, etc.) or ladders on top of scaffold platforms to increase working height unless the platform covers the entire floor area of the room.
- Do not work on scaffolds covered with snow, ice, or other slippery material or work on scaffolds during storms or high winds unless personal fall arrest systems or wind screens are provided and the competent person determines it is safe to remain on the scaffold.

3.1.10 Welding and Cutting

Refer to the following SOPs prior to performing “Burning and Welding”; “Fire Protection”; “Eye/Face Protection”; “Powered Hand Tools”; “Personal Protective Equipment”; and “General Safety rules”.

- Only trained personnel are permitted to operate welding/cutting equipment.
- Do not enter areas where welding/cutting operations are taking place unless completely necessary and only after receiving permission from the welding/cutting operator.
- If you must be present in an area during welding/cutting operations, position yourself behind flash screens or wear glasses/goggles with lenses of appropriate darkness.
- Do not look directly at the welding/cutting flash or at reflective surfaces surrounding welding/cutting operations.
- Avoid contacting compressed gas cylinders. Cylinders should be properly and firmly secured in an upright position at all times.
- Be aware of tripping hazards created by welding hoses, power cables, leads, and cords positioned on walking surfaces.
- The Hot Work Permit is provided in the Burning and Welding SOP.

3.1.11 Compressed Gas Cylinders

Refer to the following SOPs: “Burning and Welding”; “Eye/Face Protection; and “General Safety Rules”.

- Valve caps must be in place when cylinders are transported, moved, or stored.
- Cylinder valves must be closed when cylinders are not being used and when cylinders are being moved.
- Cylinders must be secured in an upright position at all times.
- Cylinders must be shielded from welding and cutting operations and positioned to avoid being struck or knocked over; contacting electrical circuits; or exposed to extreme heat sources.
- Cylinders must be secured on a cradle, basket, or pallet when hoisted; they may not be hoisted by choker slings.

3.1.12 Fall Protection

Refer to the following SOP prior to beginning tasks that have fall potential: “Fall Protection”, “Ladder Safety”; and “General safety Rules”.

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- Fall protection systems must be used to eliminate fall hazards when performing construction activities or general industry activities at a height of 4 feet or greater.
- All project personnel that may be exposed to fall hazards must review the Fall Protection SOP.
- Never use fall protection systems on which you have not been trained.
- The SS shall act as competent person and shall inspect and oversee the use of fall protection systems.
- Follow all requirements established by the competent person for the use and limitation of fall protection systems.
- A registered professional engineer shall oversee the use of horizontal lifelines.
- Only one person shall be simultaneously attached to a vertical lifeline.
- Remain within the guardrail system when provided. Leaning over or stepping across a guardrail system is not permitted.
- Do not stand on objects (boxes, buckets, bricks, blocks, etc.) or ladders to increase working height on top of platforms protected by guardrails.
- Inspect personal fall arrest systems prior to each use. Do not use damaged fall protection systems at any time, or for any reason.
- Set up personal fall arrest systems so that you can neither free-fall more than 4 feet or contact any lower level.
- Only attach personal fall arrest systems to anchorage points capable of supporting at least 5,000 pounds.
- Use fall protection equipment for fall protection only and not to hoist materials. Do not use personal fall arrest systems that have been subjected to impact loading.

3.1.13 Earthmoving Equipment

Reference the following SOPs prior to performing earth moving related tasks: “Heavy Equipment” and “General Safety Rules”.

- Only authorized personnel are permitted to operate earthmoving equipment.
- Maintain a safe distance from operating equipment and stay alert of equipment movement. Avoid positioning between fixed objects and operating equipment and equipment pinch points, remain outside of the equipment swinging and turning radius. Pay attention to backup alarms, but do not rely on them for protection. Never turn your back on operating equipment.
- Approach operating equipment only after receiving the operator’s attention. The operator shall acknowledge your presence and stop movement of the equipment. Caution shall be used when standing next to idle equipment; when equipment is placed in gear it can lurch forward or backward. Never approach operating equipment from the side or rear where the operator’s vision is limited or blocked.
- When required to work in proximity to operating equipment, wear high-visibility vests to increase visibility to equipment operators.

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- Do not ride on earthmoving equipment unless it is specifically designed to accommodate passengers. Only ride in seats that are provided for transportation and that are equipped with seat belts.
- Unless directly involved with the work activity, stay clear of all hoisting operations. Loads shall not be hoisted overhead of personnel.
- Earthmoving equipment shall not be used to lift or lower personnel.
- If equipment becomes electrically energized, personnel shall be instructed not to touch any part of the equipment or attempt to touch any person who may be in contact with the electrical current. The utility company or appropriate party shall be contacted to have line de-energized prior to approaching the equipment.

3.1.14 Hand Tools

Refer to the following SOPs prior to using hand tools: “Eye and Face Protection”; “Powered Hand Tools”; “Hearing Protection”; “Unsafe Condition Tagout” and “General Safety Rules”.

- Operate all tools according to the manufacturers’ instructions, within design limitations and only to perform tasks for which they were designed.
- All hand and power tools shall be maintained in a safe condition.
- Tools are to be inspected and tested before use. If a tool is found to be defective it is to be tagged “Do Not Use” and removed from service until repaired.
- Personal protective equipment (PPE), such as gloves, safety glasses, earplugs, and face shields, are to be used when exposed to a hazard from the tool.
- Power tools are not to be carried or lowered by the cord or hose.
- Disconnect tools from energy sources when not in use, before servicing and cleaning, and when changing accessories such as blades, bits, and cutters.
- Safety guards on tools are to remain installed while the tool is in use and promptly replaced after repair or maintenance has been performed.
- Tools are to be stored properly, where they will not be damaged or come in contact with hazardous materials.
- If a cordless tool is connected to its recharge unit, both pieces of equipment must conform strictly with electrical standards and manufacturer’s specifications.
- Tools used in an explosive environment must be rated (e.g., intrinsically safe, spark proof, etc.) for work in that environment.
- When using a knife or blade tool, stroke or cut away from the body with a smooth motion taking care not to use excessive force that could damage tool, material being cut, or unprotected hands.
- Wrenches, including adjustable, pipe, end, and socket wrenches, shall not be used when jaws are sprung to the point that slippage occurs.
- Impact tools, such as drift pins, wedges, and chisels, shall be kept free of mushroomed heads.

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- The wooden handles of tools shall be kept free of splinters or cracks and shall be kept tight in the tool.
- Manual and pistol-grip hand tools may involve work with highly repetitive movement, extended elevation, constrained postures, or positioning of body members (e.g., hand, wrist, arm, shoulder, neck, etc.). Consider alternative tool design, improved posture, selection of appropriate materials, work organization, and sequencing to prevent muscular skeletal, repetitive motion, and cumulative trauma stressors.
- Tools with safety devices shall be tested each day before use to see that the safety devices are in proper working condition. The method of testing shall be in accordance with the manufacturer’s recommended procedure.
- Belts, gears, shafts, pulleys, sprockets, spindles, drums, fly wheels, chains, or other reciprocating, rotating or moving parts of equipment shall be guarded if such parts are exposed to contact by employees or otherwise create a hazard.
- All liquid fuel-powered tools shall be stopped while being refueled, serviced, or maintained.

3.2 General Hazards

3.2.1 Housekeeping

Refer to SOP-36, *Housekeeping*, in Attachment 3.

- Site work should be performed during daylight hours whenever possible. Work conducted during hours of darkness requires sufficient illumination intensity to read a newspaper without difficulty.
- Good housekeeping must be maintained at all times in all project work areas.
- Common paths of travel should be established and kept free from the accumulation of materials.
- Keep access to aisles, exits, ladders, stairways, scaffolding, and emergency equipment free from obstructions.
- Provide slip-resistant surfaces, ropes, and/or other devices to be used.
- Specific areas should be designated for the proper storage of materials.
- Tools, equipment, materials, and supplies shall be stored in an orderly manner.
- As work progresses, scrap and unessential materials must be neatly stored or removed from the work area.
- Containers should be provided for collecting trash and other debris and shall be removed at regular intervals.
- All spills shall be quickly cleaned up. Oil and grease shall be cleaned from walking and working surfaces. Spill kits and fire extinguishers will be maintained in fuel storage areas and fueling stations.

3.3 Hazard Communication

Refer to the following SOPs: “Hazard Communication Program”; “Materials Handling Program”; “General Safety Rules”; “Personal Protective Equipment “; “Respiratory Protection”;

The SS is to perform the following:

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- Complete an inventory of chemicals brought on site by TES using Attachment A in the Hazard Communications SOP.
- Confirm that an inventory of chemicals, and their MSDS', brought on site by subcontractors is available.
- TES shall obtain material safety data sheets (MSDSs) from the client, contractors, and subcontractors for chemicals to which TES employees and subcontractors potentially are exposed.
- Before or as the chemicals arrive on site, obtain an MSDS for each hazardous chemical and retain a copy with the HASP on site.
- Label chemical containers with the identity of the chemical and with hazard warnings, and store properly.
- Give the employees necessary chemical-specific HAZCOM training.
- Store all materials properly, giving consideration to compatibility, quantity limits, secondary containment, fire prevention, and environmental conditions.

3.4 Shipping and Transportation of Chemical Products

Refer to the appropriate regulations found in the US Department of Transportation (USDOT) 49 CFR Parts 100-185. In the event wastes are being shipped off-site, the following regulations may be applicable: US Environmental Protection agency regulations (USEPA) that pertain to Resource Conservation and Recovery Act (RCRA) 40 CFR Parts 256,261, 262 and the Toxic Substances Control Act (TSCA) 40 CFR 700-789.

- Any person who offers hazardous materials for transportation must label the package or container
- Chemicals brought to the site might be defined as hazardous materials by the USDOT.
- All staff who ship the materials or transport them by road must receive appropriate training in shipping dangerous goods.
- All hazardous materials that are shipped (e.g., via Federal Express) or are transported by road must be properly identified, labeled, packed, manifested and documented by authorized staff.
- Contact the SS, or the SSHO for additional information. Specific contact numbers may be found in Section 5.0 of this document.

3.5 Lifting

Refer to the following SOPs prior to beginning a lifting related task: 'Lifting and Carrying'; and "General Safety Rules".

- Proper lifting techniques must be used when lifting any object.
 - Plan storage and staging to minimize lifting or carrying distances.
 - Get assistance when moving any materials weighing greater than 50 lb.
 - Split heavy loads into smaller loads.
 - Use mechanical lifting aids whenever possible.

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- Have someone assist with the lift, regardless of weight, for any awkward loads.
- Make sure the path of travel is clear prior to the lift.

3.6 Fire Prevention

Refer to the following SOPs: “Fire Protection”; “Housekeeping”; and “Burning and Welding”.

- Fire extinguishers shall be provided so that the travel distance from any work area to the nearest extinguisher is less than 100 feet. When 5 gallons or more of a flammable or combustible liquid is being used, an extinguisher must be within 50 feet. Extinguishers must:

- Be maintained in a fully charged and operable condition,

Be of the proper type to extinguish a potential fire from the material used, stored, or encountered,

- Be visually inspected each month, and
- Undergo a maintenance check each year.
- The area in front of extinguishers must be kept clear.
- Post “Exit” signs over exiting doors, and post “Fire Extinguisher” signs over extinguisher locations.
- Combustible materials stored outside should be at least 10 feet from any building.
- Solvent waste and oily rags must be kept in a fire resistant, covered container until removed from the site.
- Flammable/combustible liquids must be kept in approved containers, and must be stored in an approved storage cabinet.
- Obtain a Hot Work Permit prior to any activity involving welding, cutting, grinding, or similar, activities.

3.7 Ladders

Refer to the following SOPs prior to using a ladder in a task: “Ladders”; “Unsafe Condition Tag Out”; and General Safety Rules”.

- Ladders must be inspected by a competent person for visible defects prior to each day’s use.
- Defective ladders must be tagged-out and removed from service.
- Ladders must be used only for the purpose for which they were designed and shall not be loaded beyond their rated capacity.
- Only one person at a time shall climb on, or work from, an individual ladder.
- User must face the ladder when climbing up and down; keep belt buckle between side rails.
- Ladders shall not be moved, shifted, or extended while in use.
- User must use both hands to climb; use rope to raise and lower equipment and materials.
- Straight and extension ladders must be placed on a firm surface, secured to prevent the base from slipping and secured at the top.
- Ladders that may be displaced by work activities or traffic must be secured or barricaded.

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- Portable ladders must extend at least 3 feet above landing surface.
- Straight and extension ladders must be positioned at such an angle that the ladder base to the wall is one-fourth of the working length of the ladder.
- Stepladders are to be used in the fully opened and locked position.
- Users are not to stand on the top two steps of a stepladder; nor are users to sit on top or straddle a stepladder.
- Fixed ladders > 24 feet in height must be provided with fall protection devices.
- Fall protection should be considered when working from extension, straight, or fixed ladders greater than six feet from lower levels and both hands are needed to perform the work, or when reaching or working outside of the plane of ladder side rails.

3.8 Heat Stress

Refer to the “Heat Stress” SOP.

- Stay hydrated. Disposable cups and water maintained at 50 to 60° F should be available. Under severe heat conditions, drink 1 to 2 cups every 20 minutes, for a total of 1 to 2 gallons per day.
- Never use alcohol in place of water or other nonalcoholic fluids. Decrease your intake of coffee and caffeinated soft drinks during working hours.
- Acclimate yourself by slowly increasing workloads (i.e., do not begin with extremely demanding activities).
- Use cooling devices, such as cooling vests, to aid natural body ventilation. These devices add weight, so their use should be balanced against efficiency.
- Use mobile showers or hose-down facilities to reduce body temperature and cool protective clothing.
- Conduct field activities in the early morning or evening and rotate shifts of workers, if possible.
- Avoid direct sun whenever possible, which can decrease physical efficiency and increase the probability of heat stress. Take regular breaks in a cool, shaded area.
- Provide adequate shelter/shade to protect personnel against radiant heat (sun, flames, hot metal).
- Maintain good hygiene standards by frequently changing clothing and showering.
- Observe one another for signs of heat stress. Persons who experience signs of heat syncope, heat rash, or heat cramps should consult the SS to avoid progression of heat-related illness.

SYMPTOMS AND TREATMENT OF HEAT STRESS					
	Heat Syncope	Heat Rash	Heat Cramps	Heat Exhaustion	Heat Stroke
Signs and Symptoms	Sluggishness or fainting while	Profuse tiny raised red blister-like	Painful spasms in muscles used	Fatigue, nausea, headache,	Red, hot, dry skin; dizziness;

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	standing erect or immobile in heat.	vesicles on affected areas, along with prickling sensations during heat exposure.	during work (arms, legs, or abdomen); onset during or after work hours.	giddiness; skin clammy and moist; complexion pale, muddy, or flushed; may faint on standing; rapid thready pulse and low blood pressure; oral temperature normal or low	confusion; rapid breathing and pulse; absence of sweating; high oral temperature.
Treatment	Remove to cooler area. Rest lying down. Increase fluid intake. Recovery usually is prompt and complete.	Use mild drying lotions and powders, and keep skin clean for drying skin and preventing infection.	Remove to cooler area. Rest lying down. Increase fluid intake.	Remove to cooler area. Rest lying down, with head in low position. Administer fluids by mouth. Seek medical attention.	Cool rapidly by soaking in cool—but not cold—water. Call ambulance, and get medical attention immediately!

Monitoring Heat Stress

These procedures should be considered when the ambient air temperature exceeds 70°F, the relative humidity is high (greater than 50 percent), or when workers exhibit symptoms of heat stress. The heart rate (HR) should be measured by the radial pulse for 30 seconds, as early as possible in the resting period. The HR at the beginning of the rest period should not exceed 100 beats/minute, or 20 beats/minute above resting pulse. If the HR is higher, the next work period should be shortened by 33 percent, while the length of the rest period stays the same. If the pulse rate still exceeds 100 beats/minute at the beginning of the next rest period, the work cycle should be further shortened by 33 percent. The procedure is continued until the rate is maintained below 100 beats/minute, or 20 beats/minute above resting pulse.

3.9 Cold Stress

Refer to the “Cold Temperature Work” SOP.

- Be aware of the symptoms of cold-related disorders, and wear proper, layered clothing for the anticipated fieldwork. Appropriate rain gear is a must in cool weather.
- Personnel who are required to work outside must have their own cold weather apparel and are required to have this apparel with them at the project site during the cold weather months.
- Consider monitoring the work conditions and adjusting the work schedule using guidelines such as the wind-chill index.
- Wind-chill index is used to estimate the combined effect of wind and low air temperatures on exposed skin. The wind-chill index does not take into account the body part that is exposed, the level of activity, or the amount or type of clothing worn. For those reasons, it should only be used as a general guideline to warn workers of situations that could cause cold-related illnesses.

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- Observe one another for initial signs of cold-related disorders. Persons who experience initial signs of immersion foot, frostbite, hypothermia should consult the SS and/or Safety Officer and seek proper treatment to avoid progression of cold-related illness.
- Review the weather forecast—be aware of predicted weather systems along with sudden drops in temperature, increase in winds, and precipitation.

SYMPTOMS AND TREATMENT OF COLD STRESS			
	Immersion (Trench)Foot	Frostbite	Hypothermia
Signs and Symptoms	Feet discolored and painful; infection and swelling present.	Blanched, white, waxy skin, but tissue resilient; tissue cold and pale.	Shivering, apathy, sleepiness; rapid drop in body temperature; glassy stare; slow pulse; slow respiration.
Treatment	Seek medical treatment immediately.	Remove victim to a warm place. Re-warm area quickly in warm – but not hot – water. Have victim drink warm fluids, but not coffee or alcohol. Do not break blisters. Elevate the injured area, and get medical attention.	Remove victim to a warm place. Have victim drink warm fluids, but not coffee or alcohol. Get medical attention.

3.10 Procedures for Locating Buried Utilities

Underground Utilities

TES will perform a geophysical survey to locate all underground utility lines within the work perimeter prior to the start of demolition. In addition, The USACE may be contacted for as-built drawings or other assistance to identify underground utilities. The located underground utility lines (gas, electric, water, sewer, telephone, etc.) will be shown on a drawing that will be presented to the USACE. After USACE acceptance, TES will disconnect and terminate all existing utility lines as required for building demolition. Basic utilities including electric and water will be provided to TES by USACE at existing sources as available. TES will coordinate and be responsible for all hookup and drop services associated with provided utilities. TES will prepare a description of its utility requirements and submit them to the USACE for approval. After receiving USACE's written approval, TES will arrange for utility hookups and have an USACE person onsite whenever a representative of any utility is present to extend or modify services.

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Currently, there are no sewer (sanitary or storm) connections at the site; they have been disconnected. TES will remove liquids and solids from site drains and sumps as needed to prevent overflow prior and during grouting. TES will then plug all drains and sumps and fill to grade to prevent any liquid from migrating off-site. TES will collect all water from demolition activities, test for compliance with discharge requirements, and transport the wastewater to an acceptable, off-site treatment facility. Sanitary wastewaters will be managed similarly. Additional details are provided in Section 3.2.

3.11 Confined Space Entry

Refer to the “Confined Space Entry” SOP. Refer to additional SOPs applicable to the work and environment of the planned task.

The following requirements must be met prior to confined space entry:

- Confined space entrants, attendants, and entry supervisors must complete the Confined Space Entry training.
- A Confined Space Entry Permit (CSEP), must be completed and posted near the space entrance point for review.
- Each confined space entrant and attendant must attend a pre-entry briefing conducted by the entry supervisor and Site Safety Officer.
- Each confined space entrant and attendant must verify that the entry supervisor has authorized entry and that all permit or certificate requirements have been satisfied.
- Only individuals listed on the Authorization/Accountability Log are permitted to enter the space.
- Each confined space entrant and attendant must verify that atmospheric monitoring has been conducted at the frequency specified on the permit or certificate and that monitoring results are documented and within acceptable safe levels.

The following requirements must be met during confined space entry:

- Communication must be maintained between the attendant and entrants to enable the attendant to monitor entrant status.
- Entrants must use equipment specified on the permit or certificate accordingly.
- All permit or certificate requirements must be followed.
- Entrants must evacuate the space upon orders of the attendant or entry supervisor, when an alarm is sounded, or when a prohibited condition or dangerous situation is recognized.
- Entrants and attendants must inform the entry supervisor of any hazards confronted or created in the space or any problems encountered during entry.

3.12 Vehicle Safety—Operator Safety

- Operate vehicle only when in possession of valid driver’s license.
- Employees shall not operate vehicles while under the influence of drugs or alcohol. Consumption of drugs or alcoholic beverages before or during work shift/driving is prohibited, as is possession of them within vehicle.

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- All vehicle occupants must use seat belts at all times. Familiarize yourself with rental vehicle features (e.g., mirror & seat adjustments).
- Adjust headrest to proper position.
- Always drive within the speed limit.
- Do not drive if you are fatigued.
- Tie down loose items when driving a pickup, truck or van.
- Exercise caution when exiting traveled way or parking along street—avoid sudden stops, use flashers when stopping at work areas.
- Park in a manner that will allow for safe exit from vehicle, and where practicable, park vehicle so the vehicle can pull forward to leave the parking space.
- Pull off the road, and put the car in park before talking on a mobile phone.
- Maintain both a First Aid kit and Fire Extinguisher in the field vehicle at all times.
- Park vehicle in a location where it can be accessed easily in the event of an emergency. Maintain a copy of emergency contact numbers and hospital directions in the vehicle.

3.13 Working/Walking Adjacent to Vehicle Traffic

- When possible, walk along edge of parking lots and roads, or in designated pedestrian ways.
- All personnel must wear reflective/high-visibility ANSI Class 2 safety vests in active work areas (exception: office area.)
- To protect from flying debris, eye protection should be worn while walking/working near or on highways.
- Work as far from traveled way as possible to avoid creating confusion for drivers.
- Remain aware of factors that influence traffic related hazards and required controls—sun glare, rain, wind, flash flooding, limited sight-distance, hills, curves, guardrails, width of shoulder (i.e., breakdown lane), etc.
- Always remain aware of an escape route—behind an established barrier, parked vehicle, guardrail, etc.
- Always pay attention to moving traffic—never assume drivers see you.
- Remain aware of approaching traffic for signs of erratic driver behavior.
- When workers must face away from traffic, a “buddy system” should be used, where one worker, typically a flagman, is looking towards traffic.
- A Flagman should be used when physical barriers are not available or practical. The Flagman continually watches approaching traffic for signs of erratic driver behavior and warns workers.
- All vehicles should be parked at least 40 feet away from the work zone and traffic except for those vehicles in direct support of the work activity.
- All Field vehicles must be equipped with flashing lights.

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- Obtain the proper traffic control devices to ensure that they are adequate to protect your work area. Traffic control devices should: (1) convey a clear meaning/warning, (2) be understood by the typical driver, and (3) be placed to give drivers adequate time for proper response (e.g., one orange cone beside an open excavation is not adequate traffic control)
- Flagmen should be used when (1) two-way traffic is reduced to using one common lane, (2) driver visibility is impaired or limited by project activities, (3) project vehicles enter or exit street traffic in an unexpected manner, or (4) the use of a flagger enhances established traffic warning.

3.14 Vehicles Entering/Exiting Site

- Vehicles entering or leaving the site will receive the required decontamination and radiological scanning.
- If heavy equipment must be backed into the site, a flagman/spotter must be used.
- If vehicle will impede (is slow-moving) the normal flow of traffic when pulling into/out of the site, a flagger must also be used. Once the vehicle is on the road way, a field vehicle equipped with flashing lights will follow the heavy equipment vehicle.
- It is imperative that truck operations do not pose a traffic hazard to pedestrians and normal road traffic.

3.15 Uneven Walking/Working Surfaces

- Employees walking in ditches, swales and other drainage structures adjacent to roads or across undeveloped land must use caution to prevent slips and falls, which can result in twisted or sprained ankles, knees, and backs.
- Whenever possible, work or observe from a flat surface and do not enter a steep ditch or side of a steep road bed.
- If steep terrain must be negotiated, sturdy shoes or boots with good traction that provide ankle support should be used.

3.16 Slips, Trips, and Falls

Refer to the following SOPs: “General Safety Rules”; “Housekeeping” and any additional SOPs specifically related to the planned task. Sprained and strained joints can require a long recovery period.

- Institute and maintain good housekeeping practices at all times.
- Pick up tools, remove debris and eliminate tripping hazards in the work area.
- Place extension cords, air lines, ropes, etc., under a barricade to eliminate tripping hazards.
- Walk or climb only on equipment and/or surfaces specifically designed for personnel access.
- Watch for slippery/poor footing and other potential slipping and tripping hazards in the work area that could result in a fall or serious injury.

3.17 Pressure Washing Operations

Refer to the following SOPs: “Eye and Face Protection”; “Hearing Protection”; “Personal Protective Equipment”; and “General Safety Rules”

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- Wear appropriate personal protective equipment when operating a pressure washer that includes a face shield, hearing protection, gloves and other protective clothing.
- Follow manufacturer’s safety and operating instructions.
- Use extended pressure wash wands to minimize contact with overspray.
- Inspect pressure washer before use and confirm deadman switch is fully operational.
- NEVER wash your hands, boots or other items with a pressure washer.

3.18 Vacuum Truck Operations

Refer to the following SOPs: “Eye and Face Protection”; “Hearing Protection”; “Fire Prevention”; “Personal Protective Equipment”; and “Powered Industrial Trucks”.

- Qualified subcontractors are the only personnel authorized to operate a vacuum truck.
- Locate the observers upwind of the tank or container being emptied.
- Keep hands from vacuum hose inlet.
- Wear protective gloves and hearing protection in the immediate vicinity.

3.19 Inclement Weather

Adverse weather conditions and work situations requiring immediate suspension of field work activities are defined in the following list:

- Any observable thunder or lightning means stop work and immediately go to shelter. Remember, if you can hear thunder you can be struck by lightning.
- Use thunderstorm watches or warnings issued by the National Weather Service as an alert to potential electric activity.
- Typically, when thunder and/or lightning are observed, a 30-minute stand-down occurs to allow the storm cell to pass the area.
- If lightning or thunder is observed within the stand down period, the 30-minute time frame is extended until electrical activity ceases.
- The SSHO can monitor multiple sources to track developing potential for lightning. These are the following:

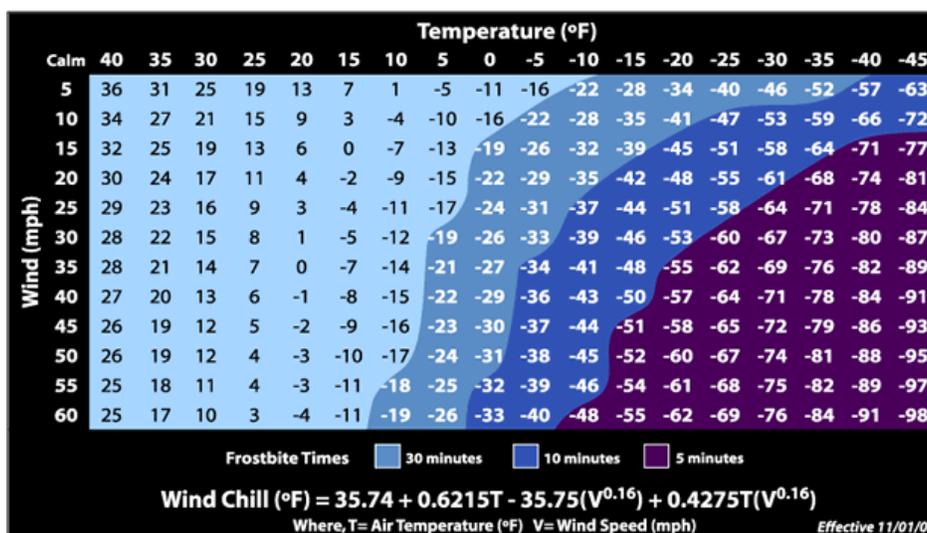
Doppler radar reports from the Internet

National Weather Service radio reports

- Field crews are to immediately report any observations of lightning or thunder in their area to the SS and/or SSHO.
- Cease boating operations when sustained wind speeds of 20 miles per hour (mph) or wind gusts of 25 mph are observed.
- Cease high profile work when sustained wind speeds of 25 mph or wind gusts of 35 mph are observed and where wind chill is not a factor, i.e., greater than 60°F.
- Cease all other land-based work when sustained wind speeds of 40 mph or wind gusts of 45 mph are observed.

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- Cease hoisting operations during moderate to heavy rain and/or snow fall events. Freezing rain is also cause for suspension of hoist use.
- An equivalent wind chill factor of -24°F on the wind chill factor chart (below) will trigger systematic shut down of all non-emergency work activities.
- A tornado warning for the general area or county will result in a site work stoppage. Move immediately to a proper shelter until the threat has passed and the SS informs you it is safe to return to work.



3.20 Radiological and Chemical Hazards

Radiological

The surface and subsurface soils associated with the NFSS have the potential to contain various levels of radiological materials (Thorium-230, Uranium-234 and Uranium-238). Routine radiological surveys and air sampling will be conducted on site to monitor/control potential exposures to these radiological contaminants. See Section 11.0 TES Radiation Safety Plan (RSP), presented in Appendix B of the APP.

Chemical

The surface and subsurface soils have the potential to contain various levels of chemical /metal constituents including metals, polynuclear aromatic hydrocarbons, various volatile organic hydrocarbons, and semi-volatile organic hydrocarbons and lead. Routine surveys and air sampling will be conducted on site to monitor/control potential exposures to these chemical/metal contaminants. Air sampling/monitoring shall be reviewed on a weekly basis or when applicable – whichever is more frequent, by the project Certified Industrial Hygienist.

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3.21 Biological Hazards and Controls

3.21.1 Snakes

Snakes typically are found in underbrush and tall grassy areas. If you encounter a snake, stay calm and look around; there may be other snakes. Turn around and walk away on the same path you used to approach the area. If a person is bitten by a snake, wash and immobilize the injured area, keeping it lower than the heart if possible. Seek medical attention immediately. DO NOT apply ice, cut the wound, or apply a tourniquet. Try to identify the type of snake: note color, size, patterns, and markings.

3.21.2 Poison Ivy and Poison Sumac

Poison ivy, poison oak, and poison sumac typically are found in brush or wooded areas. They are more commonly found in moist areas or along the edges of wooded areas. Become familiar with the identity of these plants. Wear protective clothing that covers exposed skin and clothes. Avoid contact with plants and the outside of protective clothing. If skin contacts a plant, wash the area with soap and water immediately. If the reaction is severe or worsens, seek medical attention.

3.21.3 Ticks

Ticks typically are in wooded areas, bushes, tall grass, and brush. Ticks are black, black and red, or brown and can be up to ¼-inch in size. Wear tightly woven light-colored clothing with long sleeves and pant legs tucked into boots; spray only outside of clothing with permethrin or permanone and spray skin with only DEET; and check yourself frequently for ticks.

If bitten by a tick, grasp it at the point of attachment and carefully remove it. After removing the tick, wash your hands and disinfect and press the bite areas. Save the removed tick. Report the bite to human resources. Look for symptoms of Lyme disease or Rocky Mountain spotted fever (RMSF). Lyme: a rash might appear that looks like a bull's-eye with a small welt in the center. RMSF: a rash of red spots under the skin 3 to 10 days after the tick bite. In both cases, chills, fever, headache, fatigue, stiff neck, and bone pain may develop. If symptoms appear, seek medical attention.

3.21.4 Wasps, Bees and Other Stinging Insects

Wasps, Bee and other stinging insects may be encountered almost anywhere and may present a serious hazard, particularly to people who are allergic. Watch for and avoid nests. Keep exposed skin to a minimum.

Carry a “Sting Kit “if you have had allergic reactions in the past and immediately seek help if you are stung. In severe allergic reaction cases, the time from

Inform the SS, the foreman and your work buddy if you are allergic to wasp and bee stings.

If a stinger is present, remove it carefully with tweezers. Wash and disinfect the wound, cover it, and apply ice.

If you have never experienced an allergic reaction to a sting, do not assume you will not have one. Watch the sting area for an allergic reaction (excessive swelling, difficult breathing, light headed, etc). Inform your supervisor and seek medical attention if a reaction develops.

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3.21.5 Blood Borne Pathogens

Refer to the following SOPs: “Exposure Control Plan for Blood Borne Pathogens”; and “Personal Protective Equipment”.

Exposure to blood borne pathogens may occur when rendering first aid to a co-worker who has been injured and bleeding and/or through giving CPR. Exposure controls and personal protective equipment (PPE) are required as specified in the SOP.

Individuals who know they have an easily communicable disease shall discuss this condition, and the work they are expected to perform, with their medical professional. These individuals must have specific written permission from their medical professional before reporting to the site to work. Hepatitis B vaccination must be offered to each employee before the person participates in a task where exposure is a possibility.

3.21.6 Bird/Animal Waste

There are many diseases associated with birds and other animals. While their waste materials are a source of strong and unpleasant odors, animal remains and their waste products (feces, urine, etc) are known as habitats for disease-breeding parasites. Hanta virus, Newcastle disease, ornithosis, are recognized as human health concerns. Serious illness including fatalities, have been associated with exposures to these contaminants. Therefore, precautions are necessary when working in areas where these materials may be present.

Appropriate hand protection as well as thorough washing immediately upon leaving the affected areas is necessary. Coveralls and booties (disposable) may also be used to ensure any contamination is not spread passed the control zones. It is important that dust from these materials is maintained to as low as reasonably achievable, as they represent an inhalation hazard when activities in the area can cause small particles from the source to become airborne. Based on an assessment of the quantity of animal waste material, appropriate respiratory protection may be required.

3.21.7 Mosquitoes and West Nile Virus

Human illness from West Nile virus is rare, even in areas where the virus has been reported. On rare occasions, West Nile virus infection can result in a severe and sometimes fatal illness known as West Nile encephalitis (an inflammation of the brain). The risk of severe disease is higher for persons 50 years of age and older.

Most infections of West Nile encephalitis are mild, and symptoms include fever, headache, and body aches, occasionally with skin rash and swollen lymph glands. More severe infection may be marked by headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, paralysis, and rarely, death. The incubation period in humans (i.e., time from infection to onset of disease symptoms) for West Nile encephalitis is usually 3 to 15 days. If symptoms occur, see your doctor immediately.

You can reduce your chances of becoming ill by protecting yourself from mosquito bites. To avoid mosquito bites:

- Apply insect repellent containing DEET (N,N-diethyl-meta-toluamide) when you're outdoors. Apply sparingly to exposed skin. DEET in high concentrations (greater than 35 percent) provides no additional protection.

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- Spray clothing with repellents containing permethrin/DEET since mosquitoes may bite through clothing.
- Read and follow the product directions whenever you use insect repellent, particularly if they contain permethrin.
- Wear long-sleeved clothes and long pants treated with repellent and stay indoors during peak mosquito feeding hours (dusk until dawn) to further reduce your risk.

3.22 Chemical and Radiological Contaminants of Concern

Refer to the following SOPs: “Personal Protective Equipment”; “Hazard Communication Program”; “Materials Handling Program”; and “General Safety Rules”.

Previous work at the NFSS has indicated the potential presence of asbestos-containing materials on the exterior walls and roof of Building 401, as well as lead-based paint. Other material anticipated as PCBs (in capacitors), mercury (in electric switches and other components). Liquids and solids identified in drains and sumps have been assessed to contain various organic solvents, phenols, pesticides and metals (arsenic, cadmium, chromium, and nickel). Surface and subsurface soils associated with the NFSS have potential concentrations of metals pesticides as well as radiological isotopes (Radium-226, Thorium-230, Uranium-234 and Uranium-238). Workers who have the potential to be in direct contact with these substances will be provided PPE in accordance with the referenced SOPs.

3.23 Potential Routes of Exposure

Refer to the following SOPs: ‘Personal Protective Equipment’; ‘Respiratory Protection’; ‘Materials Handling’; and ‘General Safety Rules’.

The following are the primary routes of exposure:

Dermal: Contact with contaminated media. This route of exposure is minimized through proper use of PPE, as specified in the SOP.

Inhalation: Airborne contaminated particulates. This route of exposure is minimized through and monitoring and proper respiratory protection, if required.

Other: Inadvertent ingestion of contaminated media. This route should not present a concern if good hygiene practices are followed (e.g., wash hands and face before drinking or smoking).

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4.0 PROACTIVE HEALTH AND SAFETY PROGRAM

TES will use a proactive approach to health and safety. Personnel are expected to actively participate in the H&S program by ensuring they have the proper PPE, tools and training prior to beginning a task and also by watch for unsafe conditions while they are working.

Everyone has the authority to temporarily stop work on a task when they observe a situation that could result in injury to themselves, co-workers, equipment and/or property. When an unsafe situation exists, stop the activity and point out the problem. You are then expected assist your co-workers in correcting the problem and then to notify the SS and SSHO. Specific contact information is provided in Section 6.0 of this document. Inform the person you contacted what occurred, and how it was corrected. Further inform them if there is a potential for the problem to reoccur.

A proactive health and safety systems uses “tools” which allows all the workers to participate in the process. The basic loss prevention tools that will be used on this project to implement a proactive approach to health and safety on this project include:

- Activity Hazard Analysis (AHA)
- Pre-Task Safety Meeting
- Loss and Near Loss Investigations

The SS ensures that all subcontractors develop and implement AHAs, safety meetings and investigations (if any needed) on the project.

4.1 Activity Hazard Analysis (AHA) and Hazardous Work Permits

An AHA will be prepared before beginning each project activity posing health and safety hazards to project personnel. The AHA is first prepared in a short meeting by the personnel assigned to perform the job and writing down details of the on the AHA form. An AHA is completely flexible and is expected to be revised as work progresses on a task.

The AHA defines the activity being performed, the hazards posed and control measure (training, inspections, PPE, etc..) required to perform the work safely. All workers are briefed on the AHA each day before doing the work. Worker input is solicited during the performance of work to further identify the hazards posed and control measures required. In addition, a listing of the equipment to be used to perform the activity, inspection requirements and training requirements for the safe operation of the equipment listed must be identified. The SS and/or the Safety Officer must review and concur with the AHA. A list of AHAs are provided in Attachment 14 of the TES Accident Prevention Plan (APP).

The use of AHAs better promotes worker participation in the hazard recognition and control process, while reinforcing the task-specific hazard and required H&S procedures with the crew each day. The use of AHAs and/or Job Safety Analysis (JSAs) are a common safety practice in the construction industry.

Hazardous work permits (HWPs) will be developed using information from the AHAs. HWPs will be used to document the hazards and the controls/PPE to address the identified hazards.

4.2 Daily Pre-Task Safety Meeting

Daily safety meetings (also known as “Tailgate Safety Meeting”) are brief safety and work orientation meetings held at the beginning of each shift. All project personnel are required to be

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in attendance, to review the applicable AHAs and HWPs and their related /required health and safety procedures, and to discuss any other important information regarding the task to be accomplished.

Typically, the safety meetings are held between the SSHO, crew supervisor and their work crews to focus on those tasks assigned, procedures to be followed and the hazards posed to individual work crews. Usually each major work crew will hold its own safety meeting. If the need arises to hold a site-wide safety meeting, the crew supervisors will be informed of the meeting location and to direct their personnel to meeting. All site personnel are required to sign a safety meeting attendance form every day. Copies of the attendance/signoff sheets for the daily tailgate meetings and HWPs will be attached to the daily reports submitted to the USACE.

4.3 Loss/Near Loss Investigations

Loss/Near Loss Investigations shall be performed for the all TES incidents involving:

- Person injuries/illnesses
- “Near Loss” (meaning an injury, property damage and/or an accident was barely avoided)
- Equipment/property damage
- Spills, leaks, regulatory violations
- Motor vehicle accidents

The causes of loss and near loss incidents are similar, so by identifying and correcting the causes of near loss causes, future loss incidents may be prevented. The following is the Loss/Near Loss Investigation Process:

- Gather all relevant facts, focusing on fact-finding, not fault-finding, while answering the “who, what, when, where and how” questions.
- Draw conclusions supported by the facts (not opinions), pitting those facts together into a probable scenario.
- Determine incident root cause(s), which are basic causes on why an unsafe act/condition existed.
- Develop and implement solutions, matching all identified root causes with solutions.
- Communicate incident as a Lesson Learned to all project personnel.
- Filed follow-up on implemented corrective active action to confirm solution is appropriate.

The SS and/or SSHO shall perform an investigation, as soon as practical after incident occurrence during the day of the incident, for all Loss and Near Loss Incidents that occur on the project. The “Loss/Near Loss Report” form contained in the AHA SOP shall be used to document the investigation.

All Loss and Near Loss incident involving personal injury, property damage in or near loss incidents that could have resulted in serious consequences shall be investigated by completing the incident investigation forms and submitting them to the SS and/or SSHO within 24 hours of incident. A preliminary report shall be submitted to the SS within 24 hours of when the incident occurs.

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Notification requirements to the USACE shall be followed as specified in the TES Accident Prevention Plan (APP).

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5.0 Project Organization and Personnel

5.1 TES Project Personnel

The following personnel have been assigned to the NFSS project in the following capacity:

Employee Name	Office	Responsibility	Mobile Phone
██████████	TES	Project Manager	██████████
██████████	TES	Site Supervisor	██████████
██████████	TES	Site Safety and Health Officer	██████████

5.1.1 TES Employee Responsibilities

The site workers are to be compliant with state and federal hazardous waste operations requirements for hazardous Waste Operations (HAZWOPER). This would include, but not be limited to, 40-hour initial training, 3-day on-the-job experience, and 8-hour annual refresher training. Certain tasks (e.g., confined-space entry) and contaminants (e.g., lead) may require additional training and medical monitoring.

Employees designated “Supervisor” will have completed the required training, and have documented requisite field experience. All workers who are currently certified by the American Red Cross, or equivalent, in First Aid and CPR (FA-CPR) are requested to provide a copy of their training to their supervisor. A list of FA-CPR trained personnel will be posted in each break/assembly area.

At least one FA-CPR designated employee must be present during tasks performed in exclusion or decontamination zones. Two (2) FA-CPR designated employees must be present during execution of work activities.

Pregnant females are required to inform the SS and/or SSHO. Additionally, these workers must obtain a physician’s statement of the employee’s ability to perform hazardous activities before being assigned fieldwork.

Each worker is responsible for the following performance objectives:

- During any task, employees must consider the possible effects of their actions on themselves and others and take appropriate protective measures.
- Complete a health and safety orientation prior to being authorized to enter the project work areas
- Employees are required to review, be familiar with, and adhere to site-specific jobsite health and safety plans, procedures, practices, precautions, and permits.
- Use only safe means of access to and from work areas.
- Perform work in a safe manner and produce quality results; complete work without injury, illness, or property damage. Report to your supervisor any observed defects beyond your ability to repair.

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- Use the right tool or equipment for the job.
- All disruptive activities, such as horseplay, practical jokes, etc., are forbidden.
- Practice good housekeeping and keep your work area clear of debris and extra tools. At the end of each phase of work, return all tools and excess material to proper storage areas. Clean up all debris as work progresses. Each employee is responsible for keeping their work areas clean.
- The employee is responsible for wearing appropriate personal protective equipment in operations where there is exposure to hazardous conditions, or where need is indicated to reduce hazards. Hard hats, safety shoes, high-visibility safety vests and safety glasses will be worn at all times within designated work areas on site.
- Hearing protection will be worn in when sound levels may exceed 85 decibels. A practical test to determine if hearing protection is needed is if you cannot easily hear a person speaking to you in a normal conversational voice from 2 feet away then you need to use hearing protection.

5.1.2 Progressive Discipline Policy

All TES individuals associated with this project must work in an injury-free and drug-free environment. All personnel must comply with the project HASP, TES policies and procedures, any project-specific safety requirements.

Safety Infractions

Any noncompliance with the project HASP procedures and other project-specific safety requirements will be considered safety infractions. These will include, but will not be limited to:

- Violation of established safety rules, regulations, codes or other requirements.
- Poor housekeeping.
- Failure to report on-the-job injuries or unsafe conditions, and
- Failure to wear the appropriate personal protective equipment.
- Intolerable Offenses

Intolerable offenses and actions will include, but will not be limited to, the following:

- Any manager, supervisor, foreman or other person in charge of the work being performed who requires, requests, asks, threatens with their job, allows, or condones employees to work in or around unsafe acts or conditions
- Any employee, supervisor, or manager who knowingly falsifies any investigative documents or testimony involving an investigation
- Any employee, supervisor, or manager who openly exhibits disregard, defiance, or disrespect for the safety program
- Any employee, supervisor, or manager who engages in a physical altercation (fight) and/or who engages in physical or emotional intimidation of co-workers.
- Any supervisor, foreman or manager who fails to keep sufficient and accurate records of their work activities, materials handled and used and/or related process data. Your records

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must show what activities occurred, equipment being used, processes the crew were operating, problems encountered, etc., in the event of an incident, accident or illness.

- Any employee who violates established safety rules, regulations, or codes that endanger themselves or other employees.
- Any employee, supervisor, or manager failing to comply with the SSHO, or any and all federal, state, or local safety laws and regulations that create the potential for serious or costly consequences.
- Any employee who commits repeated minor offenses and shows a lack of responsible effort to correct these offenses.
- This project will practice zero tolerance for intolerable offenses. Those individuals found participating in such offenses will be:
 - Receive a written warning containing conditions for returning to work along with being suspended from work for 3 days without pay, or
 - Immediately discharged and not allowed to return
 - Enforcement and Discipline

This policy will be thoroughly reviewed with each employee during the employee health and safety orientation. All personnel will indicate their review of the SSHO and project rules by signing the employee signoff form.

- Safety Infractions

Safety infractions will be handled as follows:

- First Offense—Employee will receive a verbal warning.
- Second Offense—Employee will receive a written warning and a 2-day suspension without pay.
- Third Offense—Employee will be discharged.

5.1.3 Drug-Free Workplace

TES does not tolerate illegal drugs, or any use of drugs, controlled substances, or alcohol that impairs an employees work performance or behavior. TES employees shall not be involved in any manner with the unlawful manufacture, distribution, dispensation, possession, sale, or use of illegal drugs in the workplace. Any violation of these prohibitions may result in discipline or immediate discharge. All employees will be subject to post-incident testing in the event of an accident and/or injury requiring medical attention.

5.2 Field Team Chain of Command and Communication Procedures

5.2.1 Project Manager (PM)

[REDACTED]

Phone: [REDACTED]

The project manager (PM) is responsible for providing adequate resources (budget and staff) for project-specific implementation of the H and S process. The PM has overall management responsibility for the project. The PM may explicitly delegate specific tasks to other staff, as

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described in sections that follow, but retains ultimate responsibility for completion of the following in accordance with this document:

- Incorporate standard terms and conditions, and contract-specific roles and responsibilities in contract and subcontract agreements (including flow-down requirements to lower-tier subcontractors).
- Select safe and competent subcontractors.
- Obtain, review, and accept or reject subcontractor pre-qualification questionnaires.
- Ensure that acceptable certificates of insurance, including TES as named additional insured, are secured as a condition of subcontract award.
- Incorporate H and S information in subcontract agreements, and ensure that appropriate site-specific safety procedures, training, and medical monitoring records are reviewed and accepted prior to the start of subcontractor's field operations.
- Maintain copies of subcontracts and subcontractor certificates of insurance, bond, contractor's license, training and medical monitoring records, and site-specific safety procedures in the project file accessible to site personnel.
- Provide oversight of subcontractor practices per the site-specific safety plan.
- Manage the site and interface with third parties in a manner consistent with contract and subcontract agreements.
- Ensure that the overall, job-specific, H&S goals are fully and continuously implemented.

5.2.2 Corporate Health and Safety Manager (CHSM)

Phone: [REDACTED]

The TES CHSM is responsible for the following:

- Review and accept or reject subcontractor pre-qualification questionnaires with participation from contracts.
- Review and accept or reject subcontractor training records and site-specific safety procedures prior to start of subcontractor's field operations.
- Support the SS's oversight of subcontractor (and lower-tier subcontractors), HS&E practices and interfaces with on-site third parties per the site-specific safety plan.
- Assist with program implementation as needed.
- Provide technical support.
- Conduct H&S audits.

5.2.3 Site Supervisor (SS)

Phone (cell) [REDACTED]

The SS and his Assistants are responsible for the following:

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- Verify that the project is conducted in a safe manner.
- Verify that the HASP is current and amended when project activities or conditions change.
- Verify team members and subcontractors read the HASP and sign the Employee Signoff Form, prior to commencing field activities.
- Verify and document team members have completed any required specialty training (e.g., fall protection, confined space entry) and medical surveillance.
- Verify compliance with the requirements of the HASP and applicable subcontractor health and safety plan(s).
- Act as the project “Hazard Communication Coordinator” and perform the responsibilities outlined in the HASP.
- Act as the project “Emergency Response Coordinator” and perform the responsibilities outlined in the HASP.
- Verify that safety meetings are conducted and documented in the project file as needed throughout the course of the project (e.g., as tasks or hazards change).
- Verify that project health and safety forms and permits are being used as outlined in the HASP.
- Perform assessments of contractor HS&E practices per the site-specific safety plan and verify that project activity self-assessment checklists are being used by TES team members.
- Conduct safety briefings weekly to NFSS FUSRAP site team members and subcontractor supervisors. Require subcontractors to lead their own safety briefings as appropriate.
- Implement Drug-Free Workplace Policy.
- Provide open communication with employees.
- Ensure that programs are effectively functioning to prevent and control hazards on the project.
- Provide opportunities for safety involvement to project employees.

5.2.4 TES Subcontractors

The subcontractors listed above must be provided a copy of this plan. However, this plan does not specifically address all hazards associated with the tasks and equipment in which the subcontractor has expertise in. TES will obtain and review for acceptance, subcontractor Health and Safety Plans (HASP) and related SOPs prior to the start of any field work. Subcontractors must comply with the minimum standard established by this HASP.

TES’ oversight does not relieve subcontractors of their responsibility for effective implementation and compliance with the established plan(s) and applicable federal and state safety regulations.

TES personnel should continuously endeavor to observe subcontractors’ safety performance. This endeavor should be reasonable, and include observing for hazards or unsafe practices that are both readily observable and occur in common work areas. TES is not responsible for exhaustive observation for hazards and unsafe practices. In addition to this level of observation,

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the SS is responsible for confirming, via observation, subcontractor compliance the subcontractor's safety plan and applicable practices defined in this HASP.

Health and safety related communications with TES subcontractors should be conducted as follows:

- Brief subcontractors on the provisions of this plan, and require them to sign the Employee Signoff Form.
- Request subcontractor(s) to brief the project team on the hazards and precautions related to their work.
- When apparent non-compliance/unsafe conditions or practices are observed, notify the subcontractor safety representative and require corrective action. The subcontractor is responsible for determining and implementing necessary controls and corrective actions.
- When repeat non-compliance/unsafe conditions are observed, notify the subcontractor safety representative and stop affected work until adequate corrective measures are implemented.
- When an apparent imminent danger exists, immediately remove all affected employees and subcontractors. Notify subcontractor's safety representative, and stop affected work until adequate corrective measures are implemented. Notify the SS and/or, SSHO as appropriate.
- Document all significant verbal health and safety related communications in project field logbook, daily reports, or other records.

5.2.5 Other Contractors/Subcontractors

- Other contractors/subcontractors will be included in the HASP as identified.

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6.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)

Refer to the following SOPs: “Personal Protective Equipment”; “ Respiratory Protection ”, and “General Safety Rules”. PPE may be downgraded per SHSO exposure assessment.

PPE Specifications ^a				
Task	Level	Body	Head	Respirator ^b
General site entry Mobilization/Demobilization Oversight of field investigation Underground Utility Survey	D	Work clothes – no shorts; ANSI Z41–approved work boots; work glove, high visibility reflective work vests, and leather work gloves for handling metal, loading/unloading equipment, and any sharp objects.	ANSI Z89 -approved Hardhat ^c ANSI Z87 – approved Safety glasses with side shields Hearing protection ^d	None required
Walkthrough/Hazard Identification in Building 401	Modified D or Modified C	Disposable coveralls - no shorts; ANSI Z41–approved work boots; nitrile or work gloves, and high visibility reflective work vests.	ANSI Z89 -approved Hardhat ^c ANSI Z87 – approved Safety glasses with side shields Hearing protection ^d	N-95 disposable respirators due to bird/animal waste IF material will be disturbed and produce airborne hazard.
Abatement of ACM	C	Disposable coveralls, nitrile gloves (inner cloth), disposable booties,	ANSI Z89 -approved Hardhat ^c ANSI Z87 – approved Safety glasses with side shields Hearing protection ^d	Full-face or ½-face APR with P-100 cartridges
Abatement/removal of lighting fixtures, ballasts, switches, etc.	D	Disposable coveralls, nitrile gloves (inner),leather (outer) gloves, disposable booties,	ANSI Z89 -approved Hardhat ^c ANSI Z87 – approved Safety glasses with side shields Hearing protection ^d	Non required
Removal of liquids/solids from drains/sumps.	C	Body: Chemical protective coveralls (Kimber-Clark Kleenguard® A70 (or equivalent) and non-slip protective (steel toe) footwear or rubber steel-toe over-boots Gloves: nitrile gloves and or nitrile gloves. Leather	ANSI Z89 -approved Hardhat ^c Hearing protection ^d	Full-face or ½-face APR with organic vapor cartridges. Air monitoring will be performed and a decision to downgrade pending review of the results.

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PPE Specifications ^a				
Task	Level	Body	Head	Respirator ^b
		gloves over nitrile surgical gloves for handling equipment.		
Demolition	C- modified D	Disposable coveralls, nitrile gloves (inner),leather (outer) gloves, disposable booties,	ANSI Z89 -approved Hardhat ^c ANSI Z87 – approved Safety glasses with side shields Hearing protection ^d	Begin work with Full-face or ½-face APR with P-100 cartridges and downgrade per IH assessment

Reasons for Upgrading or Downgrading Level of Protection

Upgrade ^e	Downgrade
<p>Request from individual performing tasks (however, not supported via IH assessment/data).</p> <p>Change in work tasks that will increase contact or potential contact with hazardous materials.</p> <p>Occurrence or likely occurrence of gas or vapor emission.</p> <p>Known or suspected presence of dermal hazards.</p> <p>Action levels are exceeded.</p>	<p>New information indicating that situation is less hazardous than originally thought.</p> <p>Change in site conditions that decrease the hazard.</p> <p>Change in work task that will reduce contact with hazardous materials.</p>

- a Modifications are as indicated. TES will provide PPE only to TES employees.
- b No facial hair that would interfere with respirator fit is permitted.
- c Hardhat and splash-shield areas are to be determined by the SS with concurrence from HSM.
- d Ear protection should be worn when conversations cannot be held at distances of 3 feet or less without shouting.
- e Performing a task that requires an upgrade to a higher level of protection (e.g., Level D to Level C) is permitted only when the PPE requirements have been approved by the HSM, and an SS qualified at that level is present.

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7.0 HEALTH AND SAFETY MONITORING AND SAMPLING

Real-time work area safety air monitoring and sampling for radiological contaminants will be performed during this project.

Personnel air monitoring will be performed during performance of the drilling and trenching activities for radiological contaminants. Pending a review of the results, the personnel air monitoring may be modified.

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8.0 DECONTAMINATION

Refer to the following SOPs: “Decontamination-Don/Doff PPE”; and “General Safety Rules”.

The SS and/or SSHO must monitor the decontamination procedures and their effectiveness. Decontamination procedures found to be ineffective will be modified by the SS. The SS must ensure that procedures followed for the proper containerization and disposing of materials generated on the site.

Personnel will adhere to proper decontamination procedures. A decontamination area will be established.

Decontamination Area Entry Procedures:

- Enter the decontamination area through the clean room/area
- Remove and deposit street clothes
- Put on protective clothing before leaving the clean room/area

Decontamination Area Exit Procedures:

- Before leaving the work area, personnel shall remove all gross contamination and debris from their protective clothing
- Personnel shall remove their protective clothing in the equipment room and deposit the clothing in labeled impermeable bags or containers
- Equipment must be thoroughly decontaminated and sealed in impervious bags before there are removed through the clean room. If equipment exits the clean room with visible contamination, the decontamination area (clean room) must be thoroughly cleaned before any entries/exits to/from the work area will be allowed. The SS will verify that potential chemical/radiological contamination does not migrate from the decontamination area. The SS and/or SSHO will verify that all personnel do not leave the work area(s) without proceeding through a proper decontamination.

8.1 Decontamination Specifications

Decontamination specifications are listed in Table 8-1.

TABLE 8-1 DECONTAMINATION SPECIFICATIONS		
Personnel	Sample Equipment	Heavy Equipment
<ul style="list-style-type: none"> • Boot wash/rinse • Glove wash/rinse • Outer-glove removal • Suit (Tyvek) removal • Inner-glove removal • Respirator removal, if required 	<ul style="list-style-type: none"> • Wash/rinse equipment • Solvent-rinse equipment, if required • Contain solvent waste for offsite disposal 	<ul style="list-style-type: none"> • Power wash • Steam clean • Dispose of equipment rinse water to facility or sanitary sewer, or contain for offsite disposal

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<p align="center">TABLE 8-1 DECONTAMINATION SPECIFICATIONS</p>		
<p align="center">Personnel</p>	<p align="center">Sample Equipment</p>	<p align="center">Heavy Equipment</p>
<ul style="list-style-type: none"> • Hand wash/rinse • Face wash/rinse • Dispose of PPE in municipal trash, or contain for disposal • Dispose of personnel rinse water to facility or sanitary sewer, or contain for offsite disposal 		

8.2 Diagram of Personnel-Decontamination Line

No eating, drinking, or smoking is permitted in contaminated areas, the laboratory, and in exclusion or decontamination zones. The SS will establish areas for eating, drinking, and smoking. Contact lenses are not permitted in exclusion or decontamination zones.

Figure 7-1 illustrates a conceptual establishment of work zones, including the decontamination line. Work zones are to be modified by the SS to accommodate task-specific requirements.

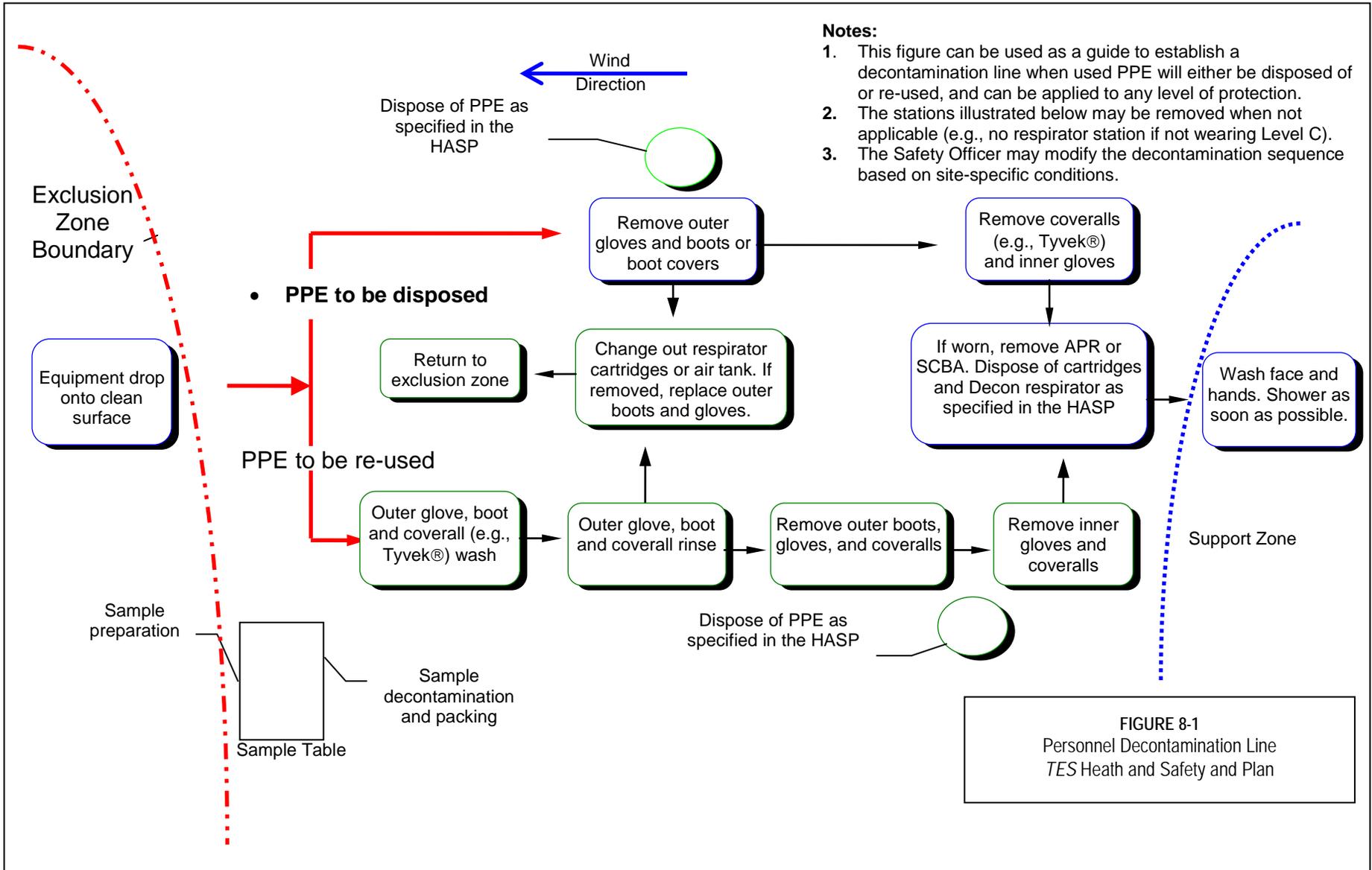
8.3 Spill-Containment and Reporting Procedures

Sorbent material will be maintained in the support zone. Incidental spills will be contained with sorbent and disposed of properly.

Spills that are not completely contained or recovered and result in the discharge of a hazardous substance to the environment will be reported immediately to the SS.

All spills (including diesel fuel and polymer) will be reported to the SSHO, who in turn will report to the SS.

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9.0 SITE-CONTROL PLAN

9.1 Site-Control Procedures

Refer to the following SOPs: “Safety Meeting Program”; “Hazard Communication Program”; and “General Safety Rules”.

- The SSHO will conduct a site safety briefing with personnel (see below) before each shift, change of field activity and/or as tasks and site conditions change.
- Topics for briefing on site safety: general discussion of HASP, site-specific hazards, locations of work zones, PPE requirements, equipment, special procedures, emergencies.
- The SS records attendance at safety briefings in a logbook and documents the topics discussed.
- Post the OSHA job-site poster in a central and conspicuous location in accordance with OSHA requirements.
- Establish support, decontamination, and exclusion zones as necessary. Delineate with flags appropriate. Support zone should be upwind of the site. Use access control at entry and exit from each work zone.
- Establish on-site communication consisting of the following:
 - Line-of-sight and hand signals
 - Air horn
 - Two-way radio and/or cellular telephone
- Establish off-site communication.
- Establish and maintain the “buddy system.”
- Initial air monitoring is conducted by the SS in appropriate level of protection.
- The SS and/or SSHO are to conduct periodic inspections of work practices to determine the effectiveness of this plan. Deficiencies are to be recorded in the logbooks, discussed with the activity supervisor and appropriate corrections implemented.

9.2 HAZWOPER Compliance

Refer to the following SOPs: “Hazard Communication Program”; “Personal Protective Equipment”.

Certain parts of the site work are covered by state or federal Hazwoper standards and therefore require training and medical monitoring. Potentially, Hazwoper tasks might occur consecutively or concurrently with respect to non-Hazwoper tasks. Non-Hazwoper-trained personnel (typically office support staff) must be trained in accordance with applicable state and federal OSHA requirements.

- In certain occurrences (e.g., chemical or fuel spill) , air sampling, in addition to real-time monitoring, must confirm that there is no exposure to gases or vapors in the work area before non-Hazwoper-trained personnel are allowed on the site and/or while non-Hazwoper-trained staff is working in proximity to Hazwoper activities. Other data (e.g., soil) may be required to document that there is no potential for exposure. The SS and the SSHO must approve the interpretation of these data.

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- When non-Hazwoper-trained personnel are at risk of exposure, the SS must post the exclusion zone and inform non-Hazwoper-trained personnel of the following:
 - Nature of the existing contamination and its locations
 - Limitations of their access
 - Emergency action plan for the site
- When exposure is possible, non-Hazwoper-trained personnel must be removed from the site until it can be demonstrated that there is no longer a potential for exposure to health and safety hazards.
- Non-Hazwoper-trained personnel, or site visitors, may not enter the permitted areas of the site without an escort from the SS and/or SSHO.

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10.0 EMERGENCY PLAN

This section outlines the Plan to be followed in case of a site-wide emergency.

10.1 Pre-Emergency Planning

The SS performs the applicable pre-emergency planning tasks before starting field activities and coordinates emergency response with TES on-site parties, and local emergency service providers (as appropriate). See Attachment 2 of the TES APP.

- Review the facility emergency assembly location(s) (TES trailer) for each major operational area with the supervisors of work tasks.
- Determine what on-site communication equipment is available (e.g., two-way radio, cell phones).
- Determine what off-site communication equipment is needed and its location (e.g., nearest telephone, cell phone).
- Confirm and post emergency telephone numbers, evacuation routes, assembly areas, and route to hospital; communicate the information to on-site personnel.
- Field trailers: Post “Exit” signs above exit doors, and post “Fire Extinguisher” signs above locations of extinguishers. Keep areas near exits and extinguishers clear.
- Establish a clear and simple protocol to communicate if, or when, there is an emergency (e.g., shouting “Mayday on site or Emergency on site” on the radio).
- Inform emergency room supervisors and the chief of the local emergency response team(s) that site work has started, ambulance access points, and the potential types of site emergencies.
- Designate one vehicle as the emergency vehicle; place hospital directions and map inside; keep keys in ignition during field activities.
- Check site emergency equipment, supplies, and potable water are present and/or functional.
- Communicate emergency procedures to the workers for personnel injury, exposures, fires, explosions, and releases.
- Supervisors are to rehearse the emergency response plan before site activities begin, including a “practice run” by driving the route to the hospital.
- Brief new workers on the emergency response plan.
- The SS and SSHO will evaluate emergency response actions and initiate appropriate follow-up actions.
- Throughout the project, review changes in site conditions, on-site operations, and personnel in relation to emergency response procedures.

10.1.1 Site Communications

- Post emergency numbers near the Site telephones and in all field vehicles.
- Ensure that personnel work under the use of a “buddy” system.

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- Furnish selected personnel (typically supervisors) with two-way radios.
- Each major subcontractor shall assign a person who shall report directly to the TES SSHO. This person shall be responsible for keeping safety equipment and facilities clean and properly equipped and maintained for their personnel and for their subcontractors. This person may, most likely, perform other duties for the contractor, but the first priority shall be maintenance of protective equipment and the personnel decontamination area.

10.2 Emergency Equipment and Supplies

The locations of emergency equipment will be marked on the site map.

Emergency Equipment and Supplies	Location
Two 20-lb fire extinguishers (ABC type dry chemical)	Support Zone/TES Trailer and Heavy Equipment/ all diesel or gasoline powered equipment/ fuel and/or flammable materials storage areas
First aid kits	Support Zone/TES Trailer/Field Vehicle
Portable Emergency Eye Wash	Support Zone/TES Trailer
Hand held emergency Air Horns	Supervisor for each major activity
Blood borne-pathogen kit	Support Zone/TES Trailer
Stretcher	Support Zone/TES Trailer
Blankets and towels	Support Zone/TES Trailer
Additional equipment (specify):	

At a minimum, two (2) certified first aid/CPR technicians shall be on the site when work activities are in progress. This person is expected to perform other duties, but shall be immediately available to render first aid when needed.

10.3 Incident Response

In fires, explosions, or major chemical releases (spills), actions to be taken include the following:

- Shut down operations and evacuate the immediate work area.
- Notify appropriate response personnel.
- Account for personnel at the designated assembly area(s).
- Assess the need for site evacuation, and evacuate the site as warranted.

Instead of implementing a work area evacuation, note that small fires or spills posing minimal safety or health hazards may be controlled.

10.4 Emergency Medical Treatment

The procedures listed below may also be applied to non-emergency incidents.

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Injuries and illnesses (including overexposure to chemicals or fuels) must be reported to the Safety Officer. If there is doubt about whether medical treatment is necessary, or if the injured person is reluctant to accept medical treatment, contact the TES SS and SSHO.

- If appropriate, notify emergency response authorities (e.g., 911).
- The crew supervisor, or the TES SS, and/or the SSHO will assume charge during a medical emergency until the ambulance arrives or until the injured person is admitted to the emergency room.
- Secure the cause of the injury, if possible, to prevent further injury and/or injury to others. REMEMBER: lifesaving, first aid and/or medical treatment take priority over everything else.
- Initiate first aid and CPR where feasible.
- Get medical attention immediately.
- Perform decontamination where appropriate and feasible.
- Make certain that the injured person is accompanied to the emergency room, preferably by his/her crew supervisor
- When communicating the emergency medical professional, state your name and telephone number, the name of the injured person, the extent of the injury or exposure (if known), what caused the injury (if known) and the on-site location where the injury occurred.
- Report incident as outlined in this HASP.

10.5 Evacuation

- Evacuation routes and assembly areas (and alternative routes and assembly areas) are required to be developed.
- Evacuation route(s) and assembly area(s) will be designated by the SS based on information from the various crew supervisors before work begins. These routes and areas will be posted at each major operational area.
- Immediately upon hearing the emergency signal for evacuation, all personnel will shut down their equipment (if any) and assemble at the pre-determined location for their operational area.
- The SS is to confirm all of their personnel are present and accounted for in their assembly area before performing any other task.
- The SS, SSHO and/or a “buddy” will remain on the site after the site has been evacuated (if safe) to assist local responders and advise them of the nature and location of the incident.
- A designated person will account for personnel at alternate assembly area(s),(if any established).
- The SS, SSHO will document the incident as soon as possible after it occurs and submit a report to the Project Manager.

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10.6 Evacuation Signals

Non-verbal signals are often necessary to communicate in emergency situations. The project will use the signal methods listed in this table during evacuations.

Signal	Meaning
Grasping throat with hand	Emergency-help me.
Thumbs up	OK; understood.
Grasping buddy's wrist	Leave area now.
Continuous sounding of horn	Emergency; leave site now.

10.7 Incident Notification and Reporting

- All personnel are to immediately notify their SS and/or SSHO (see Section 5.0 for contact numbers) in the event of an incident, serious illness, fire, spill, accident, injury, near loss, or loss.
- For TES work-related injuries or illnesses, the injury/illness report must be completed within 24 hours of incident.
- Notify and submit reports to client as required.
-

10.8 Lines of Authority

The lines of authority are as follow:

- Site personnel are authorized to report to the SS and SSHO any health and safety and/or emergency issue/incident. They are also authorized to stop work in cases where the individual/personnel safety is endangered.
- The SS and SSHO are authorized to stop work for any health and safety and/or emergency issue/incident. Such action is required to be reported to the PM.
- The PM is authorized to stop work for any health and safety or emergency issue/incident , as well as, issues related to schedule , cost and/or quality of product.
- The direct line of authority is as follows:
 - PM
 - SS
 - SSHO
 - Site personnel

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11.0 SECURITY PLAN

The purpose of this security plan is to provide security and facilities to protect the NFSS FUSRAP work site from unauthorized entry, vandalism, and theft. A security program will be initiated at the time of start up of major site activities and will be maintained throughout operation of the facility.

11.1 Security Components and Required Actions

- Allow entrance only to authorized persons/vehicles with proper identification.
- Maintain a log of workers and visitors. Include date, name, address, company employed by, company/person visited, time in and time out for each person, and record of deliveries and security incidents.
- If unauthorized personnel are observed on the site, notify the Site Supervisor. Request the supervisor contact the appropriate law enforcement officials if the situation requires assistance or legal action.
- All visitors will be required to complete basic site safety and orientation training prior to being escorted into the secured areas. Never allow visitors to enter the area secured by the site security fence without the express permission TES.
- Work site entry will be controlled by locking gates during non-working hours and limiting the distribution of keys to the access gates.
- Entrance to the work site will be by the TES trailer, which will be used for all site entries including delivery of materials.
- All work site personnel including TES employees, subcontractors, delivery persons, regulators, and visitors must sign in at the TES trailer prior to entering the main site and sign out upon leaving.
- Visitors to the work site will always be escorted and will be required to adhere to the requirements of the HASP.

11.2 Entrance and Traffic Control Procedures

- Entrance and exit points will be posted for the exclusion zone after the transition zone facilities are installed and the field investigation activities are ready to start.
- Access to the work areas will be denied for persons who do not have proper identification and training.
- Each subcontractor is to maintain a list of persons authorized for work area entry. The list will be available on request to the Site Supervisor.
- Require that all personnel, including regulators, TES employees, lower-tier contractors, suppliers, vendors and visitors having access to the work areas and trailer compound area sign in and sign out at the TES trailer.
- Restrict vehicle access to the exclusion zones beyond public roads to authorized vehicles only.
- Personal vehicles will not be allowed to enter the exclusion zones.

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- Control vehicle traffic on and through the work areas to provide safe and efficient operations.
- Regulate parking areas to prevent unrestricted entry to and exit from the work areas.
- Install barriers and signs at public road entrances and exits.
- All employees are instructed to immediately report suspected security to the Site Supervisor.

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12.0 Medical Monitoring

The medical monitoring requirements for the anticipated work activities shall be provided per 29 CFR 1910.120 “HAZWOPER” requirements as well as Standard Operating Procedures No. 27 and 28; “Personal Protective Equipment” and “Respiratory Protection” in Attachment A. Information pertaining to certification of medical surveillance shall comply with EM 385 1-1, section 28.B.02.f. This information includes 1) employee name, 2) date of last medical examination, and 3) name of examining physician. The written opinion of the employee’s fitness for duty shall be available upon request. Because project personnel shall be assigned work tasks at various times throughout the project schedule, personal medical surveillance reports shall be included upon assignment.

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**ATTACHMENT A
STANDARD
OPERATIONAL
PROCEDURES**

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Standard Operating Procedures

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*These procedures are not included, as they are not relevant to the scope of work for this project.

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SOP-01

Approved By: Signature on File

Date: 08/28/09

EXPOSURE CONTROL PLAN FOR BLOOD-BORNE PATHOGENS

1.0 PURPOSE

- A. To provide a program for minimizing the exposure and infection of for TES employees, from blood borne pathogens that may be encountered during employment. The intent of this policy is to eliminate any transmission of blood borne pathogens. This protocol stresses the concept of universal precautions and the full use of personal protective equipment whenever possible. Any employee infected by a particularly virulent form of a disease, that is easily communicable, shall be barred access on to the site until cleared by a healthcare professional, (i.e., Medical Doctor). Examples of such diseases are, but not necessarily limited to: Tuberculosis, Meningitis (airborne), etc....

2.0 SCOPE

This policy applies to all applicable employees involved in an exposure incident at TES projects/sites.

3.0 REFERENCES

- A. OSHA standard 29 CFR 1910.1030.
- B. TES Personal Protective Equipment SOP-27

4.0 DEFINITIONS

Blood borne Pathogens means pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include but are not limited to, hepatitis B virus (HBV) and human immunodeficiency virus (HIV).

Exposure Incident means a specific eye, mouth, other mucous membrane, non intact skin, or parental contact with blood or other potentially infectious materials that result from the performance of an employee's duty.

Parental means piercing mucous membranes or the skin barrier through such events as needle sticks, human bites, cuts, and abrasions.

Universal Precautions is an approach to infection control. According to the concept of Universal Precautions, all human blood and certain human body fluids are treated as if known to be infectious for HIV, HBV, and other blood borne pathogens.

First Aid Provider is a person(s) operating on an emergency response basis that has been trained in basic First Aid and CPR skills.

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5.0 PROCEDURE

- A. Areas of Potential Exposure
1. First Aid response anywhere on TES jobsites or facilities.
 2. Emergency response involving human tissue, blood, fecal material and any items which may have come in contact with the same.
- B. Persons with reasonable potential for exposure to blood borne pathogens.
1. Persons operating on an emergency response basis that have been trained in basic First Aid and CPR skills.
 2. Any employee responding on a "Non Mandatory" basis to a medical emergency.
 3. Any employee responding to a project involving any item which may have had exposure to blood borne materials.
- C. Infection Control
1. General-Universal precautions
 - a. General-Universal precautions shall be observed by employees at TES projects/sites.
 - b. All bodily fluids shall be considered potentially infectious materials.
 2. Hand washing facilities
 - a. Whenever normal hand washing facilities are not feasible, TES shall provide either an appropriate antiseptic hand cleanser in conjunction with clean cloth/paper towels or antiseptic towelettes.
 - b. Whenever these alternative hand cleansing materials are utilized, the employee shall wash his or her hands with soap and running water as soon as possible.
 3. Personal Protective Equipment (PPE)
 - a. Employees shall don gloves and safety glasses whenever contact with bodily fluids is likely.
 1. Surgical and nitrile gloves are preferred because of tactile sensation. However, in extreme circumstances, latex and even PVC gloves may be substituted.
 - b. Surgical masks shall be worn by First Aid providers whenever treating an employee with an infectious disease.
 1. In extreme circumstances, a respirator or "dust mask" may be substituted for a surgical mask.
NOTE: When using a respirator, the person must be approved for respirator usage.
 - c. In the unlikely event an employee must be administered Cardiopulmonary Resuscitation (CPR) or artificial respiration, the First Aid provider shall use, whenever possible, a one-way mask.
- D. Reporting Procedures
- Any TES employee that is involved in an exposure incident must immediately report the exposure to his/her supervisor.
- E. Hepatitis B Vaccination
- The Hepatitis B vaccination is offered at no cost to employees at TES. Also, if a TES employee is exposed to blood, saliva or any other infectious materials, the Hepatitis B

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Vaccination should begin within 24-hours of exposure. It will be completed by three injections over a six-month period. If the aforementioned employee declines the vaccination they shall sign the Hepatitis B Vaccine Declination form (Attachment 1)

F. Post Exposure Evaluation and Follow-up

Following a report of an exposure incident, TES shall make immediately available to the exposed employee a confidential Medical evaluation and follow-up, including at least the following elements.

1. Documentation of Routes of Exposure and the circumstances under which the exposure incident occurred.
2. Identification and documentation of the Blood status of the source individual, to determine HBV and HIV.
3. The exposed employee shall be informed of applicable laws and regulations concerning disclosure of the identity and infectious status of the source individual.
4. The exposed employee shall obtain a Healthcare professional's written opinion for post exposure evaluation and follow-up within 15 days of the evaluation.

G. Disposal of Infectious Materials

1. Disposal of sharps, such as needles, lancets, etc., shall be discarded as soon as possible in approved containers that are closable, puncture resistant, leak-proof on sides and bottom and shall be color coded red and labeled with the Biohazard Symbol.
2. Any other infectious material that had been used in treatment and must be discarded shall be disposed of in a closable container that prevents leakage or spillage of the material and shall be color coded red and labeled with the Biohazard Symbol.

H. Training

1. All field employees of TES
 - a. Shall have training in the concept of general-universal precautions.
 - b. Shall have proper training in the use of personal protective equipment.
 - c. The training shall encompass proper usage and disposal of used PPE.
 - d. Shall receive training on diseases, modes of transmission and related topics.
2. Field employees shall receive additional training upon assignment to tasks or procedures that specifically include occupational exposure to Blood borne Pathogens.
 - a. Additional training shall be continuous as need dictates. This training shall be conducted on a yearly basis.
 - b. Records shall be maintained of all training sessions and occupational exposure for a period of employment plus 30 years.
3. All TES Employees.
 - a. Shall have access to a copy of TES Exposure control plan for Blood borne Pathogens

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HEPATITIS B VACCINE DECLINATION

I understand that due to my occupational exposure to blood or other potentially infectious materials I may be at risk of acquiring hepatitis B virus (HBV) infection.

I have been given the opportunity to be vaccinated with hepatitis B vaccine, at no charge to myself. However, I decline hepatitis B vaccination at this time. I understand that by declining this vaccine, I continue to be at risk of acquiring hepatitis B, a serious disease.

If in the future, should I decide that I want to be vaccinated with the hepatitis B vaccine, I can receive the vaccination at no charge to me, but must notify the TES Health and Safety Manager with a written request.

Signature: _____

Date: _____

Witness
Signature: _____

_____ Date:

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HEPATITIS B VACCINE ACCEPTANCE

Due to my potential occupational exposure to Hepatitis B, I have been offered the opportunity by TES to receive the Hepatitis B vaccine. I understand the following information and requirements.

1. TES will provide the vaccination at no cost.
2. The vaccination is a series of 3 shots taken over a 5 to 6 month period.
3. Once I initiate the vaccination process I will complete the series of inoculations within the time frame noted.

I agree to be vaccinated against the Hepatitis B virus under the above information and conditions.

Signature: _____

Date: _____

Print Name: _____

Witness: _____

Date: _____

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SOP-03

Approved By: Signature on File

Date: 08/28/09

BURNING AND WELDING PROCEDURES

1.0 PURPOSE

To provide a procedure to insure that burning and welding operations are performed safely in hazardous or potentially hazardous locations.

2.0 SCOPE

This procedure applies to TES employees.

3.0 REFERENCES

- A. 29 CFR 1910.252 Occupational Safety and Health Standard, Subpart Q, Welding, Cutting, and Brazing; Final Rule, dated Wednesday April 11, 1990

4.0 PROCEDURE

- A. Responsibility for Welding and Cutting

- 1. Management should:

- a. Recognize their responsibility for the safe usage of equipment on the job site;
- b. Establish approved areas for welding and cutting (as applicable);
- c. Establish procedures for approving the work to be done;
- d. Designate an individual to be responsible for authorizing operations in areas not specifically designed or approved for such process (said individual should be aware of the fire hazards involved);
- e. Arrange for the use of any approved apparatus, such as torches, manifolds, regulators or pressure reducing valves, and acetylene generators;
- f. Make sure that welders or cutters and their supervisors have been suitably trained in the safe operation of their equipment, the safe use of the process, and emergency procedures in the event of a fire;
- g. Select only contractors who have properly trained and experienced personnel and who have any awareness of the magnitude of the risks involved;
- h. Advise all contractors about flammable materials or hazardous conditions of which the contractors may not be aware.

- 2. Supervisors should:

- a. Be responsible for the safe handling of the welding and cutting equipment and for the safe work practices of the workers;
- b. Determine the combustible and flammable materials and hazards present or likely to be present in a work location;
- c. Protect combustibles from ignition by doing the following:
 - 1. Moving the work to a location free from dangerous combustibles,

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2. If the work cannot be moved, having the combustibles moved to a safe distance from the work or having the combustibles properly shielded against ignition,
3. Scheduling the welding and cutting so that operations that might expose combustibles to ignition are not started during such work;
- d. Secure authorization and post Hot Work Permit from the Site Supervisor/Manager or the Health and Safety Manager (as applicable) prior to starting work;
- e. Make sure that employees secure their approval and conditions are safe before beginning work;
- f. Make sure that fire protection and extinguishing equipment is properly located at the site;
- g. Make sure that fire watches are at the site when necessary;
- h. Make a final check-up, one-half hour after the completion of welding and cutting operations to detect and extinguish possible smoldering fires, when fire watches have not been provided.
3. Welders and cutters should:
 - a. Handle the equipment safely and use it so as to not endanger lives and property;
 - b. Have written approval from their Supervisor in the form of a burn permit before starting to weld or cut;
 - c. Only weld or cut where conditions are safe and only continue so long as conditions are unchanged from those under which approval was granted.

B. Precautions

1. Welding or cutting shall not be permitted under the following conditions:
 - a. In unauthorized areas.
 - b. In the presence of explosive atmospheres (mixtures of flammable gases, vapors, liquids, or dusts in the air) or explosive atmosphere that may develop inside uncleaned or improperly prepared drums, tanks or other containers, or equipment which have previously contained such materials;
 - c. In areas near the storage of large quantities or exposed, readily ignitable materials.
2. Before welding or cutting is permitted, the area should be inspected by the supervisor responsible for authorizing welding and cutting operations in that area. This supervisor should designate precautions to be followed in granting authorization to proceed, in the form of a written permit and should sign the permit or otherwise authorize the work and should verify that:
 - a. Welding and cutting equipment to be used is in satisfactory operating condition and in good repair;
 - b. When combustible materials such as paper, wood, or textile fibers are on the floor, the floor is swept clean for a radius of 35 feet. Combustible floors (except wood on concrete) should be kept wet, covered with damp sand, or protected by

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fire-resistant shields. Where floors have been wet down, personnel operating arc welding or cutting equipment should be protected from possible shock;

- c. Where practicable, all combustibles are relocated at least 35 feet horizontally from the work site. Where relocation is impracticable, combustibles should be protected from flame-resistant covers. The edges of covers should be tight at the floor to prevent sparks from going under them. This precaution is also important at overlaps where several covers are used to protect a large pile;
- d. Openings or cracks in walls, floors or ducts within 35 feet of the work area are tightly covered to prevent the passage of sparks to adjacent areas;
- e. where cutting or welding is done near walls, partitions, ceilings or roofs of combustible construction, fire-resistant shields or guards are used to prevent ignition. If welding is to be done on a metal wall, partition, ceiling or roof, precautions should be taken to prevent ignition of combustibles on the other side due to conduction or radiation, preferably by relocating combustibles. Where combustibles are not relocated, a fire watch on the opposite side from the work should be provided. Welding should not be attempted on a metal partition, wall ceiling or roof having a combustible covering, or on walls or partitions of combustible sandwich-type panel construction;
- f. welding or cutting on pipes or other metal in contact with combustible walls, partitions, ceiling or roofs is not started if the work is close enough to cause ignition by conduction;
- g. fully charged and operable fire extinguisher(s), appropriate for the type of possible fire, are available at the work area;
- h. the work area must be adequately ventilated;
- i. vapors emitting from the worksite shall be exhausted through the use of fans or blowers;
- j. the person performing the welding, cutting, or burning is using the appropriate safety gear, which may include gloves, sleeves, body, eye, hearing, and respiratory protection;
- k. nearby personnel are suitably protected from heat, sparks, slag, etc, and should not look at the welding arc. This can be accomplished by either providing a welding shield or have all exposed employees wear protective (tinted) glasses.

3. Fire Watches:

- a. Are required whenever such work is performed in locations where other than a minor fire may develop, or any of the following conditions exist:
 - 1. appreciable combustible material in building construction or contents closer than 35 feet to the point of operations;
 - 2. an appreciable quantity of combustible material more than 35 feet away but easily ignited by sparks;
 - 3. wall or floor openings within a 35 foot radius which expose combustible materials in adjacent areas including concealed spaces in walls or floors;

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4. combustible materials adjacent to the opposite side of metal partitions, walls, ceilings, or roofs which are likely to be ignited by conduction or radiation;
- b. have fire extinguishing equipment readily available and be trained in its use, including practice on test fires;
- c. be familiar with facilities and procedures for sounding an alarm in the event of a fire;
- d. watch for fires in all exposed areas, and try to extinguish them first only when obviously within the capacity of the equipment available, or otherwise sound the alarm immediately;
- e. be maintained for at least a half hour after completion of welding or cutting operations to detect and extinguish possible smoldering fires; Waiting period may need to be longer based on conditions;
- f. will observe all personnel movement around and adjacent to the welding operations. When employees get near the welding operations, the fire watch will warn the employees of the additional eye hazard.

C. Training

A training program should emphasize that welders or cutters can provide for their safety and the safety of all co-workers by observing the following safe practices:

1. For work at more than 4 feet above the floor or ground, use a platform with railings, or a safety harness and lifeline;
2. Wear respiratory protection as needed and a safety harness with attached lifeline for work in confined spaces, such as tanks and pressure vessels. The lifeline should be tended by a similarly equipped helper whose duty is to observe the welder or cutter and effect rescue in an emergency;
3. Take special precautions if welding or cutting in a confined space is stopped for some time. Disconnect the power on arc welding or cutting units and remove the electrode from the holder. Turn off the torch valves on gas welding or cutting units, shut off the gas supply at a point outside the confined area, and, if possible remove the torch and hose from the area;
4. After welding or cutting is completed, mark hot metal or post a warning sign to keep workers away from heated surfaces;
5. Follow safe housekeeping principles. Don't throw electrode or rod stubs on the floor - discard them in the proper waste containers. Keep tools and other tripping hazards off the floor by putting them in a safe storage area.

D. Gas Welding and Cutting

1. Handling Cylinders
 - a. Only accept cylinders approved for use in interstate commerce for transportation of compressed gases.
 - b. Do not remove or change numbers or marks stamped on cylinders.
 - c. Cylinders are to be secured from falling at all times, chained or strapped to the cart or work station.

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E. Hot Work Permit

1. All hot work permits will be obtained through the appropriate Supervisor prior to performing hot work.
2. All hot work permits must be placed as close to the work area as possible. The permit must be displayed at all times while the work is being performed.
3. The hot work permit must be returned to the Supervisor by the end of the work shift. The employee requesting the hot work permit is responsible for returning it to the Supervisor.
4. The Supervisor will be responsible for placing a copy in the project records and submit the original to the Health and Safety Officer.
5. Hot work permits will be kept on file as required by applicable guidance.

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HOT WORK PERMIT

(Permit must be returned to the Supervisor initiating the document after the work is completed.)

LOCATION _____ GOOD FOR THIS DATE ONLY

1. Permission is granted to _____ for _____
2. THIS PERMIT IS SUBJECT TO COMPLIANCE WITH THE FOLLOWING PRECAUTIONS:
3. THIS PERMIT IS VALID ONLY SO LONG AS SAFE WORK CONDITIONS EXISTING AT THE TIME OF ITS ISSUANCE CONTINUE, AND EXPIRES UPON OCCURRENCE OF HAZARDOUS CONDITIONS SUCH AS GAS LEAKS, LIQUID SPILLS, DRASTIC OPERATING CHANGES IN ADJACENT EQUIPMENT, CHANGE IN WIND DIRECTION BLOWING VAPORS INTO WORK AREA, Etc.
4. WRITE IN YES OR NO. IF QUESTION DOES NOT APPLY, CHECK IT OFF, INDICATING THAT IT HAS BEEN GIVEN CONSIDERATION.
 - A. Gas tests have been made - O₂ _____ LEL _____ CO _____ H₂S _____
 - B. Proper Preventive measures have been taken concerning involved electrical equipment _____
 - C. Warning tags have been attached _____
 - D. Equipment and all attached piping has been cleaned and purged with:

Water	_____
Steam	_____
Inert Gas	_____
Air	_____
 - E. Equipment has been cooled and ventilated _____
 - F. Connections have been blinded off or disconnected _____
 - G. Are there any precautions to be observed as to grounding equipment, oil soaked or nitrate materials, etc.? _____
 - H. Does adjacent equipment present hazards? _____
 - I. Can sparks ignite material in vicinity or on other floors or levels _____
 - J. Can this work be done other than by the use of heat? _____
 - K. Can the equipment be removed from the area or building? _____
 - L. Has necessary protective equipment been prescribed in Section No. 2 above? _____
 - M. Are portable combustion engines permissible in area? _____
 - N. Have affected personnel been informed of work to be performed? _____

APPROVED BY:

Signed _____ Title _____

Signed _____ Title _____

I have read and understand the above information and will follow the burning and welding SOP-03.

Employee: _____

Employee: _____

Fire _____ Watch: _____

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SOP-04

Approved By: Signature on File

Date: 08/28/09

COLD TEMPERATURE WORK GUIDANCE

1.0 PURPOSE

To ensure the health and safety of all TES employees working in cold temperatures.

2.0 SCOPE

This procedure applies to all TES employees at TES project/work sites.

3.0 REFERENCES

None

4.0 PROCEDURE

The following guidance shall apply:

- 1: Each full time employee, required to work outside, is to own cold weather apparel to combat the cold climate while working (e.g., hard hat liners, insulated coats and coveralls, etc). You are required to have this apparel with you at all times during cold weather, typically November thru March.
- 2: Whenever the ambient temperature drops to 18°F, check the internet weather site (www.weather.com) or call the local airport or a local radio station to determine the wind chill - see attached wind chill chart if the wind is known:
- 3: If the temperature in which you are working, including wind chill, is between -9°F & -24°F (-23°C & -31°C) your work will be limited to the following conditions:
 - o Exposure is limited to 40 minute intervals, with 20 minute working breaks in a WARM PLACE*.
- 4: If the temperature in which you are working, including wind chill, is between -25°F & -60°F (-32°C & -51°C) the Supervisor must request a variance to begin or continue working.
- 5: If the temperature in which you are working, including wind chill, is lower than -60°F (-51°C), you will not work, unless under emergency circumstances as approved, via a variance, through Senior management.

*WARM PLACE: >61°F (16°C)

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WIND CHILL FACTORS

OUTSIDE TEMPERATURE °F

WIND SPEED	15	10	5	0	-5	-10	-15	-20	-25
4	15	10	5	0	-5	-10	-15	-20	-25
6	8	2	-3	-9	-14	-20	-25	-31	-36
8	2	-4	-10	-16	-21	-27	-33	-39	-45
10	-3	-9	-15	-21	-27	-33	-40	-46	-52
12	-7	-13	-19	-26	-32	-39	-45	-51	-58
14	-10	-17	-23	-30	-36	-43	-50	-56	-63
16	-13	-20	-26	-33	-40	-47	-54	-60	-67
18	-15	-22	-29	-36	-43	-50	-57	-64	-71
20	-18	-25	-32	-39	-46	-53	-60	-67	-75
22	-19	-27	-34	-41	-48	-56	-63	-70	-78
24	-21	-29	-36	-43	-51	-58	-65	-73	-80
26	-23	-30	-38	-45	-53	-60	-68	-75	-83
28	-24	-32	-39	-47	-54	-62	-69	-77	-85
30	-25	-33	-41	-48	-56	-64	-71	-79	-86
35	-28	-36	-43	-51	-59	-67	-75	-82	-90
40	-29	-37	-45	-53	-61	-69	-77	-85	-93

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SOP-05

Approved By: Signature on File

Date: 08/28/09

CONFINED SPACE ENTRY POLICY

1.0 PURPOSE

To provide a procedure for the safe entry of a confined space to effect repairs, inspection or testing.

2.0 SCOPE

This policy applies to TES employees.

3.0 REFERENCES

- A. 29 CFR 1910.146 Occupational Safety and Health Standard, Subpart J, Permit required Confined Spaces for General Industry; Final Rule, April 15, 1993.
- B. TES SOPs, as appropriate. Without exception, the TES Health and Safety Officer, shall be contacted prior to any confined space entry.

4.0 DEFINITIONS

- A. AUTHORIZED ENTRANT - An employee authorized by the Entry Supervisor to enter a permit space.
- B. CONFINED SPACE ENTRY PERMIT - At any point in time, the employee's head breaks the plane of the entry point into a class (A) or (B) confined space, a permit is required.
- C. CONFINED SPACE (PERMIT REQUIRED) & (NON PERMIT REQUIRED) - For the purpose of this procedure, a confined space is defined as a space which by design has limited openings for entry and exit; unfavorable nature ventilation which could contain or produce dangerous air contaminants, and which is not intended for continuous employee occupancy. Confined spaces include but are not limited to transformer tanks, storage tanks, tank containments, process vessels, pits, silos, vats reaction vessels, low lying areas and tank trucks. The majority of confined space entries performed will be classified under one of the following classes:
 - 1. Class "A" - (Permit Required Confined Space) A confined space that presents a situation that is immediately dangerous to life or health (IDLH). These include but are not limited to oxygen deficiency, explosive or flammable atmospheres, and/or concentrations of toxic substances.
 - 2. Class "B" - (Permit Required Confined Space) A confined space that has the potential for causing injury and illness, if preventive measures are not used, but not immediately dangerous to life and health.
 - 3. Class "C" - (Non Permit Confined Space) A confined space in which the potential hazard would not require any special modification of the work procedures.
- D. EMERGENCY RESPONSE PLAN: - The emergency response plan shall be determined by the Entry Supervisor. This information shall be indicated on the Confined Space Entry Permit Form and shall include:
 - 1. How will emergency medical response be notified?

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2. How will the entrant be removed/rescued from the confined space?
 3. What personnel will perform the rescue service?
- E. **ENTRY SUPERVISOR:** - The Supervisor or Group leader is responsible for determining if acceptable entry conditions are present at a permit space where entry is planned. Only those Entry Supervisors approved by the TES Safety Officer will be allowed to issue a Confined Space Entry Permit.
- F. **HAZARDOUS ATMOSPHERE:** - An atmosphere that may expose employees to the risk of death, incapacitation and impairment of ability to self-rescue (that is, escape unaided from a permit space), injury, or acute illness from one or more of the following causes:
1. Any flammable gas, vapor, or mists, that is detected, that is, a greater reading than zero "0" on the LEL monitor is considered a hazardous atmosphere and entry into the confined space is prohibited. A flammable atmosphere generally arises from enriched oxygen atmospheres, vaporization of flammable liquids, by products of work, chemical reactions, concentrations of combustibles, dust, and absorption of chemicals from inner surfaces of the confined space.
 2. Airborne combustible dust at a concentration that meets or exceeds its LEL. - This concentration may be approximated as a condition in which the dust obscures vision at a distance of 5 feet (1.52m) or less.
 3. Atmosphere oxygen concentration below 19.5 percent or above 23.5 percent. - The consumption of oxygen takes place during combustion of flammable substances, as in welding, heating, cutting, and brazing operations. Oxygen can also be consumed during chemical reactions, as in the formation of rust on the exposed surfaces of the confined space (iron oxide). An additional factor in oxygen deficiency is the oxygen is displaced by another gas. Gases such as nitrogen, argon, carbon dioxide and methane can displace the air and create an environmental immediately dangerous to life and health.
 4. Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in 29 CFR 1910 Subpart G, Occupational Health and Environmental Control, or in 29 CFR 1910 Subpart Z, Toxic and Hazardous Substances, of this part and which could result in employee exposure in excess of its dose or permissible exposure limit.
 5. A corrosive atmosphere may or may not produce immediate evidence of irritation. In many cases the body's sensitivity abilities can be generally weakened due to damage of the nerve endings, and the worker is not aware of any increase in the exposure to toxic substances.
- G. **NON PERMIT CONFINED SPACE:** - A confined space that does not contain nor, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm. Also included are: Class (A) or (B) confined spaces.
- H. **ATTENDANT (ATTENDANT) PERSON:** - An individual stationed outside a permit required confined space who monitors the authorized entrants and who will perform all duties assigned by the Entry Supervisor.

5.0 PROCEDURES

5.1 Training

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All employees whose work will involve confined spaces will be trained prior to being assigned to such duties. The training will consist of the following areas;

- a. How to identify a confined space
- b. How to determine if a space is a non permit area
- c. How to use air monitoring equipment for entry
- d. How to enter confined spaces safely
- e. How to properly fill out a permit form
- f. Duties of an attendant
- g. Rescue procedures and equipment. Rescue training will be practiced at least every 12 months.

Training will be also be completed for any changes in hazards, equipment or procedures.

All training will be recorded and a certificate of training issued to each employee show the date of training, the trainer's signature and subject covered.

5.2 Entry Supervisor;

It is not always obvious what constitutes a confined space. For this reason, the Supervisor will always be contacted and perform an inspection whenever the possibility of engaging in any type of Confined Space activity. Before entry into a Permit or a Non Permit required confined space, the following shall occur:

- A. The Entry Supervisor will determine the classification of the confined space. The following battery of monitoring tests shall be performed to make the following assessment:
 1. Flammable Atmosphere
 2. Toxic Atmospheres
 3. Oxygen Deficiency
 4. Any Other Harmful Physical Agents

The Entry Supervisor shall then contact the TES Safety Officer and determine the best course of action.

- B. Appropriate breathing air tests shall be made as necessary to ensure that the atmosphere is safe for entry. The minimum percentage of oxygen for entry shall be no less than 19.5% and no more than 23.5% oxygen by volume.
 - To determine the possible exposure to a flammable environment, a combustible gas indicator shall be used to measure what levels are present. Flammability is measured in terms of the Lower Explosive Limit "LEL". This is the smallest concentration of a combustible gas in air that will explode when it contacts a spark or open flame. If a reading indicates a level greater than zero "O", entry is prohibited and forced ventilation is required until a "O" indication is achieved.

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All Lock Out Procedures and Burn Permits must be issued when warranted.

C. Confined Space Entry Procedures for the Entry Supervisor Conducting Atmospheric Checks

1. The Confined Space Entry meter shall be calibrated within (30) days prior to entry.
2. The sample probe should be placed in the manway of the vessel, tank, pipe, etc, using extra care to hold the probe off the bottom of the confined space, to avoid pumping liquid into the analyzer. The atmosphere sampling area shall be tested approximately every 4 feet (1.22m) in the direction of travel and to each side.
3. Longer lengths of sample tubing may be necessary in deep vessels to avoid entering the vessels.
4. If it is necessary to enter a vessel to obtain a O₂ check at a work area some distance from the manway:
 - a. An attendant person must be outside the entrance before it is entered (as described in this procedure).
 - b. The atmosphere should be checked just inside the manway.
 - c. After entering the vessel, the atmosphere shall be continuously monitored while slowly moving through the vessel.
 - d. If lights are to be used, a flashlight, 12-volt light system, or ground fault interruption device must be used.
 - e. Safety harness or wristlets with a "life-line" will be required for vessel entry for the purpose of monitoring the atmosphere.
5. If entering a Permit Required Confined Space with a SCBA, air purifying respirator or an airline respirator then O₂ levels shall be continuously monitored for the period of the entry. The LEL, CO and other known hazardous atmospheric materials shall be monitored, no less then every 15 minutes for the period of the entry.

D. Confined Space Ventilation - The Entry Supervisor is responsible for ventilating each Permit Required Confined space. This will include:

1. Inerting the space: This will involve the displacement of the atmosphere in a permit space by a noncombustible gas (such as nitrogen) to the extent that the resulting atmosphere is non combustible. This procedure produces an IDLH oxygen-deficient atmosphere. A self-contained breathing apparatus with safety harness is required to enter an ILDH atmosphere.
2. If entering a Permit Required or a Non Permit Required Confined Space transformer unit or a vault in which a fire or fault occurred to the transformer, then all authorized entrants are to be in SCBA's.

E. The next to last step in issuing the Permit Required Confined Space:.

1. The Entry Supervisor will obtain verbal approval from both the TES Safety Officer and the project manager.

F. The last step: Issue written permit

1. If a Non Permit Required Confined Space is determined then the Entry Supervisor will provide a general review of the entry hazards with the entrants.
2. If a Permit Required Confined Space is determined, then the Entry Supervisor will review the potential employed hazards about the particular confined space

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with all entry participants. The Entry Supervisor will authorize the entrants, orientate the Attendant Person, and inform the crew of the Emergency Rescue Plan.

- 5.3 Authorized Entrant: - The person entering a Permit required confined space entry shall:
- A. Be in full Safety Equipment/Clothing as outlined in Section (9) of this procedure, and be wearing a safety harness with lifeline as outlined in Section (8).
 - B. Be fully aware of any and all hazards which are or may become present within the confined space and has signed the Confined Space Entry Permit prior to performing any work in the space. The entrants or their representatives are entitled to request additional monitoring at any time before and during the entry.
- 5.4 Authorized Attendant Person - A attendant is required anytime someone is working in a Permit Required Confined Space. The Attendant Person must:
- A. Know who is in the space.
 - B. Keep unauthorized people out of the area. This includes the use of barriers or signs to prevent pedestrian or vehicle traffic from endangering the entrants.
 - C. Recognize early symptoms of danger in the space. This includes using the air monitoring meters and recording the results. The attendant will also stay in verbal contact with the entrants to verify their condition.
 - D. Watch for hazards outside as well as inside the space.
 - E. The attendant will only watch one confined space at a time. Additional confined spaces will require an attendant for each space entered.
 - F. The attendant, along with the supervisor, will coordinate with other contractors on site, entry operations so that employees of other contractors do not endanger TES employees
 - G. Maintain clear access to and from the space. If rescue is necessary, the attendant must:
 - 1. Call for rescue personnel. (Activate Emergency Rescue Plan)
 - 2. Stay outside until back-up personnel arrive/keeping unauthorized people out.
 - 3. Perform the rescue from outside whenever possible. Try to ventilate the space.
 - H. Employees working inside a Permit Required Confined Space must be under constant observation of a fully instructed observer.
 - I. Before anyone enters a Permit Required Confined Space, the Attendant Person will be instructed by the Entry Supervisor that:
 - 1. A Permit Required Confined Space Entry Permit has been executed and posted.
 - 2. Rescue harness and life line are in use.
 - 3. The Attendant Person must know the location of the nearest:
 - a. Telephone or cell
 - b. Safety Shower
 - c. Fire Extinguisher

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- d. The Attendant Person must be able to describe the location where the entry is taking place.
- e. The Attendant Person must be instructed how to shut down welding/burning equipment
- f. As long as anyone is inside the vessel, the Attendant Person must remain in continuous contact with the Authorized Entrant(s). He/she is not to leave the observation point, except to report an emergency after first sounding his alarm horn, or other wise alerting help.
- g. Under no circumstances shall the Attendant Person enter the vessel. If the Authorized Entrant(s) in the vessel becomes ill or injured, the Attendant Person will sound the alarm and call for help. He/she should speak clearly and give the details about what has happened and where the emergency is. He/she is to be sure the message is repeated back correctly before breaking contact.
- h. The Attendant Person still does not enter the vessel. He/she returns to the vessel and directs the rescue team.
- i. Every person entering any vessel for rescue purposes must wear a harness with life line attached and a positive pressure air supplied respirator or self contained breathing apparatus (SCBA).
- j. In the event of an emergency which requires entry to affect a rescue either the local Fire Dept or a TES rescue crew will be used to perform this duty. An air line from a dry air system should be placed into the space until the rescue team arrives. It will be determined before entry is started who will be providing rescue services. If the host company or an outside rescue service, Fire Dept. will be used they must agree to this ahead of time and be allowed to examine the entry site and either confirm or decline rescue services. If the host company is providing these services it must be stated in the work contract.
- k. Special Instructions
A Permit Required Confined Space Entry permit becomes void if any of the following occur:
 - 1. The job is interrupted for more than 60 minutes, for any reason.
 - 2. An Authorized Entrant working in the vessel becomes ill or injured.
 - 3. A power failure occurs which renders the lighting or the telephone inoperative.
 - 4. Change in atmospheric conditions within the space.
 - 5. At the end of the work shift.
 - 6. At the completion of the work which required the entry. The supervisor will review the permit for completeness and sign off with the date and time for cancellation of the permit.

5.5 Required Equipment and Tools - Equipment and tools to be used in a confined space shall be inspected and meet the following requirements:

- A. Hand tool must be clean and in good condition.

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- B. Any time 110 volt electrical power is to be used in confined space entry, power must be provided through a ground fault interrupter. For lighting, fixtures specifically designed as "Spark Proof" are required any time a flammable condition is suspected or may occur. The spark proof lighting must be used in conjunction with a ground fault interrupter. The ground fault interrupter must be located outside of the vessel and as close to permanent wiring as possible to ensure against shock hazards from faulty or damaged power tools and extension cords.
- C. Air driven tools shall be used when flammable liquids are present.
- D. Cylinders of compressed gases shall never be taken into a confined space.
- E. Portable ladders shall be adequately secured.
- F. Scaffolding and staging shall be properly designed and erected to carry the maximum expected load.
- G. An approved life line and harness shall be used whenever an employee enters a Permit Required Confined Space.

5.6 Required Safety Equipment and Clothing - The entry permit shall include a list of necessary protective equipment to be used in the confined space. Items normally used to protect against traumatic injury include:

- A. Eye and Face Protection
 - 1. Non Permit required Confined Spaces - Occupational Safety Glasses with Side shields.
 - 1. Face shields for grinding and welding.
- B. Hearing Protection
 - 1. Hearing Protection shall be worn under the following conditions:
 - a. Noise levels exceed 85 dba
 - b. Air or power tools are being used.
 - c. Normal conversation between employees cannot be heard.
- C. Respiratory Protection
 - 1. No entry will be permitted unless the readings on the atmosphere meet the above standards.
 - 2. A half face respirator with particulate/fume filters is required if welding will be performed in the space.
- F. Hand Protection
 - 1. As required per Health & Safety policy SOP-30 and SOP-14.
- G. Foot Protection - Steel toe shoes.

HOT WORK - Refer to the TES Burning and Welding Policy SOP-03.

LOCK OUT/TAG OUT - Refer to the TES Policy Lockout/Tagout Policy SOP-08

5.7 Permit System - The Permit Required Confined Space Entry is an authorization and approval in writing that specifics the location and type of work to be done, and certifies that all existing hazards have been evaluated by an Entry Supervisor, and necessary protective measures have been taken to insure the safety of each worker.

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- A. The permit for a confined space shall be posted in a conspicuous place, close to entrance. The original permit is to be filed with the Safety Officer upon completion of work.
- B. The permit shall be dated and carry an expiration time that will be valid for one shift only. The permit shall be updated for each shift with the same requirements. At the completion of the work the permit will be signed off by the supervisor as completed.
- C. The permit is to be filled out completely, all questions should be answered, where the questions are "not applicable" then fill in NA for those questions. Entry into the confined space cannot be executed until all questions are addressed and all required signatures are obtained.

5.8 Plan Review

- a. The plan will be reviewed annually for updates to the regulations and for usability; any unauthorized entry of a confined space, any hazards not covered by the permit and any occurrence of an injury or near miss. Also for any employee complaints.
- b. All confined space permits will be reviewed for the prior year for completeness and general information

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Confined-Space Alternative Procedure Certificate

Alternative procedures may be used for permit-required confined-space entry if the only hazard within the space is an atmospheric hazard and the hazard can be controlled to acceptable safe levels solely by forced-air ventilation. If the space must be entered to determine hazards, the initial entry must be done in full compliance with the requirements of a confined-space-entry permit.

These alternative procedures are valid as long as the atmospheric hazards are controlled by forced-air ventilation. If additional hazards arise within the space, or the forced-air ventilation is inadequate in controlling the atmospheric hazard, personnel must exit the space immediately and the space must be reevaluated.

1.0 GENERAL INFORMATION							
Project:			Project #:			PM:	
Date of Entry:		Duration of Entry:			Certification Expiration Date:		
Space Location:							
Description of Space:							
Purpose of Entry:							
Atmospheric Hazards Expected: <input type="checkbox"/> Oxygen Deficiency <input type="checkbox"/> Oxygen Enrichment <input type="checkbox"/> Flammable Vapors <input type="checkbox"/> Toxics (specify):							
Entry Supervisor (ES):				Attendant(s):			
2.0 CERTIFICATE REQUIREMENTS							
<input type="checkbox"/> Nonatmospheric hazards do not exist in this space <input type="checkbox"/> Communication methods established between entrants and the attendant <input type="checkbox"/> Covers can be removed safely <input type="checkbox"/> Space openings guarded from fall hazards and falling objects <input type="checkbox"/> Continuous forced-air ventilation from a clean air source is positioned in the immediate area where entrants are working and continue until they have left the space							
3.0 ATMOSPHERIC MONITORING							
Frequency: <input type="checkbox"/> Prior to Entry <input type="checkbox"/> Continuous <input type="checkbox"/> Periodic (specify):							
Instruments: <input type="checkbox"/> Combustible Gas Indicator <input type="checkbox"/> FID <input type="checkbox"/> PID <input type="checkbox"/> Colorimetric Tubes <input type="checkbox"/> CO Monitor <input type="checkbox"/> H ₂ S Monitor <input type="checkbox"/> Other(specify):							
Substances Monitored: <input type="checkbox"/> Oxygen <input type="checkbox"/> Flammables <input type="checkbox"/> CO <input type="checkbox"/> H ₂ S <input type="checkbox"/> Other (specify):							
Monitoring Results		Oxygen		Flammability		Toxicity	
Monitors	Limits		19.5 – 23.5 %	< 10 % of LEL		< PEL/TLV	
Initials	Date	Time	%	% of LEL	Substance	Level	Limit
4.0 CERTIFICATE AUTHORIZATION AND CANCELLATION							
Entry Supervisor Signature			Employee Number		Date	Time	
Entry Authorized							
Entry Canceled							
Problems Encountered During Entry							

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Confined-Space-Entry Permit

1.0 GENERAL INFORMATION

Project:		Project #:		PM:
Date of Entry:	Duration of Entry:		Permit Expiration Date and Time:	
Space Location:				
Description of Space:				
Purpose of Entry:				
Hazards Expected: <input type="checkbox"/> Oxygen Deficiency <input type="checkbox"/> Oxygen Enrichment <input type="checkbox"/> Flammable Vapors <input type="checkbox"/> Temperature Extremes <input type="checkbox"/> Entrapment <input type="checkbox"/> Engulfment <input type="checkbox"/> Fall <input type="checkbox"/> Electrical <input type="checkbox"/> Mechanical <input type="checkbox"/> Chemical <input type="checkbox"/> Pressure <input type="checkbox"/> Combustible Dust <input type="checkbox"/> Toxics (specify): _____ <input type="checkbox"/> Others (specify): _____				
Entry Supervisor (ES):			Attendant(s):	

2.0 CONTROL MEASURE REQUIREMENTS

Communication: <input type="checkbox"/> Visual <input type="checkbox"/> Voice <input type="checkbox"/> Radio <input type="checkbox"/> Cell Phone <input type="checkbox"/> Other (specify): _____	
Cleaning: <input type="checkbox"/> None <input type="checkbox"/> Purging <input type="checkbox"/> Inerting <input type="checkbox"/> Flushing	Date/Time Completed: _____
Isolation: <input type="checkbox"/> None <input type="checkbox"/> Lockout/Tagout <input type="checkbox"/> Line Breaking <input type="checkbox"/> Blinding/Blanking <input type="checkbox"/> Double Block & Bleed <input type="checkbox"/> Other (specify): _____	Date/Time Completed: _____
Ventilation: <input type="checkbox"/> None <input type="checkbox"/> Prior to Entry <input type="checkbox"/> Continuous <input type="checkbox"/> Periodic (specify frequency): _____ <input type="checkbox"/> Type (specify): _____	Date/Time Completed: _____
Protective Equipment: <input type="checkbox"/> GFCI <input type="checkbox"/> Low-voltage Lighting: <input type="checkbox"/> Fire Extinguisher <input type="checkbox"/> Fall Protection <input type="checkbox"/> First Aid Kit <input type="checkbox"/> Respirators (specify): _____ Other (specify): _____	
Rescue Equipment: <input type="checkbox"/> Harness <input type="checkbox"/> Lifeline <input type="checkbox"/> Tripod <input type="checkbox"/> Retrieval Device <input type="checkbox"/> Other (specify): _____	
Other Requirements: <input type="checkbox"/> Hot Work Permit <input type="checkbox"/> Other (specify): _____	

3.0 RESCUE AND EMERGENCY PROCEDURES

4.0 ATMOSPHERIC MONITORING

Frequency: <input type="checkbox"/> Prior to Each Entry <input type="checkbox"/> Prior to Shift <input type="checkbox"/> Continuous <input type="checkbox"/> Periodic (specify): _____
Instruments: <input type="checkbox"/> Combustible Gas Indicator <input type="checkbox"/> FID <input type="checkbox"/> PID <input type="checkbox"/> Colorimetric Tubes <input type="checkbox"/> CO Monitor <input type="checkbox"/> H ₂ S Monitor <input type="checkbox"/> Other(specify): _____
Substances Monitored: <input checked="" type="checkbox"/> Oxygen <input checked="" type="checkbox"/> Flammables <input type="checkbox"/> CO <input type="checkbox"/> H ₂ S <input type="checkbox"/> Other (specify): _____

Monitoring Results		Oxygen	Flammability	Toxicity				
Monitors	Limits		19.5 – 23.5 %	< 10 % of LEL	< PEL/TLV			
	Initials	Date	Time	%	% of LEL	Substance	Level	Limit

5.0 PERMIT APPROVAL, AUTHORIZATION, AND CANCELLATION

	Signature	Employee Number	Date	Time
Company Safety				
Officer Approval	83		AUGUST 2010	
ES Permit Authorized			REV.0	
ES Permit Canceled				

Problems Encountered During Entry

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Confined-Space Nonpermit Certificate

This nonpermit certificate may be used for confined spaces that pose no actual or potential atmospheric hazard above acceptable safe levels and if all nonatmospheric hazards can be eliminated without entry into the space. If the space must be entered to eliminate nonatmospheric hazards, the initial entry must be done in full compliance with the requirements of a confined-space-entry permit. If an atmospheric or nonatmospheric hazard is observed, personnel must exit the space immediately and the space must be reevaluated.

1.0 GENERAL INFORMATION															
Project:				Project #:				PM:							
Date of Entry:			Duration of Entry:				Certification Expiration Date:								
Space Location:															
Description of Space:															
Purpose of Entry:															
Entry Supervisor:						Attendant(s):									
2.0 CERTIFICATE REQUIREMENTS															
<input type="checkbox"/> Actual or potential atmospheric hazard above acceptable safe levels do not exist in this space <input type="checkbox"/> Nonatmospheric hazards do not exist in this space or have been eliminated without entry <input type="checkbox"/> Communication methods established between entrants and the buddy or attendant <input type="checkbox"/> Entrants are informed to exit the space if any hazard is observed															
3.0 ATMOSPHERIC MONITORING															
Frequency: <input type="checkbox"/> Prior to Entry <input type="checkbox"/> Continuous <input type="checkbox"/> Periodic (specify):															
Instruments: <input type="checkbox"/> Combustible Gas Indicator <input type="checkbox"/> FID <input type="checkbox"/> PID <input type="checkbox"/> Colorimetric Tubes <input type="checkbox"/> CO Monitor <input type="checkbox"/> H ₂ S Monitor <input type="checkbox"/> Other(specify):															
Substances Monitored: <input type="checkbox"/> Oxygen <input type="checkbox"/> Flammables <input type="checkbox"/> CO <input type="checkbox"/> H ₂ S <input type="checkbox"/> Other (specify):															
Monitoring Results		Oxygen		Flammability		Toxicity									
Monitors	Limits	19.5 – 23.5 %		< 10 % of LEL		< PEL/TLV									
Initials	Date	Time	%	% of LEL		Substance		Level		Limit					
4.0 CERTIFICATE AUTHORIZATION AND CANCELLATION															
		Entry Supervisor Signature						Employee Number		Date		Time			
Entry Authorized															
Entry Canceled															
5.0 AUTHORIZATION/ACCOUNTABILITY LOG															
The following individuals have successfully completed confined-space training, have attended a pre-entry briefing, and are authorized to enter the space.															
		ES Initials		Attendant - check each time an individual enters or exits the space.											
Name of Entrant		Trained	Briefed	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
Problems Encountered During Entry															

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SOP-06

Approved By: Signature on File

Date: 08/28/09

DECONTAMINATION

1.0 PURPOSE

A. The purpose of this procedure is to describe the requirements for decontamination. This policy applies to all TES field operations.

2.0 SCOPE

All personnel and equipment working at project sites involving hazardous materials remediation work require decontamination upon leaving the exclusion zone.

3.0 REFERENCES

- A. 29 CFR 1910.120
- B. Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities

4.0 PROCEDURE

- 4.1 When a cleanup project involves hazardous chemicals/materials a decontamination procedure will be established for the removal of debris and chemicals from PPE, tools and any large movable equipment. This procedure may vary from a simple decon line involving removal of disposable PPE and disposal to multiple step areas for scrub down and cleaning.
- 4.2 Before decontamination of PPE can occur the proper donning and doffing must be reviewed so that the appropriate decon stations can be established based upon the level of protection used and the chemicals exposure. The following are simple steps for donning of each level, A,B,C.

LEVEL A DONNING PROCEDURE

1. Inspect the clothing and respiratory equipment before donning.
2. If hard hat or headpiece is to be worn, adjust to fit user's head.
3. Standing or sitting, step into the legs of the suit; ensure proper placement of feet within the suit; then gather the suit around the waist.
4. Put on chemical-resistant safety boots over the feet of the suit; tape the legcuff over the tops of the boots.
5. If overboots are to be used, put these on next and complete boot taping.
6. Put on air tanks and harness assembly of the SCBA. Don the facepiece and adjust it to be secure, but comfortable. Do not connect the breathing hose. Open the valve on the air tank.
7. Perform user seal check procedures.
8. Put on inner gloves (chemically compatible).

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9. Put sleeves of suit over arms as assistant pulls suit up and over the SCBA. Assistant adjusts suit around SCBA and shoulders to ensure unrestricted motion.
10. Put on hard hat if needed.
11. Put on outer gloves and tape as needed.
12. Raise hood over head carefully so as not to disrupt face seal of SCBA mask. Adjust hood to give satisfactory comfort.
13. Begin to secure the suit by closing all fasteners on opening until there is only adequate room to connect the breathing hose. Secure all belts and/or adjustable leg, head, and waistbands.
14. Connect the breathing hose while opening the main valve.
15. Have assistant check that wearer is breathing properly and then make final closure of the suit.
16. Have assistant check all closures.
17. Have assistant observe the wearer for a period of time to ensure that the wearer is comfortable, psychologically stable, and that all equipment is functioning properly.

LEVEL B DORNING PROCEDURE

1. Inspect the clothing and respiratory equipment before donning.
2. If hard hat or headpiece is to be worn, adjust to fit user's head.
3. Standing or sitting, step into the legs of the suit; ensure proper placement of feet within the suit; then gather suit around the waist.
4. Put on chemical-resistant safety boots over the feet of the suit, tape the leg cuff over the tops of the boots.
5. If overboots are to be used, put on next and complete boot taping.
6. Put on inner gloves (chemically compatible).
7. Put on basic gloves.
8. Put sleeves of suit over arms and shoulders. Have assistant adjust suit to ensure unrestricted motion. Secure the suit by closing all fasteners. Secure all belts and/or adjustable leg-, head-, and waistbands.
9. Put on air tanks and harness assembly of the SCBA. Don the facepiece and adjust it to be secure, but comfortable. Do not connect the breathing hose. Open the valve on the air tank.
10. Perform user seal check procedures. 11. Raise hood over head carefully so as not to disrupt face seal of SCBA mask. Adjust hood to give satisfactory comfort. Tape hood to facepiece if needed.
11. Put on outer gloves and tape as needed.

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12. Put on hard hat.
13. Connect the breathing hose while opening the main valve.
14. Have assistant check that wearer is breathing properly and then make final closure of the suit.
15. Have assistant check all closures.
16. Have assistant observe the wearer for a period of time to ensure that the wearer is comfortable, psychologically stable, and that all equipment is functioning properly.

LEVEL C DONNING PROCEDURE

1. Inspect the clothing and respiratory equipment before donning.
 2. If hard hat or headpiece is to be worn, adjust to fit user's head.
 3. Standing or sitting, step into the legs of the suit; ensure proper placement of feet within the suit; then gather suit around the waist.
 4. Put on chemical-resistant safety boots over the feet of the suit.
 5. If overboots are to be used, put on next.
 6. Put on inner gloves (chemically compatible).
 7. Put sleeves of suit over arms and shoulders. Have assistant adjust suit to ensure unrestricted motion. Secure the suit by closing all fasteners. Secure all belts and/or adjustable leg-, head-, and waistbands.
 8. Select APR and appropriate cartridges. Don the facepiece and adjust it to be secure, but comfortable.
 9. Perform user seal check procedures.
 10. Raise hood over head carefully so as not to disrupt facepiece seal of mask. Adjust hood to give satisfactory comfort.
 11. Put on outer gloves.
 12. Put on hard hat.
 13. Have assistant check that wearer is breathing properly and then make final closure of the suit.
 14. Have assistant check all closures.
 15. Have assistant observe the wearer for a period of time to ensure that the wearer is comfortable, psychologically stable, and that all equipment is functioning properly.
- 4.3 Decontamination and doffing of PPE will happen in a reverse order. When the worker leaves the exclusion zone (contaminated work area) he will exit thru a predetermined exit area. The following is a general procedure that will be adjusted for each individual project.

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- Equipment drop;
- Outer boots and glove wash/rinse (step off);
- Outer boots and gloves removal;
- Suit wash/rinse/removal;
- Inner glove wash/rinse;
- Face piece removal, wash/rinse;
- Inner glove removal; and
- Field wash (face, hands).

4.4 All materials used for decontamination such as scrub brushes, broom and buckets will be disposed of as contaminated debris with the project waste.

4.5 Solutions used for decontamination also will vary with the type of contamination to which the equipment and PPE has been exposed. A basic soap and water solution followed by clean water at each station will in most cases be the main choice. The following list contains examples of potential solutions which may be used for decontamination purposes.

DECONTAMINATION SOLUTIONS

For acid wastes, organic acid compounds, and acidic metal processing wastes use a 5% sodium carbonate and 5% trisodium phosphate solution:
4 pounds of sodium carbonate
4 pounds of trisodium phosphate **
10 gallons water

For heavy metals, cyanides, ammonia, PCBs, pesticides, and dioxins use a 10% solution of calcium hypochlorite:
8 pounds of calcium hypochlorite
10 gallons of water

For oily, greasy, nonspecific wastes not suspected of pesticide contamination and as a general duty rinse use a 5% trisodium phosphate solution:
4 pounds trisodium phosphate
10 gallons of water

For caustic wastes(bases):
1 pint of concentrated hydrochloric or muriatic acid
10 gallons of water
(Always add acid to water, never add water to acid)

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For radioactive materials:

Concentrated solution of detergent and water mixed into a paste. Scrub with a brush and rinse with water.

For etiologic (blood-borne pathogens) materials:

- 1 cup household bleach
- 10 cups water or
- 1 cup hydrogen peroxide (3-4%)
- 10 cups water

- 4.6 Heavy equipment, hand tools and other specialty items will have any gross contamination removed by brushing, the material will be captured and placed into containers for disposal. Small tools will be hand wiped using either a basic soap and water solution, or one of the above alternate solutions.

Heavy equipment may then also require pressure washing to remove remaining contamination. This will occur in a wash area constructed ahead of time where the wash solution can be contained, captured and removed disposal (such as a plastic lined shallow soil excavation)

4.7 Emergency Decontamination

In an emergency situation in which the primary concern is to prevent the loss of life or severe injury decontamination procedures must be adjusted. The following is a set of steps which can be used in making a determination of what decontamination must take place. Depending upon the emergency the worker should exit the work zone at the closest possible area for help without going thru normal decon exits.

Step 1 – Are life saving procedures required?

Step 2 – If “Yes” – Grossly decontaminate or cover or wrap contaminated areas, then perform life saving procedures and transport to a medical facility.

Step 3 – If “No”- Decontaminate as much as possible and if further medical attention or surveillance is needed then transport to a medical facility

Step 4 – Contact company Safety Officer, complete an accident report with the site supervisor and copy the report to all necessary parties.

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SOP-07

Approved By: Signature on File

Date: 08/28/09

DRUM AND CONTAINER HANDLING

1.0 PURPOSE

- A. To provide a method to ensure the proper handling of drums and containers of hazardous and non-hazardous materials during TES operations.
- B. To provide a specific procedure for the unloading, storage, and inspection of hazardous waste drums and containers and stored at TES projects/sites.

2.0 SCOPE

This applies to all employees working with drummed materials or creating drummed materials at TES projects/sites.

3.0 REFERENCES

- A. TES SOP-27 PPE
- B. TES SOP-15 Hazard Communication
- C. 49 CFR Part 172.101

4.0 PROCEDURE

- A. Personnel Protective Equipment (PPE) shall be used in accordance with PPE policies in this Manual.
- B. All drums and containers of hazardous materials and hazardous wastes shall be labeled in accordance with the TES Hazard Communication Policy, DOT, and EPA regulations.
- C. Drums and containers of hazardous waste must be closed at all times except when adding or removing waste.
- D. When practical, drums and containers shall be inspected and their integrity shall be assured prior to being moved.
- E. Work performed requiring movement of drums and containers shall be planned and organized to minimize the movement of the materials.
- F. When a container holding hazardous waste is not in good condition, (e.g. severe rusting, apparent structural defects) or if it begins to leak, the waste must be immediately transferred to another container or otherwise processed to remedy the situation.
- G. Spill response materials and equipment shall be available in any area where spills, leaks, or ruptures may occur.
- H. Major spills shall be handled in accordance with the Emergency Response Plan (SPCC plan).

5.0 RECEIVING AND STORAGE

- A. Unloading Process
 - 1. All tractor-trailers will be secured in place using the tractor brakes and wheel chocks. Trailers only will require a safety jack and wheel chocks.
 - 2. The forklift driver will unload the trailer and place the material in the drum storage area.
- B. Placement in Storage of wastes (See Attachment 1 for specific storage criteria)

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1. Drums should not be placed on a pallet in such a way that the edge of the drum extends beyond the edge of the pallet. The drums are to be banded together at a level in the top 1/3 of their height for safety if the pallet will be placed on another pallet of drums.
2. Wastes shall be placed in storage according to their compatibility. At no time will incompatible wastes be placed on the same pallet.
3. Drums will be placed in drum storage in rows or racks separated by aisles at least two feet (24") wide in such a way that all drums on each pallet are visible for inspection, including the label.
4. The pallets should not be placed so that they overlap the next pallet.

C. Inspection

1. Inspection for leaking drums shall be performed at least monthly.
 - a. Any leaking drum (when waste can be seen on the outside of the drum or on the pallet) will be removed and repackaged or processed as appropriate.
2. Drum storage inspections shall be performed using the criteria defined in Attachment 1 of this procedure.

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DRUM HANDLING PROCEDURE - ATTACHMENT 1

RULES FOR STORAGE OF CONTAINERS IN THE DRUM STORAGE DIKE

1. No full containers of waste (55 gallon) are to be stacked over three containers high. Each level must be on a pallet. If drums are stacked three high, each layer of drums must be banded or shrink wrapped. Full containers (55 gallon) of new materials can be stacked three high if needed. Empty containers may be stacked four high provided the drums are on pallets and are banded together at a level in the top 1/3 of their height for safety.
2. Aisle space between rows must be maintained to at least 2 feet.
3. Containers may not be allowed to lean
4. All waste containers must be labeled with the following information:
 - A. Each container must be labeled as to its contents using either the yellow hazardous waste label or the non haz green label.
 - B. The date the waste was first placed into the container.
 - C. Any dot labels required for shipping.
 - D. EPA pcb label if waste material is pcb-contaminated.
 - E. Initials/name of the person preparing the drum for storage.
5. Containers must not be allowed to leak. Spills must be immediately cleaned up and any cleanup absorbents removed.
6. Containers must not be left open except when adding or removing waste.
7. If a container is found to be open, replaced the cover or stopper. If the cover or stopper (bung), is damaged secure a new cover or stopper. Where a good seal is not possible or the container is damaged, the waste must be transferred to a new or secure container (tape or wrapping is not sufficient).
8. If a wet spot is discovered on the floor assume it is waste, unless it is known to be rainwater. If the wet spot is waste, it must be cleaned up immediately. If the wet spot is rainwater, it should be dried and cleaned up within 24 hours after the rain event.

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SOP-08

Approved By: Signature on File

Date: 08/28/09

ELECTRICAL SAFETY

1.0 PURPOSE

To provide a guideline for safe use of electrical equipment and to set minimum standards for the quality of electrical devices.

2.0 SCOPE

This policy applies to all TES employees.

3.0 REFERENCES

A. 29 CFR 1910, Occupational Safety and Health Standards, Subpart S, Electrical

4.0 PROCEDURE

A. General

Employees may not wear or hang any watches, rings, chains, keys or any other metal on their body while working on or near energized electrical equipment.

B. Breaker boxes, junction boxes, extension cords

1. All breaker switches will be labeled to identify the circuit for which it is being used.
2. Breaker boxes will be labeled when there is a single switch which could interrupt power to a series of circuits.
3. A detailed log will be kept identifying the location and function of each electrical breaker box and switch box.
3. The area around a circuit breaker boxes will be kept clear 30" in all directions
5. Bare or exposed wiring will not be tolerated.
6. Junction boxes will be sealed with all weather plates intact.
7. Electrical extension cords will be used only if all the following regulations are met:
 - a. Cords will be inspected before each use for deterioration, fraying, or other external damage.
 - b. Cords will not be used if damaged or frayed (damaged cords will be discarded).
 - c. Splicing of cords will not be permitted.
 - d. There must be a ground plug on the cord.
 - e. A ground fault interrupter (GFI), will be used with all electrical power tools and devices.
 - f.. Cords will not be run down stairs, through doors, or through holes in walls.
 - g. Extension cords will not be used as a substitute for fixed wiring.

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- 8. Electrical switches will be visually inspected before each use and will be replaced as necessary.
- 9. Electrical repairs will be made under the direction of the maintenance department.

- C. Electrical fixtures used in hazardous atmospheres or confined spaces.
 - 1. Electrical equipment (tools, wiring, lights, radios, etc.) must be intrinsically safe (lights must be approved with a Class I Div. I rating) as indicated in the National Electric Code Part 500 -5.

- D. Electrical Lockouts
The TES Lockout Tag-out Health & Safety Policy shall be followed.

- E. Specific Electrical Policies/Programs
 - 1. Maintenance Work
Sometimes maintenance work in your area will require an electrical **Lockout**. Maintenance cuts off the power and attaches a lock so the equipment can't be energized. Only that maintenance person has the key to the lock. Don't try to start equipment that's locked out. (See **LOCKOUT POLICY SOP-35**)
 - 2. Electrical Panels And Boxes
You may need to turn the power to an electrical panel on or off. This is done by operating the switch on the outside right hand side of the box. **ALWAYS OPERATE THESE SWITCHES WITH YOUR LEFT HAND**. This positions your face and body right of the box instead of directly in front. Sometimes panels and boxes explode when these switches are operated.

If you aren't sure how to do something safely, **GET HELP and ASK YOUR SUPERVISOR.**

TABLE 1 - APPROACH DISTANCES FOR QUALIFIED EMPLOYEES - ALTERNATING CURRENT

Voltage range (phase to phase)	Minimum approach distance
300V and less	Avoid Contact
Over 300V, not over 750V	1 ft. 0 in. (30.5 cm).
Over 750V, not over 2kV	1 ft. 6 in. (46 cm).
Over 2kV, not over 15kV	2 ft. 0 in. (61 cm).
Over 15kV, not over 37kV	3 ft. 0 in. (91 cm).
Over 37kV, not over 87.5kV	3 ft. 6 in. (107 cm).
Over 87.5kV, not over 121kV	4 ft. 0 in. (122 cm).
Over 121kV, not over 140kV	4ft. 6 in. (137 cm).

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SOP-09

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Date: 08/28/09

EMERGENCY RESPONSE/HAZWOPER

1.0 PURPOSE

- A. To provide a program which address the proper procedures for the handling of emergency response situations and hazardous chemical cleanups.

2.0 SCOPE

This program applies to all TES field operations at clean-up operations at sites recognized by Federal, state, local or other governmental bodies as uncontrolled hazardous waste sites; and Emergency response operations for releases of, or substantial threats of releases of, hazardous substances without regard to the location of the hazard.

3.0 REFERENCES

- A. 29 CFR 1910.120
- B. TES Medical Surveillance Policy
- C. TES PPE Policy SOP-27

4.0 PROCEDURE

1. TES is an environmental management company and as such will comply with and follow the sections under 29 CFR 1910.120 which cover those operations.
2. All TES employees who are hired to perform field operations will be trained or will have already received training under 1910.120 according to the following schedule:
 - a. Employees will have a minimum of 40 hours of training in Hazardous Materials Operations either prior to hire or within 90 days of hire.
 - b. Each employee will receive training in how to implement emergency response plans, how to identify known or unknown substances, proper PPE selection, how to provide containment, proper decontamination techniques and the proper operation of survey equipment.
 - c. Each field supervisor will be trained as a Hazardous Materials Specialist and have the ability to develop a site safety plan or HASP (health and safety plan).
 - d. Depending upon the nature of the response or operation the field supervisor will also perform the role of on scene incident commander, if necessary. The commander will know how to implement any programs and system, PPE, hazard risks, state and Federal regulations and decontamination.
 - e. All above training will be issued a certificate of training showing the date, subject and name of the instructor.
 - f. All employees will receive at a minimum 8 hours of annual refresher training in the above areas.

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3. Before the start of any TES project a site specific HASP (health and safety plan) will be developed based upon any known chemicals and other physical hazards. The plan will take into account operations on a working plant site, work along or on highways and the unique hazards that each operations presents.

4. The plan will address coordination with outside parties, lines of authority and communications. It will also address safe distances, places of refuge, site security, emergency medical treatment, alert procedures, PPE, and decontamination standards.

5.0 Medical

- All employees who perform the duties of a hazardous materials technician and above will receive a medical physical/evaluation as described in TES's medical surveillance policy.
- The physical will include an evaluation that the employee is fit for duty based upon information provided to the physician on work to be performed, PPE worn and potential chemical exposures.
- This examination will be performed before being assigned to a hazardous chemical work site and on an 18 month (maximum) schedule there after.
- The physician will issue a fit for duty and respirator approved determination form.
- Any employees who responds to an emergency situation and who exhibit signs or symptoms which may have resulted during the course of an emergency shall be provide with medical consultation.

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SOP-10

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EXCAVATION

1.0 PURPOSE

This procedure outlines requirements for excavating soil and is intended to protect personnel from the hazards of excavation collapse.

2.0 SCOPE

Employees are not to work in or around excavations unless excavations are properly shored or sloped. This policy applies to all TES employees.

3.0 REFERENCES

A. 29 CFR 1926.65, 1926.651, and 1926.652

4.0 PROCEDURE

Safe operations while working in and around excavations involve many factors. Factors to be evaluated and discussed at daily safety meetings before starting work include:

- A. Soil Structure: Excavations in wet soil, sandy soil, or areas that have been backfilled are relatively unstable and must be supported or sloped if employees are to enter the excavation.
- B. Weather Conditions: Changing weather conditions greatly affect the safety of working in and around excavations. Excess water from rain or snow loosens and adds weight to the soil, increasing the chance of the soil caving in. Excavation should be diked, pumped, or covered, to prevent an excessive amount of water from accumulating.
- C. Superimposed Loads: Superimposed loads in the vicinity of excavation walls increase the probability of a cave-in. Heavy equipment and materials should be kept back as far as possible. Heavy equipment should be placed on wooden mats or planking to spread the weight more evenly. Considerations must also be taken when buildings, curbs, trees, utility poles, and other structures are around the excavation. Soil excavated must be stored away from the edge and be barricaded or retained in an effective manner.

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5.0 SPECIFIC REQUIREMENTS

Specific requirements in this safety plan are minimum regulations which are contained in 29 CFR Subpart P 1926.65, 1926.651, and 1926.652 .

- A. Walkways and sidewalks shall be kept clear of excavated materials. Sidewalks which must be undermined must be shored to carry a load of 125 pounds per square foot.
- B. Planks used for walkways shall be laid parallel to the length of the walkway and fastened together.
- C. Employees subjected to vehicle traffic in excavating operations shall don reflective clothing.
- D. Excavations shall be inspected at the start of the workday and after any breaks (lunch, etc.); if the possibility of cave-in or slide exists, employees shall not be permitted into the excavation. This inspection shall be performed by the designated competent person. If during the excavation conditions are noted that indicates a possible cave-in, employees will immediately exit the space until proper precautions have been taken.
- E. Prior to opening an excavation, all efforts shall be made to locate all underground utilities. The utilities shall be marked.
- F. Excavations deeper than 5 feet which are entered by employees shall be sloped, shored, or protected by some other equivalent means.
- G. Excavations below the level of the base of footings of a subsurface structure shall not be permitted, unless the wall is underpinned.
- H. When employees are required to work in an excavation 4 feet or deeper, a ladder shall be provided. The maximum horizontal travel distance to the ladder shall be 25 feet. The ladder shall extend a minimum of 3 feet above the excavation and be secured. This ladder shall not be removed until all employees have exited the excavation. Ladders shall be provided in an excavation regardless of sloped ends or benched sides.
- I. Guardrail or fences shall be placed at all excavations which are close to sidewalks, drives, or other thoroughfares. Adequate protection shall also exist at remote excavations where workers are not present.
- J. Excavated soil must be kept at least 2 feet from the edge of the excavation. The excavated soil shall not be permitted to extend higher than the maximum allowable slope for the excavation.
- K. Atmospheric monitoring will be conducted in conjunction with the daily inspections of the excavation and prior to allowing employees to enter or re-enter an excavation. Personnel will monitor for lower explosive limit (LEL), oxygen, and carbon monoxide (CO). In addition, hydrogen sulfide (H₂S) will be monitored on landfill projects. If excavations occur in contaminated soils, refer to the HASP for additional monitoring requirements.

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6.0 MAXIMUM ALLOWABLE SLOPE

- A. OSHA requires that all excavations more than 5 feet deep that will be entered by employees shall be sloped, shored, sheeted, braced, or supported.
- B. The preferred method is to slope the sides of the excavation to the maximum allowable slope, or the angle of control at which the soil will remain at rest. The maximum allowable slope varies with different kinds of soil; this angle must be determined on each individual excavation. The minimum allowable slope for excavations is 1:1.
- C. The second method of support is shoring, sheeting, tightly placed timber shores, bracing, trench jacks, piles, or other materials installed in manner strong enough to resist the pressures surrounding the excavations. This method requires a design approved by a professional engineer licensed in the state where the work is performed.
- D. The third method is to use a trench box, which is a prefabricated movable trench shield made of steel plates, welded to a steel frame.

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SOP-11

Approved By: Signature on File

Date: 08/28/09

EYE/FACE PROTECTION

1.0 PURPOSE

To eliminate the possibility of eye/face injury resulting from contact with physical or chemical agents.

2.0 SCOPE

This policy applies to all TES employees.

3.0 REFERENCES

- A. 29 CFR 1926.102 & 1910.133, Occupational Safety and Health Standard, Eye and Face Protection
- B. American National Standard Z87.1 - 2003, Occupational and Educational Eye and Face Protection

IV. PROCEDURE

A. GENERAL

1. All eye protection used at a site shall meet the design and approval specifications of ANSI Z87.1 - 2003.
 2. Non-prescription safety glasses will be available at each project location.
 3. Face shields will be provided as required by a specific task under a site-specific HASP.
 4. Prescription safety glasses will be provided by the employee. The following stipulations apply to this policy:
 - a. Full time employees **may** have cost reimbursement through insurance or TES benefits.
 - b. The employee is responsible for obtaining any eyeglass prescription .
 5. Tinted or shaded safety glasses will not be worn inside any building or structure, or during any non-daylight work shift.
 6. Safety glasses shall not be worn when wearing a full face respirator. If prescription glasses are required, the company will provide inserts to be worn inside the respirator face-piece. Employee will provide the prescription lenses to fit the frames. Note: see section IV A.3.
 7. The use of individually owned eye protection will be permitted as long as the intent of this policy is met and the eye protection meets ANSI Z87 standards. Eyewear not meeting this standard must be protected by additional approved protection such as goggles or slip over safety glasses.
 8. Metal-framed safety glasses shall not be worn in any energized substation or work area where high voltage contact is possible. Slip over plastic safety glasses may be worn over metal frames for protection.

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9. All safety glasses worn shall have side-shields in place at all times when in a designated area or while performing a designated process.

B. USAGE OF EYE PROTECTION

1. Eye protection shall be worn at all times when in a work area as defined in the TES Personal Protective Equipment Policy.
2. Specific areas and duties that require a minimum of standard safety glasses include but are not limited to:
 - a. Production areas, warehouse areas and parking/driveway areas when any work activity is occurring.
 - b. Inside designated work areas at project sites in the field.
 - c. When required by a customer.
 - d. When a supervisor believes it is required.
 - e. Whenever, regardless of location, work is being performed that involves the movement of materials or potential exposure to chemical hazards.

C. ADDITIONAL EYE PROTECTION

1. Additional eye protection, such as goggles, face shields, welding helmets, or brazing shields, shall be worn when necessary to protect from physical and chemical hazards present.
2. Approved face shields, along with safety glasses, will be worn for activities that include but are not limited to:
 - a. Grinding
 - b. Sanding
 - c. Cutting with power tools
 - d. Chemical handling/pumping of liquids
 - c. Painting
 - d. Chain saw usage

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SOP-12

Approved By: Signature on File

Date: 08/28/09

FALL PROTECTION

1.0 PURPOSE

- A. To provide a procedure to use during work activities at the ACE NFSS in Lewiston, New York for Building 401 Demolition when working in a location exceeding 4 feet in the facility and 6 feet in the field above a surface where fixed fall protection is not provided or is inadequate. This distance is measured from the floor or grade to the level at which the worker is standing or sitting.

2.0 SCOPE

This procedure applies to all TES employees.

3.0 REFERENCES

- A. 29 CFR 1910.21-30 Walking, Working Surfaces
 B. 29 CFR 1926.104 Occupational Safety and Health Standard; Safety Belts, Lifelines and Lanyards
 C. 29 CFR 1926.500 OSHA Subpart M-Fall Protection Standards.
 D. 29 CFR 1910-303 OSHA Standard; Electrical - General

4.0 PROCEDURE

1. All employees will receive training in the proper procedures and use of fall protection before being assigned any work above 4 ft in the warehouses or 6 ft in field operations including work around excavations. The training will consist of the following areas:
 - a. to be able to recognize a fall protection required work.
 - b. to be able to recognize the hazards of falling
 - c. correct procedures for erecting, maintaining, disassembling, and inspecting the fall protection systems
 - d. the use of guardrail systems, personal fall arrest systems, safety net systems, warning line systems, safety monitoring systems, controlled access zones and other protection to be used
 - e. the handling and storage of equipment, materials and erecting of overhead protection
 - f. the role of employees in fall protection plans
 - g. a review of the fall protection standard
2. The instructor conducting the training will be qualified in those areas and be considered a competent person under the regulations.

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3. A certificate of training will be issued and kept on file. The certificate will contain the name of the student, the name of the instructor with his signature, the date of training. Prior training by other companies will be reviewed for compliance with these regulations and standards.
4. A fall protection program will be created for each situation involving working at heights above 6 ft. The program will be prepared by a qualified person such as the Compliance Manager or a field supervisor who has received specific fall protection information for the creation of such plans.
5. Any accidents or serious incidents will be investigated and reported under TES' accident reporting policy. The incident will be investigated for any changes necessary to this policy to prevent similar accidents.
6. Any personnel performing elevated work shall be provided with one or more of the following types of protection;
 - a. Full body harness and lanyards, which are tied to a secure object, lifeline, or horizontal fixed line. When a full body harness with lanyard is used as the sole means of fall protection, the lanyard is to be attached to a firm support close enough to the worker so that if a fall occurs, it will be as close to vertical as possible to minimize swinging and so the fall will be limited to six feet or less. Lanyards used as personal fall protection are to have a maximum length of 6 feet and a minimum size of 1/2" nylon or equivalent. Where tie-offs cannot be made in accordance with this standard, the use of nets, cranes, cherry pickers, etc., must be considered and used as appropriate. NOTE: before each use the employee must inspect all harness, belts, & lanyards for condition, no broken parts or tears in the webbing. All fall protection equipment purchased will be ANSI/ASTM rated and approved.
 - b. Fixed work platforms or scaffolds equipped with solid guard rails;
 - c. When working off straight ladders, the ladders will be equipped with safety shoes and tie-off ropes, which are secured to appropriate structures prior to initiating the work. A second person shall steady the ladder until the tie-off is completed. See policy on Ladders.
 - d. Vehicles with mounted elevating and rotating work platforms, which have their scaffolds and platforms securely attached to the vehicles and their brakes set prior to persons occupying the elevated scaffolds or platforms. Personnel occupying the scaffold or platform shall wear a full body harness with lanyards securely attached to the scaffold, platform, or basket.
7. All open-sided floors, platforms, runways, and roof, wall, and earth openings that qualify as elevated work locations shall be effectively barricaded in accordance with OSHA regulation 29 CFR 1926.500. Subpart M details safeguards to be used for floor, wall openings and stairways. Effective barricades are usually railings with toe-boards or floor hole covers.

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8. Assignments on flat or low pitched roof type structures with a ground-to-eave height greater than ten feet, or a slope greater than or equal to 4 inches rise in 12 inches, employees shall be protected from falling from all unprotected sides and edges of the roof as follows:
 - a. By the use of a motion-stopping safety system (body harness/belt and lanyard including rope grab device) on lines or lanyards; or,
 - b. By the use of a highly visible warning line system erected not less than 6 feet from the roof edge or where there is no alternate methods for use of fall protection equipment a monitoring system will be utilized. The monitor will recognize the fall hazards, warn employees if they are unaware of a fall hazard or are acting in an unsafe manner, be on same working surface and in visual sight and stay close enough for verbal communication. The monitor can not have other duties that would take his attention from the monitoring function.
9. Materials and tools are not to be "dropped" from or "tossed" to any elevated levels. Equipment/tools that must be raised or lowered must be controlled by the use of hand lines or mechanical lifting devices. The equipment/tools must also be contained by rigging, use of tool buckets, tool belts, chutes, etc.
10. Mobile work platforms and portable ladders used in close proximity to electrical lines have appropriate clearance as specified in 29 CFR 1910.303
11. Personnel protection from falling while in transit to and from an elevated work site will be considered in all job planning and execution.

FALL PROTECTION PROCEDURES

TES policy requires fall protection when working at any height over 4 feet above floor level.

OPTIONS

- Ladders must be tied off the first time up. Check the non-skid feet on the ladder before use. Don't stand on the top two steps; get a longer ladder if needed. If you are standing inside a manhole, or inside a tank, you do not need fall protection.
2. When possible, employees should work from a lift platform. We have platforms fastened to a forklift, single person electric lifts, and multiple person electric lifts. Scaffolds are also available. Harnesses/lanyards are not needed if you can do the job from the lift platform or scaffold. Remember to fasten safety chains or gates, and position the platform as close as possible to the work area.
- The next choice is a full body harness hooked to an inertial reel that is fastened to a solid anchor point. If the lid is on the transformer unit, a tether pole can be bolted to the attachment plate and the inertial reel attached to the pole. One person only can be hooked to the pole at one time. The mounting bracket needs placed on the lid with 1/2" x 2" studs. These studs will be removed when unit is ready for shipping. The inertial reel is good for a 8' radius. Place the bracket in the center of a lid when the lid is approximately 16' in length and 2 poles spaced in

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from the end 1/3 when lid is longer than 16'. When the lid is off, the inertial reel must be fastened to either a jib crane or the overhead crane hook. When the crane is used for fall protection, the operator must stand by the controls to make sure they are not operated while an employee is attached to the crane. Jib crane controls should be locked out by the employee using them, or kept with the worker to prevent accidental operation while in use as an anchor.

A body belt with a 4 ft lanyard may be used while on a lid of a transformer if the lanyard can be attached so that the person can not fall off the edge of the unit. A body belt is not fall protection it is a positioning device to prevent you from reaching the edge. Do not use a body belt if there is a chance that a fall of more than 2 ft can occur.

5. Before using any harness or belt, visually inspect its condition, looking for any fraying or tears. Check the contrasting colored stitching--if it is broken anywhere, the equipment has been over strained and should be taken out of service and returned to the safety person.

If you are not sure what to use, or if you have any questions about the correct way to use the equipment, ask your supervisor or the safety person before you continue working.

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SOP-13

Approved By: Signature on File

Date: 08/28/09

FIRE PROTECTION

1.0 PURPOSE

- A. To provide a method to ensure the safety of personnel, property, and the environment from injury and damage due to a fire, both at TES fixed and field work locations.
- B. To provide an effective fire prevention program through planning, training, education and inspections.

2.0 SCOPE

This procedure applies to all employees of TES.

3.0 REFERENCES

- A. 29 CFR 1910.38, Occupational Safety and Health Standards, Emergency Plans and Fire Prevention Plans
- B. 29 CFR 1910, Occupational Safety and Health Standard, Subpart L - Fire Protection
- C. TES Safety Policy SOP-14 and SOP-30.

4.0 PROCEDURE

- A. General
 - 1. Every work & office area of this building or structure and each mobile operation have been provided with fire extinguishing equipment appropriate for the fire hazards present or potentially present at each location.
 - 2. All fire extinguishing equipment will be maintained in close proximity to the area of protection and access to this equipment shall not be blocked at any time.
 - 3. All buildings are provided with appropriate exits with exit signs. These exits shall be kept clear and free of obstruction at all times.
- B. Smoking
 - 1. Smoking, including the use of matches and lighters, is permitted only in approved areas.
 - 2. Smoking is also forbidden in any area where flammable liquids or gases are present.
 - 3. Cigarettes, cigars, etc. shall be properly, completely extinguished prior to disposal, and shall be disposed of in proper receptacles.

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C. Maintenance and Inspection

1. Listings are attached (Attachment 1) of major workplace fire hazards for TES offices and operations. These listings include the hazard, handling method, ignition sources and fire protection systems applicable.
2. Regular, monthly, inspections of fire protection equipment shall be performed to ensure proper operation and accessibility of equipment.
3. Monthly inspections shall also include looking for general fire hazards, inclusive of housekeeping concern.

D. Categories of Fires

1. Class A fires are those involving ordinary combustible materials such as wood, paper, cloth, and some rubber and plastic materials. Use a Class A fire extinguisher on this type of fire.
2. Class B fires involve combustible liquids (such as oils, gasoline, etc), flammable gases, greases and similar materials. Use a Class B fire extinguisher on this type of fire.
3. Class C fires involve energized electrical equipment where the electrical non-conductivity of the extinguishing agent is of importance (where electrical equipment is turned off at the power source, extinguishers of other classifications may be used safely). Use a Class C fire extinguisher on a Class C fire.
4. Class D fires are combustible metals, such as magnesium, titanium, zirconium, sodium, and potassium. Dry Powders that exclude oxygen and do not react adversely with the metals are effective extinguishing agents. Use only a Class D fire extinguisher or dry powder on this type of fire.

E. Burning and Welding (Hot Work)

All burning, cutting torch, or welding operations, including any activity that may involve sparks, high heat or open flames, shall be performed in accordance with approved Burning and Welding Procedures.

F. Compressed Gas

1. All compressed gas cylinders shall be stored in well ventilated areas. The cylinders shall be secured upright at all times, and when not in use, the protective cap shall be placed over the cylinder's valve.
2. Flammable substances such as oil and volatile liquids should not be stored in the same area.
3. Cylinders of oxygen should not be stored within 20 feet of cylinders containing flammable gases. If storage must be closer than 20 feet, then the cylinders shall be separated by a fire-resistive wall (such as concrete partition) at least 5 feet high and have a fire rating of at least 1/2 hour.

G. Training and Education

1. All TES personnel that may respond to a fire are trained on the following:

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- a. Fire hazards of the materials and processes in their areas.
 - b. Categories of fires and fire fighting theory for each.
 - c. Proper use of fire fighting equipment available for their use.
2. All trained personnel shall receive appropriate training.

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Attachment 1

MAJOR WORKPLACE FIRE HAZARDS

OFFICES:

HAZARD:

- Paper, trash, furniture, electric appliances

HANDLING METHOD TO REDUCE HAZARD:

- Remove trash daily
- Materials in proper storage area
- Proper disposal of smoking material
- Portable electric heaters w/tip over switches
- Coffee units turned off at end of work

IGNITION SOURCES:

- Smoking materials
- Coffee making equipment
- Overloaded electrical circuits

FIRE PROTECTION:

- Portable ABC or pressurized water fire extinguishers
- Use ABC or BC only on electrical fires, do not use water!

TRAFFIC/WAREHOUSE OPERATIONS:

HAZARD:

- Gasoline/Diesel/Propane

HANDLING METHOD TO REDUCE HAZARD:

- Use gasoline safety container
- Never refuel running or hot equipment

IGNITION SOURCES:

- Smoking materials
- Hot engines
- Torches - cutting & welding

FIRE PROTECTION:

- Portable BC & CO2 fire extinguishers

MAIN FACILITIES:

HAZARD:

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- Flammable/combustible liquids in Stockroom & solvent storage
- Oils, paints
- Compressed flammable gases

HANDLING METHODS TO REDUCE HAZARD:

- Prevent spills - Watch for leaks
- Keep cylinders chained upright & shut-off after use

IGNITION SOURCES:

- Smoking materials
- Open flames - welding, cutting, brazing

FIRE PROTECTION:

- Portable ABC & BC & CO₂ fire extinguisher

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SOP-14

Approved By: Signature on File

Date: 08/28/09

GENERAL SAFETY RULES

- Employees must inform their supervisor immediately of any situations beyond their ability or authority to correct.
- Supervisors shall insist that employees observe and obey every safety rule, regulation and order as necessary for the safe conduct of the work, and shall take such action as is necessary to obtain compliance.
- Only qualified and/or licensed employees may operate any piece of equipment.
- Anyone known to be under the influence of alcohol and/or drugs shall not be allowed on the job while in that condition. Anyone suspected of being under the influence will be required to submit to testing.
- No one shall knowingly be permitted or required to work while his or her ability or alertness is so impaired by fatigue, illness or other cause that might expose the individual or others to injury.
- Work shall be planned and supervised to prevent injuries in all work processes, particularly when working with equipment and handling heavy materials.
- Employees shall immediately report any personal injury or damage to property to their supervisor, no matter how trivial, regardless of the amount of damage and irrespective of cause or fault.

SUPERVISOR'S RESPONSIBILITIES

- To set examples of safe practices by their own conduct.
- To investigate and correct, or have corrected promptly, unsafe conditions which have come to their attention.
- To know, observe and enforce all general safety rules and such special instructions as are set up for their department.
- To thoroughly acquaint each employee with safety instructions and practices and carefully observe them at their work.
- To take part in work place safety and health program activities and contribute to their success.
- To investigate and report all personal injuries, illnesses and property damage sustained on the job by the personnel within their area of responsibility.
- To welcome and utilize, as far as practical, the safety suggestions which may be made by employees.
- To see that the employees have and use personal protective equipment as determined by the Safety department and company SOGs.
- To see that all tools and equipment are and remain in safe and proper working conditions.

EMPLOYEES RESPONSIBILITIES

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- Be alert to see that all guards and other protective devices are in their proper places and adjusted. Guards are not to be removed except by authorized personnel. Report all deficiencies promptly to your supervisor.
- Horseplay, scuffling and other acts which tend to endanger the safety or well being of employees are prohibited.
- Obey all posted warning and/or instructional signs.
- Do not use equipment that has been tagged out until repairs have been made and the tags have been removed by authorized personnel.
- You are responsible for housekeeping at your project site and in your work areas.
- The access to all fire extinguishers, electrical panel boxes, eye washes, first aid kits and exits must be kept clear at all times. Any defective, damaged or missing fire protection or safety equipment must be reported immediately to your supervisor.
- Keep flammable liquids only in the designated storage areas and in authorized and labeled containers which correctly identify the contents.
- All aisles must be kept clear and open for traffic.
- Smoking is permitted only in designated outdoor areas. Smoking is prohibited in company buildings and vehicles.

These rules are not all inclusive and are a summary of the specific rules in the Safety manual. Please familiarize yourself with these procedures and policies to produce a safe work place.

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SOP-15

Approved By: Signature on File

Date: 08/28/09

HAZARD COMMUNICATION PROGRAM

1.0 PURPOSE

To facilitate worker health and safety through effective communication of the presence of hazardous materials, their associated hazards, and proper handling requirements in compliance with 29 CFR 1910.1200.

2.0 SCOPE

The Hazard Communication Program is applicable to all TES employees.

3.0 REFERENCES

A. Occupational Safety and Health Standards 29 CFR 1910.1200 Hazard Communications.

4.0 PROCEDURE

1. TES shall meet the following criteria of the OSHA 1910.1200 Hazard Communication Standard:
 - a. The Occupational Health & Safety Administration (OSHA) which is part of the Federal Department of labor requires chemical manufactures to access the hazards of chemicals which they produce and manufacturing employees to provide information to employees concerning hazardous chemicals in the workplace.
 - b. OSHA has established the Hazard Communication Standard to reduce the possibility of chemically-related occupational injuries and illnesses to employees.
 - c. The program's requirements are designed to ensure that TES receives the hazard information from our suppliers to enable us to inform our employees properly and implement the Hazard Communication Program. In addition, it provides necessary hazard information to associates, so that they can meaningfully participate in, evaluate and support the program instituted for TES' work places.
 - d. The components of the Hazard Communication Plan involve:
 1. Hazard Determination
 2. Labeling and Warnings on Containers
 3. Material Safety Data Sheets
 4. Hazardous Chemicals used in the Workplace (Chemical Inventory)
 5. Associate Information and training
 6. Hazards of Non-Routine Work Assignments
 7. Contractors in the TES Workplace
2. This written program has been developed to meet the above criteria.
3. All chemicals purchased will have an MSDS made available to the Safety dept for listing and use in training. These chemicals will then be listed on the inventory. The MSDS will be kept in the Safety dept and copies available in the warehouse and on jobsites as required.
4. All employees will receive training on hazardous chemicals at TES;

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1. requirements of this program
 2. where chemicals are present in the work area
 3. location of the written program
 4. review a listing of MSDS available
 5. methods to detect the presence or release of chemicals by monitoring devices, visual appearance or odor
 6. the physical & health hazards of chemicals
 7. protective measures to be utilized to prevent exposure, work practices, emergency procedures and proper PPE to be used
 8. explanation of the labeling program
5. Since TES is an environmental project management company most operations outside of the office will require the use of a HASP (health and safety plan) which will detail all non routine tasks and any chemical exposures. A MSDS will be obtained for all identified chemicals which employees may be exposed to during field activities before activities begin.
6. When working on sites which involve multi employer situations the project manager and/or field supervisor will contact the other employers and advise them of where TES' MSDS are located and at that time determine what chemicals the other contractors will be using in the shared work areas.
- a. All containers will have labels identifying the contents along with any appropriate hazard warnings. The name and address of the manufacturer shall also be on the container.
 - b. Any containers which lose their label or whose contents are repackaged will have the information applied to the container thru the use of the HMIS labeling system. This system consists of 4 colored sections using a numbering system ranging from zero for no hazard to four for the highest hazard. The health, fire, reactivity and any specific hazard will be identified.
 - c. Any employees who can not read or understand English will receive specific hands on training to understand the handling of the chemicals in the language they understand.
 - d. See attachment A for a listing of known chemicals.

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Attachment A – MSDS Listing

PRODUCT NAME	MANUFACTURER
<p align="center">Complete this attachment when project chemicals and products are identified</p>	

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SOP-16

Approved By: Signature on File

Date: 08/28/09

HEAD PROTECTION

1.0 PURPOSE

To provide a method to ensure the appropriate use of protection to prevent head injuries resulting from contact with flying/falling objects, impact or low hanging equipment as well as limited electrical shocks and burns.

2.0 SCOPE

These requirements apply to all employees at TES.

3.0 REFERENCES

- A. 29 CFR 1910.135 and 1926.100, Occupational Safety and Health Standard, Occupational Head Protection
- B. American National Standard Z89.1-2003, Safety Requirements, for Industrial Head Protection

4.0 PROCEDURE

- A. General
 - 1. Hard hats shall meet the design and approval specifications of Policy E-1, ANSI Z89.1-2003, Class E & G.
 - 2. Individual hard hats will be provided to employees and will be replaced as necessary.
 - 3. A supply of clean hard hats will be kept on hand for use by visiting personnel.
 - 4. Hard hats shall be worn in the manner designed by the manufacturer and should be discarded and replaced if dented, chipped, chemically corroded, or otherwise damaged in any way.
 - 5. Contaminated or potentially contaminated hard hats shall be decontaminated to minimize the spread of hazardous materials to clean areas. If they can not be decontaminated, they will be containerized for proper disposal, and the Supervisor notified.
 - 6. Hard hats shall be worn at all times when in a work area as defined by the TES Personal Protective Equipment Policy. Specific hard hat use requirements are as follows:
 - A. At all times on project sites
 - B. Anytime in an electrical substation
 - C. Warehouse Facilities - In posted areas
 - D. When a supervisor believes it is required for safety
- NOTE:** If Customer requirements are more stringent than TES policies, they shall take preference over TES requirements.
- 7. Hard Hats are normally not required:
 - A. In Office Areas
 - B. In Break Areas
 - C. While donning or doffing other equipment required where temporary removal is required to facilitate the correct use of PPE.

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D. As approved by the project manager.

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SOP-17

Approved By: Signature on File

Date: 08/28/09

HEARING PROTECTION

1.0 PURPOSE

To prevent hearing loss resulting from repeated exposure to excessive noise levels.

2.0 SCOPE

This policy applies to all TES employees.

3.0 REFERENCES

- A. 29 CFR 1910.95, Occupational Safety and Health Standard, Occupational Noise Exposure

4.0 PROCEDURE

Hearing protection devices will be worn at all times in designated areas.

- A. Hearing protection will be required in those areas in which it has been determined that the 8 hour TWA (Time Weighted Average) exceeds 85 dBA and the employee will be exposed for periods of greater than 15 minutes duration.
- B. Designated hearing protection areas will be marked for easy identification by employees.
- C. Employees consistently in and out of hearing protection areas shall keep their protective personal hearing protection devices to be used throughout the day.
- D. Approved hearing protection devices are provided as necessary, by the Safety department.
 - 1. Foam/rubber inserts
 - 2. Muffs
- E. If an employee believes noise in the work area is uncomfortable, he/she may use hearing protection at their own discretion - provided the Supervisor and other co-workers are notified.
- F. Operations/areas, and the employees performing those job functions, requiring hearing protection are as follows:
 - 1. Grinding/Polishing with Power Equipment
 - 2. Air or power tools being used.
 - 3. Painting
 - 4. Client job sites that are marked as hearing protection required.
 - 5. When normal conversation between two employees can not be heard due to background noise.

The above is not all inclusive of types of operations requiring hearing protection.

All employees who are exposed at or above an 8 hour time-weighted average of 85 decibels will have an annual audiogram conducted. The audiogram will be conducted by a certified/accredited vendor, whose procedures meet the requirements of 29 CFR 1910.95.

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SOP-18

Approved By: Signature on File

Date: 08/28/09

HEAT STRESS

1.0 PURPOSE

To provide a method to minimize the risk of heat stress and to properly respond to heat stress cases that occur on the job.

2.0 SCOPE

This procedure applies to any TES personnel performing tasks in an area where, as a result of high temperature, strenuous work in protective clothing, etc., there is a reasonable risk of heat stress. This applies to employees working in the field.

3.0 REFERENCES

- A. 29 CFR 1910.151, Occupational Safety and Health Standard, Subpart K, Medical and First Aid.

4.0 PROCEDURE

- A. Heat stress occurs when the body's temperature control system stops working properly because of exposure to internal and external heat sources in conjunction with other physical, cooling-restricting conditions. The following are precautions that should be taken to prevent heat stress:
 - 1. Drink liquids to replace water lost by perspiration. Avoid alcohol and very cold drinks. If available, drink beverages which can provide electrolyte replacement, for example, Gatorade brand. If going on a planned project bring your own water cooler/jug to assure yourself of a source of water while on the project site. Stay away from sodas and teas and other drinks with caffeine as these make the body lose water. **Note: Do not drink Gatorade exclusively. Water is necessary to maintain a proper balance of fluids.**
 - 2. Pace yourself during periods of heavy, hot work.
 - 3. Take extra breaks and rotate duties when practical to reduce heat exposure time.
 - 4. Avoid eating lots of heavy, fatty foods. Eat sensible meals.
 - 5. Get plenty of rest when off the job.
 - 6. Don't report to work with a hangover.
- B. Types of heat stress, signs and symptoms, and treatment:
 - 1. Heat Cramps

Signs and symptoms: Painful muscle spasms, usually of the leg muscles, that occurs after vigorous exercise. This is usually accompanied by profuse sweating.

Treatment: Move to a cooler area and remove excessive layers of clothing to aid in cooling the body. Sit or lie down and rest the cramping muscles. Drink cool (not cold) water.
 - 2. Heat Exhaustion

Signs and symptoms: Profuse (heavy) sweating, skin is usually cold and clammy and face is a gray color. May be dizzy, weak, nauseous and complain of a headache.

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Treatment: Remove yourself from hot environment immediately, loosen any tight clothing and remove all excessive layers of clothing. Have the person lie down. If the person is fully alert, have him/her drink up to 1 liter of water. If the person is not fully alert, **DO NOT GIVE HIM/HER ANYTHING BY MOUTH.**

3. Heat Stroke

Signs and symptoms: Hot, dry, flushed skin; they will not be sweating profusely because the sweating mechanism of the body is not functioning adequately. However, there may be some remaining moisture on the skin from the stages leading up to heat stroke. The person is usually not fully alert and may lose consciousness.

Treatment: **NOTIFY MEDICAL RESPONDERS IMMEDIATELY!** It is extremely important to cool this person off as quickly as possible. Remove all clothing to apply wet, cool towels or sheets to the body to aid in the cooling process. If possible, direct a fan directly on the person and **DO NOT GIVE ANYTHING TO EAT OR DRINK.** This person will require rapid transporting to a medical treatment facility.

- C. The above treatments should be started immediately in all cases. The more extreme the case of heat stress (heat stroke) can be life threatening. Of course, in all cases of heat cramps, heat exhaustion or heat stroke, notify the required medical responder(s) immediately. However, treatment should be started without waiting for the responders to arrive on the scene.
- D. All first aid and medical treatment rendered or obtained, including first aid considered non-emergency status shall be recorded and required notifications shall be performed.

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SOP-19

Approved By: Signature on File

Date: 0828/09

HEAVY EQUIPMENT SAFETY AWARENESS

1.0 PURPOSE

To provide awareness when working around heavy/moveable equipment.

2.0 SCOPE

This policy applies to all TES employees.

3.0 REFERENCES

A. 29 CFR 1926.602 Material Handling Equipment

4.0 PROCEDURE

A. GENERAL

1. During certain projects TES may use heavy equipment such as a bobcat, bull dozer, excavators, scrapers, backhoes and other similar equipment for the excavation of soils and concrete. Employees must be aware of their presence on the project site and the safety concerns while working around such equipment.
2. Red Zones: When working around the following equipment a safe distance must be maintained.
3. Non extendable equipment; 15 feet in front of the machine and 15 feet behind the machine (with the side limits established during the job briefing according to individual circumstances).
4. Extendable equipment; 10 feet beyond the maximum reach of any extended portion of the machine in any direction.
5. Workers must not enter a machine's Red Zone without first communicating with the operator either through hand signals or a radio.
6. Operators must not allow the machine to approach workers closer than 15 feet without first communicating with them using a horn, hand signals or a radio.
7. Blind spots: remember, if the worker can not see the eyes of the operator, the operator can not see him.

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SOP-21

Approved By: Signature on File

Date: 08/28/09

LADDER SAFETY

1.0 PURPOSE

To describe the required procedures regarding Ladder Safety in the workplace.

2.0 SCOPE

All employees who might be expected to use a ladder during the course of work should be familiar with this document. This standard operating procedure covers all types of ladders, including step, extension, and fixed ladders. Ladder users must be able to recognize and avoid ladder hazards and be aware of safe practices in setting up, storing, moving and working from this equipment.

3.0 REFERENCES

CFR 1926. 1950-1960 Subpart X contains specific information on these rules.

4.0 RESPONSIBILITY

1. It is the responsibility of all employees who may use a ladder read and understand this SOP.
2. It is the responsibility of the field supervisor to review basic ladder training safety
3. It is the responsibility of all employees to inspect any ladder being used are free from defects and the all moving parts are working properly.
 - A. Ladder Categories
 - Type IA-300 pounds extra heavy duty
 - Type I-250 pounds, heavy duty
 - Type II-225 pounds, medium duty
 - Type III-200 pounds, light duty
 - B. Fixed Ladder - A ladder that can not be easily moved or carried, and may be an integral part of a structure.

5.0 PROCEDURE

1. All employees who use ladders should have Ladder Safety Training.
2. Ladder Safety Training will consist of recognition of possible hazards associated with ladder use, proper maintenance and safety precautions to be taken when using ladders.
3. All employees must inspect them for defects or possible hazards before the ladders are used. Ladders with loose parts or faulty rungs should be taken out of service immediately, be tagged "Defective" and removed from the work area.
4. Whenever possible have someone within shouting distance while on a ladder.

5.1 SAFE LADDER SETUP

1. All ladders must be placed on a firm surface and secured from slipping.

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2. Do not set ladders on boxes, blocks or other objects that might move.
3. Do not lean or reach out while standing on ladders.
4. Secure ladders whenever a danger of slippage might occur. If a ladder cannot be secured from slipping (e.g., on a smooth concrete surface) then an assistant must hold the ladder while the worker is on the ladder.
5. Do not use ladders in high wind or during inclement weather conditions.
6. Never set up ladders in front of or around doors, unless the door is posted, blocked and/or locked.
7. Do not sit on ladders.
8. Use safety shoes when climbing a ladder.
9. NEVER join 2 ladders together. If your ladder is not long enough, get a longer one.
10. Climbing and Standing on Ladders Safely
 - A. Always face a ladder when climbing up or down.
 - B. Avoid carrying materials or tools when climbing a ladder. Climb the ladder first then pull up the materials with a rope.
11. Rungs and steps should be clear of grease, oil, wet paint, snow, and ice before climbing.
 - A. Do not climb onto a ladder from the side.
 - B. Do not slide down a ladder.
 - C. Climb or stand on a ladder with your feet in the center of the rung.
12. NEVER stand on the top rung or step of a ladder and NEVER higher than the second step from the top of a step ladder .

5.2 PROPER USE AND CARE OF LADDERS

1. Never use metal ladders near exposed electrical wires or circuits.
2. Place warning signs or traffic barriers around a ladder before use in or near roads, sidewalks or other vehicle or walking access areas.
3. Do not move a ladder while someone is on it.
4. Never use a ladder when under the influence of alcohol or prescription medications.
5. Do not leave tools or materials on top of ladders.
6. Only one person should be on a ladder at a time.
7. Do not use a ladder on a scaffold, in a manlift or on top of heavy equipment.
8. Do not try to “rock” or “bounce” a ladder to move it.
9. Store wood ladders where they will not be exposed to the elements.
10. Make sure ladders are properly secured when transported.
11. Do not paint wood ladders. Painting could hide potentially dangerous defects.
12. Remove defective ladders from service immediately, be tagged "Defective", and

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removed from the work area.

13. Never use a stepladder over 20 ft. in length.
14. Always open a stepladder completely and make sure the spreader is locked before use.
15. NEVER stand higher than the second step from the top of a step ladder.
16. NEVER straddle a stepladder.

5.3 EXTENSION LADDER SAFETY

1. The sections of an extension ladder must sufficiently overlap to retain the strength of the ladder. See Table 1
2. Never splice or tie two short ladders together.
3. When using a ladder for access to a landing, it must extend 3 rungs or 3 feet above the landing.
4. The top of an extension ladder should rest against a flat, firm surface.
5. Elevate and extend these extension ladders only from the ground.
6. When practical, secure extension ladders at both the base and the top.
7. Extension Ladder Setup
8. Lay the ladder on the ground when it is collapsed.
9. Have someone foot the ladder or make sure it is braced against something.
10. Pick up the ladder and walk it to an upright position, making sure it will not be obstructed by trees or wires.
11. Slide the bottom of the ladder outwards to the proper angle and set the feet correctly.
12. Then extend the ladder by pulling the extension line.
13. Make sure the rungs on the upper half of the ladder are properly secured by the locking mechanism.
14. If possible, tie the ladder off or have someone steady the ladder as you climb it.

5.4 FIXED LADDER SAFETY

1. Fixed ladders must be secured to the object they are attached to.
2. Fixed ladders over 20 feet must have a safety cage surrounding the ladder.
3. The safety cage should have 15" clearance to all points from the center.
4. Defects in fixed ladders should be repaired as soon as possible.
5. When a defect is not repairable the ladder must be taken out of service.

Table 1

Length of Ladder	Required Overlap
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Up to 36'	3 Feet
Over 36'to 48'	4 Feet
Over 48' to 60'	5 Feet

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SOP-22

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Date: 08/28/09

LIFTING AND CARRYING

1.0 PURPOSE

To provide a method to minimize the risk of injuries resulting from the movement, lifting and carrying of tools, materials and equipment at work locations.

2.0 SCOPE

This procedure applies to all TES employees performing tasks involving the movement of materials that may cause short term, immediate injury or long term, cumulative trauma.

3.0 REFERENCES

A. N/A

4.0 PROCEDURE

A. General

1. In order to minimize the probability of injuries resulting from movement of materials, the two basic types of injuries must be taken into consideration:
 - a. Short term, immediate injury
 - b. Cumulative trauma and/or repetitive motion
2. Short Term, Immediate Injury
 - a. These are injuries that occur as a result of a specific, immediate event such as a pulled muscle, sprained wrist, etc.
 - b. Injury severity may be minor requiring no medical response or treatment, or severe up to and including permanent disability and death.
3. Cumulative Trauma and/or Repetitive Motion
 - a. Any and all activities performed by the human body results in stress ("wear and tear") on the musculoskeletal system. Lifting and carrying is particularly stressful, as well as activities performed repetitively.
 - b. Musculoskeletal stresses repeatedly occurring over long periods of time can result in Cumulative Trauma Disorders (CTD's) that affect the spine, joints, muscles, nerves, etc. A commonly known CTD is Carpal Tunnel Syndrome. The likelihood of a CTD and its severity is related to three factors:
 - Frequency: How often the activity is performed.

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- Position: The position of the worker's body, extremities, etc. while performing the activity.
 - Pressure/Force: How much pressure or force is exerted when performing the activity?
4. Injury prevention during lifting and carrying can be accomplished by the following:
- a. Use materials handling equipment properly when available.
 - b. Get assistance when for moving any materials weighing greater than 50 pounds (or awkward to carry, regardless of weight).
 - c. Use proper lifting and carrying techniques at all times.
 - d. Do not move materials unnecessarily.
 - e. When tasks require material movement in awkward physical positions (e.g. arms extended, lifting overhead, etc.), consult with your supervisor or the Safety dept. for determination of best available procedure.
- B. Use of Materials Handling Equipment
- 1. Where available, materials handling equipment should always be used to move materials from one point to another, regardless of the distance traveled.
 - 2. Proper safety procedures, as described in this manual, shall be followed at all times when using materials handling equipment. Recommended manufacturer's procedures should also be followed.
 - 3. Materials handling equipment that should be used includes but is not limited to
 - a. Hand trucks
 - b. Hoists
 - c. Forklifts
 - d. Drum lifting tools
- C. Guidelines for Lifting and Carrying
- 1. Less than 50 pounds lift: one person
 - 2. 50 - 100 pounds lift: two persons required
 - 3. 101 pounds or greater lift: material handling equipment must be used
- D. Proper Manual Lifting and Carrying
- 1. The load should be tipped to test whether it is light enough for a one-man lift.
 - 2. When ready to lift
 - a. One foot should be placed beside the object, and one foot behind it.
 - b. The back should be kept straight. Nearly vertical.

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- c. The chin should be tucked in, to help keep the back straight.
 - d. The object should be lifted by bending the knees and gripping with the whole hand, not just the fingers.
 - e. Arms and elbows must be kept close to the body.
 - f. The object should be drawn close to the body and body weight should be centered over the feet.
 - g. The body should be shifted until a straight lift can be made by pushing up with the leg muscles, not putting a strain on the back or getting in awkward positions.
 - h. Lifting to a position above the waist should not be with one motion. The load should first be raised waist high (using the procedure just described) then rested on a support while grip is changed. The knees should be bent again to get leg muscles into the final lift.
3. When something is carried, the grip and position should not be adjusted without stopping and resting the load on a support.
 4. To set the load down, just follow the lifting procedure, but in reverse, bending the legs, not the back, setting one corner down first to slide hands out so they won't get pinched.
 5. Help should be obtained to lift large or heavy objects. When two or more persons carry a load, the procedure should be reviewed beforehand and the route and clearances checked. One person should act as a leader and position himself so he can watch and coach the others. If the object is long, each person should carry it on the same side of his body - and everyone should walk in step. Items cannot be safely stacked without a safe base.

E. Injury Prevention

1. The use of back belts is an optional procedure when doing any lifting and carrying. Back belts have, in some situations, found to be a help when lifting and carrying is a constant job requirement.
5. Following the above procedures will help eliminate many situations where a pulled or strained back would occur.

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SOP-23

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LIFTING DEVICES

1.0 PURPOSE

To establish a procedure for proper operation and inspection of Material Handling Lifting Devices.

2.0 SCOPE

This procedure applies to TES personnel and equipment.

3.0 REFERENCES

- A. 29 CFR 1910.176, Occupational Safety and Health Standard, Handling Materials - General
- B. 29 CFR 1910.179, Occupational Safety and Health Standard, Overhead and Gantry Cranes.
- C. 29 CFR 1910.184, Occupational Safety and Health Standard, Slings.

4.0 PROCEDURE

For your own and other TES employees safety, Material Handling Equipment must be used and maintained as recommended by the Manufacturer. Failure to adhere to the following recommendations could endanger your life. Use good common sense and judgment at all times. Safety is the responsibility of the operator of the equipment. You must be competent and attempt to foresee and avoid all hazardous conditions. To be safe as possible, the hoist must be given proper preventative maintenance and testing.

A. Before Operating Hoist and completing Rigging

- 1. Do not operate hoist or completed rigging unless you are properly trained, physically fit, and authorized to do so. You must be familiar with all operating controls of the hoist, warnings, and instructions on the hoist, the safe hoisting practices, and service guides.
- 2. On powered hoists, test all controls and limit switches and make sure hoist is well lubricated at the beginning of each shift. Make sure needed lubrication, adjustments, or repairs are made by appointed personnel before operations are begun.
- 3. Conduct periodic visual inspections as described by the Service manuals, and make sure necessary lubrication or repairs are made.

B. Wire Rope

A wire rope is a piece of flexible, multi-wired, stranded machinery made of many precision parts.

Any wire rope in use should be inspected on a regular basis. You have too much at stake in lives and equipment to ignore thorough examination of the rope at prescribed intervals.

The purpose of inspection is to accurately estimate the service life and strength remaining in a rope so that maximum service can be had within the limits of safety. Results of the inspection should be recorded to provide a history of rope performance on a particular job. On most jobs, wire rope must be replaced before there is any risk of failure.

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The Occupational Safety and Health Act has made periodic inspection mandatory for most wire rope applications.

C. Wire Rope Inspection

All wire rope will be inspected once a month during the monthly shop inspections and signed and dated inspection report maintained. The Inspection Check List(s) attached can be used to record these inspections.

WIRE ROPE SHOULD BE REPLACED IF ANY OF THE FOLLOWING CONDITIONS ARE NOTED:

1. Six (6) randomly distributed broken wires in one rope lay, or three (3) broken wires in one strand in one rope lay.
2. Reduction of three-sixty-fourths inch (3/64) of the original diameter of outside individual wires.
3. Kinking, crushing, bird-caging, or any distortion of the wire rope structure.
4. Evidence of heat damage, or excessive corrosion.
5. Reduction from nominal diameter due to loss of core support, internal or external corrosion, wearing of outer wires.

D. Hoisting Equipment

1. All cables, chokers, chains and slings shall be thoroughly inspected before use. Defective ones will be cut and discarded.
2. All come-a-longs, chains, hoists and hydraulic rams shall be thoroughly inspected before use. Defective ones will be repaired before use.
3. The employee must be thoroughly familiar with the safe working load of the cable, sling, chain and/or any other lifting equipment. There is no room for guess work. If you do not know the lifting capability of the equipment please consult your supervisor or the Safety department.
4. Loads with sharp edges should be properly protected to avoid damage to load or slings.
5. A chain or cable must never be used on loads with smooth surfaces because slippage may occur. A rope or fabric sling is safest for this use.
6. All hoist blocks must be directly over the load before lifting.
7. Only qualified and duly authorized persons may operate heavy equipment, or do necessary rigging and signaling.
8. It is the responsibility of the person rigging the load to see that the load is securely fastened and balanced.
9. The crane is designed to carry weight at its center, not on the point.
10. Personnel are to be lifted only in equipment specifically designed for that purpose.
11. Loads should be lifted just high enough to clear obstacles on the floor or ground. When the loads are to be carried over a distance to a higher position, they should be carried as stated and then lifted to the desired height.
12. When using come-a-longs, the supporting member should be checked to make sure it will carry the load.

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13. A load should never be lifted and left unattended.

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HOIST INSPECTIONS

HOIST #:	TYPE:	DATE:	
INSPECTED BY:		OK	DEFECTIVE
Guards in Place			
Manual Controls			
Wire rope (defective if six randomly broken wires in one rope lay or three broken wires in one strand in one rope lay)			
Limit devices			
Abrasion scrubbing, flattening or peening of wire rope			
Electrical connections			
Evidence of heat damage			
Hook (deformed or cracked)			
COMMENTS:			

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SYNTHETIC SLING INSPECTION

SLING NO.	TYPE:		DATE:
INSPECTED BY:		OK	DEFECTIVE
Abnormal Wear			
Powdered fiber between strands			
Signs of stretching			
Discolored or rotting			
Distortion of hardware			
Marked or coded for capacity			
Snag, puncture, tear or cuts			
Broken or worn stitches			
COMMENTS:			

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SOP-24

Approved By: Signature on File

Date: 08/28/09

MATERIALS HANDLING PROGRAM

1.0 PURPOSE

To provide a method to ensure proper handling of hazardous materials and proper usage of materials handling equipment at TES.

2.0 SCOPE

This applies to all employees, contractors and visitors at TES.

3.0 REFERENCES

- A. TES HASP and SOP-27 Personal Protective Equipment.
- B. TES SOP-23 Lifting Devices.
- C. TES SOP-07 Drum & Container Handling.

4.0 PROCEDURE

- A. The performance of any task at TES whether it involves hazardous materials/waste or not, requires compliance with all applicable safety and health procedures in the HASP.
- B. When operating or riding on or in any vehicle while on TES property or while conducting company business regardless of location, seat belts **shall be worn at all times**. This applies to company cars, trucks, personal vehicles being used for company business, as well as "industrial trucks" such as forklifts, if equipped.
- C. Powered industrial trucks (fork lifts, man-lifts, etc) shall be operated, inspected, and maintained in accordance with the Powered Industrial Trucks SOP-26.
- D. Commercial vehicles shall be operated, inspected, and maintained in accordance with the Commercial Vehicle Procedure, Section G-3 of this manual.
- E. Lifting devices used at TES shall be used, inspected and maintained in accordance with the Lifting Devices SOP-23.
- F. Potential hazardous materials exposures of personnel, plant equipment, grounds, and the environment shall be minimized by performing work practices in compliance with effective contamination control procedures and decontamination.
- G. Drums and containers of hazardous materials and hazardous waste shall be handled in accordance with standard safe handling practices.
- H. Material handling equipment used to move drums and containers of hazardous materials shall be selected, positioned, and operated to minimize sources of ignition related to the equipment from vapors released from ruptured drums or containers.
- I. Shipping and Transport
 - 1. Drums and containers shall be identified and classified prior to packaging for shipment.
 - 2. Drum or container staging areas shall be kept to a minimum number necessary to identify and classify materials safely and prepare them for transport.
 - 3. Staging areas shall be provided with adequate access and egress routes.

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4. Bulking of hazardous materials and hazardous wastes shall be permitted only after thorough characterization of the materials has been completed.

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SOP-25

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Date: 08/28/09

POWER HAND TOOLS

1.0 PURPOSE

To insure safe handling of portable power hand tools in order to prevent injury and reduce the possibility of accidents.

2.0 SCOPE

This procedure applies to TES employees.

3.0 REFERENCES

- A. 29 CFR 1910, Occupational Safety and Health Standards, Subpart P, Hand and Portable Powered Tools

4.0 PROCEDURE

A. General

1. All hand tools shall be in good repair and used only for the purpose for which it was designed.
2. Tools having defects shall be removed from service.
3. When work is being performed overhead, tools not in use shall be secured or placed in holders.
4. Throwing materials or tools from one location to another, from one person to another, or dropping them to lower levels, shall not be permitted.
5. Only non-sparking tools shall be used in locations where sources of ignition may cause a fire or explosion.
6. Power tools shall be inspected, tested, and determined to be in safe operating condition prior to use.
7. Rotating or reciprocating portable power tools shall have a constant pressure switch that will shut off the power when the tool is released by the operator.
8. Ground wires are mandatory on all power tools.

B. Grinding Tools

1. Portable grinding tools shall be guarded so that a maximum of 180 degrees of the grinding wheel is exposed; and the guard shall be located so as to be between the operator and the wheel during use.
2. Work or tool rests shall not be adjusted while the grinding wheel is in motion.
3. Tool rests on power grinders shall not be more than one-eighth inch distance from the wheel.
4. All abrasive wheels shall be closely inspected and ring tested before mounting. Cracked or damaged grinding wheels shall be destroyed, and/or properly disposed of.

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5. Floor stand and bench mounted abrasive wheels, used for external grinding, shall be provided with safety guards.
6. Face shield shall be worn during the grinding operation.
7. Cotton or leather gloves should be worn during the grinding operation.

C. Pneumatic Tools and Equipment

1. Safety clips or retainers shall be installed and maintained on pneumatic impact tools to prevent dies and tools from being accidentally expelled from the barrel.
2. Pressure shall be shut off and exhausted from the line before disconnecting the line from any tool or connection.
3. Defective hoses shall be removed from service.
4. Hoses shall not be laid over ladders, steps, scaffolds, or walkways to create tripping hazards.
5. The use of compressed air for blowing dirt from hands, face, or clothing is prohibited.
6. Compressed air shall not be used for other cleaning purposes except where reduced to less than 30 psi. When cleaning with air, face shield or Mono goggles shall be worn. At no point in time will compressed air be used to blow dirt from clothing.
7. Hoses shall not be used for hoisting or lowering tools.
8. Hearing protection shall be used when working with or around operating air compressors.

D. Power Saws

1. Circular saws shall be equipped with guards that automatically and completely enclose the cutting edges, splinters, and anti-kickback devices.
2. Cracked, bent, or damaged blades shall be destroyed.
3. Power saws shall not be left running unattended.
4. All portable, power-driven circular saws shall be equipped with guards above and below the base plate or shoe. The upper guard shall cover the saw to the depth of the teeth, except for the minimum arc required to permit the base to be tilted for level cuts. The lower guard shall cover the saw to the depth of the teeth, except for the minimum arc required to allow proper retraction and contact with work. When the tool is withdrawn from the work, the lower guard shall automatically and instantly return to the covering position.
5. All power saws shall be equipped with a pressure driven switch only. No locking devices allowed.
6. Extra eye protection is required when operating power saws, (face shields with safety glasses)

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SOP-26

Approved By: Signature on File

Date: 08/28/09

POWERED INDUSTRIAL TRUCKS

1.0 PURPOSE

To provide a procedure to ensure the safe operation of powered industrial trucks at TES projects/sites.

2.0 SCOPE

This procedure applies to forklifts, man-lifts, backhoes, front-end loaders, etc. used at TES projects/sites.

3.0 REFERENCES

- A. 29 CFR 1910.178, Occupational Safety and Health Standards, Powered Industrial Trucks

4.0 PROCEDURE

A. Operators

1. The operation of powered industrial trucks at TES shall be performed only by trained and qualified operators.
2. Operators must use safety belts, if equipped, while operating any powered industrial truck.
3. Operator training for all equipment shall include:
 - a. Classroom training on the knowledge required to correctly inspect and safely operate the vehicle.
 - b. Practical skill demonstration that shows the operator is capable of performing required skills on the vehicle.
 - c. Documentation to verify the above training and practical exercise has been completed.
4. Qualifications of drivers may be suspended or revoked as a result of violation(s) of operating procedures or unsafe actions while operating a vehicle.

B. Inspection

1. All vehicles shall be formally inspected prior to use. For vehicles used on a regular basis, this inspection shall be performed at the beginning of each shift.
 - a. If the vehicle is found to be in need of repair, defective, or in any way unsafe, it shall be taken out of service until it is restored to a safe condition.
 - b. Document the inspection using the Operator's Lift Truck Inspection Form attached.
2. Each Operator shall perform a brief inspection every time prior to starting a vehicle, checking brakes, hydraulic lines, tires, etc. for obvious unsafe conditions.

C. Operation

1. When an operator discovers any unsafe condition during vehicle operation, the operator shall immediately take the vehicle out of service and notify the maintenance department or the Supervisor to effect repairs.

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2. Trucks shall not be driven up to anyone standing in front of a bench or other fixed object that could result in a worker being "caught between" a vehicle and a fixed, immovable object.
3. No person shall be allowed to stand or pass under the elevated portion of any truck, whether loaded or empty.
4. Unauthorized personnel shall not be permitted to ride on any truck. Other than the operator, the only time personnel may ride on a vehicle is when an approved personnel carrying device is used.
5. Arms and legs shall not be placed between the uprights of the mast or outside the running lines of the truck.
6. Fire aisles, access to stairways and emergency response equipment shall be kept clear at all times.
7. Operator shall slow down and sound horn at cross aisles, doorways, and other locations where vision is obstructed. Operator shall also sound horn when starting to back up.
8. If the load being carried obstructs forward view, the driver shall travel in reverse, with the load trailing.
9. The Operator shall look in the direction of travel at all times, including when backing up, and keep a clear view of the path of travel.

D. Parking

NOTE: A powered industrial truck is considered unattended when the operator is 25 feet or more away from the vehicle which remains in his view, or whenever the operator leaves the vehicle and it is not in his view.

1. When the operator gets off the vehicle, whether it is unattended or remains attended, brakes shall be set and load engaging means shall be fully lowered.
2. When a vehicle is left unattended, brakes shall be set, power shut off, load engaging means fully lowered, and controls shall be neutralized.

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OPERATOR'S DAILY REPORT & INSPECTION

ENGINE POWERED LIFT TRUCKS

THIS INSPECTION MUST BE PERFORMED BY EACH SHIFT ON A DAILY BASIS

TRUCK NO. _____ MAKE _____ LOCATION/DEPT. _____

Note: all safety items must be operating or the lift truck must be taken out of service until repaired. If items are found inoperative, immediately notify the maintenance department and tag the lift out of service to effect repairs when form is full and completed return to maintenance for filing.

CHECK EACH ITEM - P/F	DATE/SHIFT:	DATE/SHIFT:	DATE/SHIFT:	DATE/SHIFT:	DATE/SHIFT:	DATE/SHIFT:
BRAKES-SERVICE/PARKING						
LIGHTS-HEAD, TAIL & WARNING						
HORN						
STEERING						
TIRES						
HYDRAULIC CONTROLS						
BACK-UP ALARM						
SEAT BELT						
OIL LEVEL & PRESSURE						
WATER LEVEL & FAN BELT						
OPTIONAL-FUEL LEVEL						
OTHER CONDITIONS						
INSPECTOR'S INITIALS						

REMARKS AND/OR ACTIONS TAKEN:

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SOP-27

Approved By: Signature on File

Date: 08/28/09

PERSONAL PROTECTIVE EQUIPMENT (PPE)

1.0 PURPOSE

To provide an overview of the types, purpose, and procedures required for the use of personal protective equipment by TES personnel.

2.0 SCOPE

The policy applies to all TES employees.

3.0 REFERENCES

- A. 29 CFR 1910, Occupational Safety and Health Standard, Subpart I, Personal Protective Equipment
- B. TES Safety SOP-28, Respiratory Protection Policy
- C. TES Safety SOP-11, Eye/Face Protection
- D. TES Safety SOP-16, Head Protection
- E. TES Safety SOP-14, General Safety Rules
- F. TES Safety SOP-35, Hand Protection
- G. TES Safety SOP-17, Hearing Protection
- H. TES Safety SOP-08, Electrical Safety

4.0 DEFINITIONS

Work Areas:

Areas where work is being or to be performed that may present physical or health hazards as a result of process operations, maintenance, materials handling etc. These areas include, but are not limited to, areas such as operations, maintenance and storage areas in the field.

Office Areas:

Areas where work is performed and equipment is present that is customarily employed with routine, administrative types of activities. This includes offices with copiers, typewriters, computers, etc., and office hallways that are not used for work areas as previously defined.

Break Areas:

A designated location at the workplace where employees and visitors routinely take breaks, eat and drink.

Basic Work PPE:

Long pants, sleeved shirts (no tank tops), occupational safety glasses with permanently attached side shields, steel toed work boots/shoes, hard hat, leather palm work gloves (typical).

Additional PPE:

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Additional requirements are defined in the HASP. Additional requirements may also be implemented due to task modifications and/or other project events as defined by the Safety Officer.

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5.0 PROCEDURE

- A. Appropriate PPE shall be used, and maintained in a sanitary and reliable condition. PPE will be required where ever it is necessary, by reason of hazards, processes, environment, chemical hazards, and/or mechanical irritants encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation or physical contact.
- B. Protective clothing shall not be ripped, torn or unzipped in any way except during its final removal.

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SOP-28

Approved By: Signature on File

Date: 08/28/09

RESPIRATORY PROTECTION

1.0 PURPOSE

- A. To define general respiratory protection program requirements.
- B. To clearly identify respiratory protection areas and conditions.
- C. To provide a step by step procedure covering the proper inspection, use, and maintenance of respiratory protection equipment, both routine use and emergency or escape equipment.
- D. To provide a procedure to maintain compliance with respiratory protection standards when working, supervising or inspecting in an area where it has been determined or is suspected that exposure to toxic substances could exceed allowable levels.

2.0 SCOPE

This applies to all TES employees.

3.0 REFERENCES

- A. 29 CFR 1910.134 Occupational Safety and Health Standard, Respiratory Protection

4.0 PROCEDURE

- 1. The requirements governing the selection and use of respirators during routine operations and in emergencies shall be job specific.
 - 2. Respirators shall be selected on the basis of hazards to which the employee is exposed in accordance with ANSI Z88.2 (1969).
 - 3. Respirators will be assigned to individual employees or be of a one use type. Respirators shall be stored in a sanitary condition.
 - 4. Employees shall not be assigned to tasks requiring the use of respirators unless it has been determined by a medical examination that they are physically able to perform the work and use the equipment. The company physician shall determine the ability of an associate to wear a respirator and perform his work by reviewing the respirator user's health history and recent (12 month's less) physical examination record, or by a current exam that included a pulmonary function evaluation.
 - 5. Only respiratory protection devices approved by the National Institute for Occupational Safety and Health (NIOSH) shall be worn.
- A. Job Assignments Requiring the Use of Respirators
- 1. Full Face air purifying
 - 7. Painting
 - 8. Air arcing
 - 9. Welding
 - 10. Entry into an atmosphere where chemical PELs are exceeded
 - 11. Entry into an unknown chemical/product situation.
 - 2. Dust mask
 - a. Sanding
 - b. Grinding
 - c. Sweeping

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- d. General cleaning
3. Abnormal Circumstances

NOTE: This requirement may be instituted at any time, in any area by the project manager or the field supervisor.

- a. Appropriate cartridge respirator shall be worn in the areas where, due to unforeseen conditions, have become suspect of approaching maximum permissible exposure level.
- b. In atmospheres containing 19.5% oxygen or lower, supplied air respiratory protection must be used.

B. Respirator Wearer Requirements

1. Medical Certification
 - a. Before any negative pressure (cartridge type) respirator may be used, Respirator Clearance must be issued by the Company's physician.
 - b. Medical clearance will include the minimum of medical history, report of respiratory ailments, a pulmonary function exam and a chest x-ray.
2. Personal Hygiene
 - a. No person shall wear a negative pressure (cartridge type) respirator which requires a seal if they have facial hair which may affect to any degree the sealing ability of the face piece.
 - b. Mustaches and sideburns are permitted as long as they are neatly trimmed and do not extend into the sealing area of the respirator.
 - c. Beards, goatees or other facial hair shall not be allowed within the sealing radius of the respirator.

C. Use of Respirators

1. The respirators shall be worn at all times by all personnel in areas where their use is designated, or whenever their use is justified by a particular exposure in a given work assignment.
2. Standard procedures governing the use and maintenance of respirators shall be issued to all users. This information will be included in the employee respirator usage guidelines.
3. Respiratory protection is no better than the respirator in use even though it is worn conscientiously. Inspections shall be conducted by the field supervisor to ensure that respirators are properly used, cleaned, and maintained.
4. For the safe use of any respirator, it is essential that the user be properly instructed in its use and maintenance. Training shall provide employees with an opportunity to handle the respirator, have it fitted properly, and its face piece to face seal tested. This training will be documented according to the requirements listed below.

D. Inspection, Maintenance and Care of Respirators

1. All respirators shall be inspected by the wearer routinely before use. Respirator inspection shall include a check of the tightness of connection and condition of the face piece, headband, hoses, connectors and valves. Rubber or elastomer parts shall be inspected for pliability and signs of deterioration.
2. Respirators are to be washed and disinfected after each day's use, even if foreign matter is not visible. Initial cleaning and decontamination of the outer body of the respirator should be performed by using an alcohol wipe pad on all exterior

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surfaces. Discard the pad in the contaminated waste when visible soiled, using the quantity necessary to effectively clean the respirator. Upon completion, let air dry. Remove the protective lens cover from the face piece, then, using windex or equivalent, clean both the outside and inside of the lens. Replace the lens cover with a new one when dry. Spray both interior and exterior surfaces of the respirator with Clean-Gear disinfectant or equivalent. Let it set for ten minutes, then wipe dry. Clean all internal areas of the respirator using alcohol wipe pads, replacing when visibly soiled. Let air dry. Filters should be replaced under the following guidance;

- a. The air flow is restricted due to blockage.
- b. A calculated use time has been determined based on chemical knowledge, PPM, humidity and work activity.
- c. At the end of every shift.

(This section does not apply to disposable respirators.)

3. After inspection, cleaning, and any necessary repair, place the cleaned and disinfected dry respirator in a sterile respirator storage bag. Respirators may not be stored in lockers or tool boxes unless they are in carrying cases or cartons. Respirators shall be stored in a clean container.
4. Respirators stored for emergency use must be inspected monthly. An inspection checklist attached.

E. Training and Education

1. For the safe use of any respirator, it is essential that the user be properly instructed in its selection, use and maintenance.
2. The training shall include the following:
 - a. Instruction in the nature of the hazard and an honest appraisal of what may happen if the respirator is not used.
 - b. A discussion of why this is the proper type of respirator for this particular purpose.
 - c. A discussion of the respirator's capabilities and limitations.
 - d. Instructions and training in the actual use of the respirator. Training shall provide each employee an opportunity to handle the respirator, have it fitted properly, test its face-to-face piece seal and wear it in normal air for a ten-minute familiarity period.
 - e. The manufacturer's instructions and caution for each respirator model shall be discussed. These instructions must be followed for the respirators to work properly.
 - f. The need for a good fit and the effect facial hair has on the fit will be discussed.
3. The respirator user shall be briefed in the following procedures for cleaning and disinfecting respirators, including the following:
 - a. Removal of any filters, cartridges, canisters or tanks.
 - b. Disassembly of other parts, as required, and washing in a cleaner/disinfectant.
 - c. Rinsing completely in clean water.
 - d. Allowing parts to air dry.
 - e. Inspection of valves, gaskets, head straps and other parts, replacing with new parts if necessary.
 - f. Inspection of new filters, cartridges, canisters of tanks. (This section not applicable to disposable respirators.)

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4. Training in the maintenance and care of respirators shall provide each employee an opportunity to disassemble, inspect and reassemble the respirator, where applicable, and become familiar with the respirator cleaning procedures.
5. A suitable fit test shall be used to determine that a proper seal is obtained. A poor face-to-face piece seal can cause contaminants to be inhaled through the respirator sealing surfaces, instead of through the cartridge, canister, filter or air supply system.
Proper fit test procedures will depend on the type of respirator being fitted and may include:
 - a. Negative pressure test
 - b. Positive pressure test
 - c. Irritant smoke test
 - d. Bitrex test

F. Fit Test Procedure

Each type of negative pressure cartridge respirator shall be fit tested on every employee whose job it might require its use. Either the Irritant Smoke protocol or the Bitrex vapor test will be performed. All tests will be conducted in accordance with the protocols listed in 29 CFR 1019.1025, App. D.

G. Recordkeeping

1. A record will be kept for each employee for all initial and review training sessions. The records will include
 - a. Medical respirator evaluation -- to be completed by the consulting physician. Approval by the physician shall be updated during each subsequent periodical physical examination.
 - b. Training record -- to be completed by the training instructor after initial training.
Periodic review training must also be documented for each employee (see Attachment 2). No employee shall be assigned to a task where respiratory protection is required unless proper training has been given and documented and a medical evaluation has been rendered indicating that the employee is physically fit to wear the required respiratory protection device(s).

H. Types of Respirators

In this procedure the word "respirator" is used to mean any of the various respiratory protection devices approved for use within the limits prescribed by the manufacturer. Some types of devices are described below for information only. Selection of the proper type of respirator(s) for use in each program shall be designated by qualified individuals.

1. Air Purifying - Particulate Removing Filter Respirators.
 - a. These are generally called "dust", "mist" or "fume" respirators
 - b. They are available in disposable (single use), quarter-mask, half-mask and full-face piece types for various contaminants at prescribed levels.
 - c. This type of respirator does not provide oxygen, so it can never be worn in oxygen deficient atmospheres.
 - d. Particulate removing filter respirators offer no protection in atmospheres containing gases or vapors.
 - e. These respirator types should not be used if the air concentration of dusts, fumes and/or mists exceeds 10 times the PEL for airborne contaminants.

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- f. These respirator types should not be used for abrasive blasting conditions.
2. Air Purifying - Chemical Cartridge and Canister Respirators for Gases and Vapors.
 - a. These respirators remove gases and vapors by trapping them on materials such as activated charcoal.
 - b. They are available in quarter-mask, half-mask, and full-mask face piece types for various chemicals and groups of chemicals. Some half-mask types are available in disposable form.
 - c. The element providing protection is the cartridge (or canister) which is designed to remove a particular contaminant. The specific label will tell you what the cartridge (or canister) protects against and at what concentration.
 - d. Canisters used in conjunction with cartridge respirators are required to be specifically color coded and specifically labeled. (See Attachment 3)
 - e. This type of respirator does not provide oxygen, so it can never be worn in oxygen deficient atmospheres.
 6. They may not be used if the chemical to be protected against lacks adequate warning properties -- odor, taste or irritant. Warnings such as these are necessary to alert the user that; (1) the chemical absorbent is saturated, and (2) the contaminant is passing through the cartridge or canister and you are breathing the contaminant.
 - f. They must not be used in atmospheres immediately dangerous to life and health (IDLH).

I. Cautions

1. Respiratory protection devices are approved for a particular usage when used as supplied by and in accordance with manufacture's instructions.
2. Parts from one respiratory protection device must not be interchanged with that of any other, even if the parts seem to fit properly or the devices are approved for the same contaminant.
3. Respirators must be used with all originally equipped parts intact. For example: if a respirator was originally equipped with two headbands, it must always be used with both headbands properly in place.

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Attachment 1

RESPIRATOR EVALUATION

_____ **DATE** _____
EMPLOYEE'S NAME

SOCIAL SECURITY NUMBER (last 4 numbers)

was examined by me on the above date. The examination and diagnostic test results indicate no apparent malfunction or medical condition which would render the employee unfit to wear a respiratory protection device, of the filter type or air supply type, in the course of his/her employment.

_____ **PHYSICIAN'S SIGNATURE**
PHYSICIAN'S NAME (Print)

DATE

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Attachment 2

Qualitative Respirator Fit Test Report

Subject's Name: _____

Last 4 numbers of SS: _____

EQUIPMENT: ½ Mask . Full Face SCBA Size: S M L

Make: _____

Model: _____

FITTING: Positive Pressure Check – Pass Fail
Negative Pressure Check – Pass Fail

EXERCISES:

Normal breathing Turning head side to side Talking (Rainbow Passage)	Deep breathing Moving head up and down Bending over or jogging
--	--

TEST AGENT:

. Irritant Smoke . Saccharin	Banana Oil Bitrex
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RESULTS: The subject passed the fit test. The subject failed the fit test.

This fit test is valid for one year from the test date.
This facepiece fit test is valid with any approved cartridge.

SUBJECT'S STATEMENT: I have been trained in the use of the respirator and I understand that my use of the respirator must be in accordance with company work rules, manufacturer's instructions and OSHA regulations.

SUBJECT'S SIGNATURE: _____ **DATE:** _____

TESTER'S SIGNATURE: _____ **DATE:** _____

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IDENTIFICATION OF CANISTERS

1. LABELING

Labeling must state "permissible chemical cartridge for:

"(name of atmospheric contaminant)"

2. COLOR CODING

Color coding is required as follows:

ATMOSPHERIC CONTAMINANT (to be protected against)	COLOR ASSIGNED
* Acid Gases	White
* Organic Vapors	Black
* Ammonia Gas/Methyl Amine	Green
* Acid Gas/Ammonia Gas	Green stacked on yellow (2 cartridges)
* Acid Gases/Organic Vapors/Ammonia Gases	Green stacked on yellow (2 cartridges)
* Radioactive Material (except Tritium, Noble Gas, and Highly Toxic Particulates, dust, fumes, mists, fogs or smoke)	Purple (Magenta)
* Organic Vapor/Acid Gas/Chlorine/Hydrogen Sulfide	Yellow

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Attachment 4

GAS ASSOCIATION COMMODITY SPECIFICATION GRADE 'D' BREATHING AIR

Limiting Characteristics

	<u>Amount</u>
Oxygen (O), balance predominantly nitrogen	19-23%
Water (see Note 1)	-----
Hydrocarbons	5 mg ³ m*
Carbon Monoxide	20 ppm**
Odor (See Note 2)	-----
Carbon Dioxide	1,000 ppm**

Note 1: The water content of compressed air required for any particular grade may vary with the intended use from saturated to dry. If a specific water limit is required, it should be specified as a limiting dew point or concentration in ppm (v/v).

Note 2: Specific measurement of odor in Grade "D" air is impractical. Air normally may have a slight odor. The presence of a pronounced odor should render the air unsatisfactory for breathing purposes.

*mg/m - milligrams of hydrocarbon per cubic meter of air

**ppm - parts of containment per million parts of air

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Attachment 5

**EMERGENCY EQUIPMENT
RESPIRATOR INSPECTION**

RIG NO.:	LOCATION:	DATE:
INSPECTED BY:	OK	DEFECTIVE
Defects (including leak check)		
Clean and disinfect		
Repairs necessary		
SCBA - tank full		
SCBA - regulator function		
SCBA - hoses deteriorated		
SCBA - warning devices		
COMMENTS:		

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SOP-29

Approved By: Signature on File

Date: 08/28/09

SAFETY MEETING PROGRAM

1.0 PURPOSE

To ensure employees maintain an awareness of applicable safety issues through periodic (daily) safety meetings.

2.0 SCOPE

This policy applies to all TES employees including supervisors, managers, etc.

3.0 REFERENCES

- A. TES Health and Safety Policy SOP-28.

4.0 PROCEDURE

- A. All Operation personnel shall attend. Topics covered will normally include but are not limited to:
 - 1. Updates on safety performance results.
 - 2. Review of recent accidents/incidents, either at TES and/or other applicable locations.
 - 3. New or changed safety policy requirements.
 - 4. Reinforcement of current policy (based on feedback from accident reports, employee corrective actions, etc.).
- B. Group Safety Meetings ("Safety Talks")
 - 1. All groups shall perform periodic safety meetings on topics pertinent to the safety and health of personnel in the group.
 - 2. This meeting should be in conjunction with the daily safety talk at field site locations.
 - 3. Topics discussed should be taken from one of the following sources:
 - a. Group specific topic (see Attachment 1).
 - b. TES Safety Bulletins.
 - c. Hazard Communication Program (for example, an MSDS review of a specific material used in the work group, labeling requirements, etc.).
 - d. Newspaper or magazine articles pertaining to accidents or other safety and health issues at other industry facilities.
 - 4. Document meetings using a TES Safety Meeting Attendance Form (Attachment 2).
 - a. Send a copy of the form to the Safety Officer.
- C. Special Safety Meetings

Special safety meetings may be conducted at any time, either company wide or group specific, when deemed necessary by TES.

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SOP-30

Approved By: Signature on File

Date: 08/28/09

SAFETY POLICY ENFORCEMENT

1.0 PURPOSE

- A. To strengthen the safety awareness program and to provide a means of implementing the Safety and Health Policies at TES.

2.0 SCOPE

This policy applies to all employees at TES.

- NOTE:** This procedure is provided to support normal personnel disciplinary procedures. This procedure should not interfere with nor otherwise circumvent the interpretation and implementation of the normal personnel procedures.

3.0 REFERENCES

- A. See Company Human Resources Policies

4.0 PROCEDURE

SAFETY POLICY ENFORCEMENT

Employees that violate the TES Health & Safety Policies will be issued warnings as follows:

- 1st offense - Verbal warning (documented in writing in project logbook)
 - 2nd offense - Written warning and unpaid retraining in safety areas in question
 - 3rd offense - 2nd written warning; unpaid retraining & subject to days off without pay
 - 4th offense - 3rd written warning; unpaid retraining & subject to reduction in hourly pay rate, and/or days off without pay or termination.
- A. Serious violations that significantly endanger the health and safety of any facility personnel (including the offender) may result in the bypassing of the normal disciplinary progression up to and including immediate termination for the first offense.
 - B. Warnings may be initiated by any TES supervisor or manager, and will be issued to the employee by the supervisor.
 - C. Each warning will stay in the employee's file.

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SOP-31

Approved By: Signature on File

Date: 08/28/09

SCAFFOLD SOP

1.0 PURPOSE

To provide guidelines to TES employees in the safe use of scaffolding, and to reduce the risk of injury to themselves and others while using scaffolding.

2.0 SCOPE

To define the procedures, responsibilities and safety of TES personnel who work with or around scaffolding.

3.0 REFERENCES

- Code of Federal Regulations 29, 1910.28, Safety requirements for scaffolding
- Code of Federal Regulations 29, 1910.29, Manually propelled mobile ladder stands and scaffolds (towers)
- Code of Federal Regulations 29, 1926.450-454, Scaffolds

4.0 DEFINITIONS

Competent Person: Is a person who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

Qualified Person: Is a person who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his/her ability to solve or resolve problems related to the subject matter, the work, or the project.

A. Scaffolding

Scaffolds are a source of accidents when not used properly. The National Institute for Occupational Safety and Health's (NIOSH) research data suggests that fatal falls occur as a result of defective scaffold equipment, improper installation of equipment, improper training of workers, or failure to use appropriate personal fall protection equipment.

B. General requirements for scaffolding

1. The standard requires fall protection at a 4-foot height above a lower level for employees.

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2. Scaffolds shall not be erected, moved, dismantled, or altered except under the supervision of a competent person.
3. The footing or anchorage for scaffolds must be sound, rigid, and capable of carrying the maximum intended load without settling or moving.
4. Unstable objects such as barrels, boxes, loose brick, or concrete blocks must not be used to support scaffolds or planks.
5. An access ladder or equivalent safe access must be provided.
6. Scaffolds four to ten feet high, having a minimum horizontal dimension in either direction of less than 45 inches, must have standard guardrails installed on all open sides and ends of the platform. Scaffolding more than 10 feet above the ground or floor must have guardrails and toe-boards installed at all open sides and ends.
7. Guardrails:
 - Must be made of not less than 2 x 4 lumber or other material providing equal protection. Guardrails must be approximately 42 inches high.
 - Must have a mid-rail of at least 1 x 6 lumber or other material giving equal protection.
 - The height of the top rail for scaffolds manufactured and placed in service before January 1, 2000 can be between 36 inches and 45 inches. The height of the top rail for scaffolds manufactured and placed in service after January 1, 2000 must be between 38 inches and 45 inches.
8. Toe-boards:
 - Must be a minimum of four inches in height.
 - Where persons are required to work or pass under a scaffold, a wire mesh screen must be installed between the toe board and the guardrail.
9. Extend scaffold planks over their end supports a minimum of six to twelve inches.
10. When the cross-point of cross bracing is used as a top rail, it must be between 38 inches and 48 inches above the work platform.
11. Mid-rails must be installed approximately halfway between the top rail and the platform surface.
12. When a cross point of cross bracing is used as a mid-rail, it must be between 20 inches and 30 inches above the work platform.
13. Erecting and dismantling - When erecting and dismantling supported scaffolds, a competent person must determine the feasibility of providing a safe means of access and fall protection for these operations.

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14. Inspections - Before each work shift and after any occurrence that could affect the structural integrity, a competent person must inspect the scaffold and scaffold components for visible defects.
15. Overhand bricklaying - A guardrail or personal fall arrest system on all sides except the side where the work is being done must protect employees doing overhand bricklaying from supported scaffolds.
16. The revised scaffold standard may require more than one competent person on each job site.
17. Scaffold planking must be of scaffold grade or equivalent.
18. The height of a stationary scaffold should not exceed four times its base, unless it is tied, guyed or otherwise.

C. Tubular welded frame scaffolding

1. Scaffold legs must be set on adjustable or plain bases placed on mud sills or other foundations adequate to support the maximum rated load.
2. Properly brace scaffolds by cross bracing or using diagonal braces, or both, for securing vertical members together laterally. Cross braces must be long enough so they will automatically square and align vertical members. In this way, erected scaffolds will always be plumb, square, and rigid.
3. All brace connections must be secure.

D. Training – Employers must train each employee who works on a scaffold on the hazards and the procedures to control the hazards. Training shall include

1. The nature of any electrical hazards, fall hazards and falling object hazards in the work area.
2. The correct procedures for dealing with electrical hazards and for erecting, maintaining, and disassembling the fall protection systems and falling object protection systems being used.
3. The proper use of the scaffold, and the proper handling of materials on the scaffold.
4. The maximum intended load and the load-carrying capacities of the scaffolds used.

Protect yourself and/or your employees from serious injuries and even death.

Employers and employees should be familiar with key provisions of the scaffolding standard:

- A qualified person must provide safety training for each worker who uses a scaffold.
- A competent person must give safety training to any worker who assembles, takes apart, moves, operates, repairs, maintains, or inspects scaffolds.

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- If the worksite changes or the type of scaffold or safety equipment changes, workers using scaffolds must be retrained.

E. Summary

The goals of this plan are to reduce and eliminate personnel injuries and fatalities, and any damage to equipment and facilities from incidents involving scaffolding.

COMPETENT PERSON SCAFFOLD INSPECTION LIST

The competent person checklist is for daily inspections and is to be used as a guide. Refer to regulations and manufacturer for full technical detail.

OSHA

The *competent person* should use this checklist for daily inspections of the scaffold. It is not all-inclusive and should be used as a starting point for the *competent person* to develop a checklist specific to the type of scaffold and jobsite conditions encountered.

1. Are scaffolds and scaffold components inspected before each work shift by a competent person?
2. Have employees who erect, disassemble, move, operate, repair, maintain, or inspect the scaffold been trained by a *competent person* to recognize the hazards associated with this type of scaffold and the performance of their duties related to this scaffold?
3. Have employees who use the scaffold been trained by a qualified person to recognize the hazards associated it with this scaffold and know the performance of their duties relating to it?
4. Is the maximum load capacity of this scaffold known and communicated to all employees?
5. Is the load on the scaffold (including point loading) within the maximum load capacity of this particular scaffold?
6. Is the scaffold plumb, square, and level?
7. Is the scaffold on base plates and are mudsills level, sound, and rigid?
8. Is there safe access to all scaffold platforms?
9. Are all working platforms fully planked?
10. Do planks extend at least 6 inches and no more than 12 inches over the supports?
11. Are the planks in good condition and free of visible defects?
12. Does the scaffold have all required guardrails and toeboards?
13. Are 4:1 (height to width) scaffolds secure to the structure as required?

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SOP-32

Approved By: Signature on File

Date: 08/28/09

SAFETY SHOWERS AND EYE WASH

1.0 PURPOSE

To provide a method to ensure the availability, proper operation, and usage of safety showers and eye wash stations used in the event of a personnel contamination incident.

2.0 SCOPE

This applies to all TES employees working in the field

3.0 REFERENCES

- A. 29 CFR 1910.151, Occupational Safety and Health Standard, Subpart K, Medical and First aid

4.0 PROCEDURE

A. Access and Availability

1. Where the eyes or body of any associate may be exposed to injurious corrosive or other chemical materials, safety showers and eye washes shall be provided.
2. Each associate has the personal responsibility to make sure that they are thoroughly familiar with the locations of the shower and eye wash units in the work area and how to use them.
3. Access to safety showers must be kept clear at all times.
4. Each new employee must be thoroughly oriented on the locations of shower and eye wash units before being permitted to work alone.
5. If portable units are subject to freezing, they should be kept in a heated area such as heated truck cabs to prevent freezing.

B. Inspection

1. Shower and eye wash units must be inspected and tested at least monthly, and more frequently in those areas where it has been determined necessary to do so.
2. Any shower or eye wash unit found to be inoperative **MUST** be reported immediately to the Project Manager.
3. Safety showers are not to be used for connection of additional water hoses or lines.

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4. If a customer's eye wash/shower is identified for potential use, then the Supervisor or Lead Technician shall perform a usage inspection.

C. Usage

NOTE: Notify the Safety Department as soon as possible after an incident has occurred to ensure the necessary assistance is obtained.

1. Safety Shower
 - a. For whole body contamination, stand directly under the shower, rinsing contaminants off of outer clothing prior to removal.
 - b. Care must be taken to avoid getting hazardous materials in the eyes, nose or mouth during showering.
 - c. Remove outer clothing while continuing to shower.
 - d. Stay under the shower for a minimum of 15 minutes.
2. Eye Wash
 - a. Holding eyelids open, flush for a minimum of 15 minutes.
 - b. Get medical assistance immediately.
 - c. Where portable eyewash only is available, wash eyes thoroughly. Transport to nearest medical facility immediately.

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SOP-33

Approved By: Signature on File

Date: 08/28/09

UNSAFE CONDITION TAG-OUT

1.0 PURPOSE

To prevent TES employees from using unsafe equipment and entering unsafe areas.

2.0 SCOPE

This policy applies to all TES employees.

3.0 REFERENCES

TES Health and Safety Plan

4.0 PROCEDURE

1. As a means of communicating, assessing and preventing unsafe conditions at both fixed and field work sites of TES, a Repair Tag shall be installed on the item or area in question until the situation is corrected.
2. The tag shall be installed by the employee who discovers the problem and may be removed only when the condition has been corrected.
3. The top and bottom part of the tag is to be filled out with the relevant information and the bottom part removed and given to the operations coordinator for recording and submittal for repair or correction.
4. Only after the manager in charge of the item or area, or the Safety Officer, is satisfied the item or area has been corrected will it be released for use.

UNDER NO CIRCUMSTANCES MAY ANY EMPLOYEE REMOVE A TAG, UTILIZE OR OPERATE, A TAGGED OUT ITEM OR ENTER A TAGGED OUT AREA WITHOUT PERMISSION FOLLOWING SPECIFIED PROCEDURES. DOING SO MAY CAUSE A SERIOUS INJURY OR FATALITY AND WILL BE CAUSE FOR DISCIPLINARY ACTION AND POSSIBLE IMMEDIATE DISMISSAL.

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SOP-35

Approved By: Signature on File

Date: 08/28/09

LOCKOUT/TAGOUT POLICY (ZERO MECHANICAL-ELECTRICAL STATE)

1.0 PURPOSE

To provide a procedure to ensure isolation of electrical power or electrically driven equipment, engine driven equipment, lines carrying hazardous substances and or high pressure systems.

2.0 SCOPE

This policy applies to TES employees.

3.0 REFERENCES

- A. 29 CFR 1910.147 Occupational Safety and Health Standard, Subpart J, The Control of Hazardous Energy (Lockout/Tagout), dated September 20, 1990.

4.0 PROCEDURES

Before anyone works on or in electrical power or electrically driven equipment, engine driven equipment piping connected to pumps or tanks, the following procedures must be followed:

- A. Stationary Electrical Power Equipment (including but not limited to transformers, regulators, reactors, tap changers, switches, and breakers).
 1. All electrical switchgear and breakers which energize equipment to be serviced must be de-energized, locked and tagged, tested, and grounded prior to any service being performed. Refer to the "Safety in Preparing Stationary Electrical Power Equipment for Servicing" Section 5 of this procedure, for details.
 2. Levers, switches, actuators, controllers, etc. which supply power to any equipment involved in servicing must be inspected and tested to verify all related circuits have been de-energized. These devices must be locked and clearly tagged to identify the equipment's status.
 3. All locks and tags, utilizing a multiple lock adapter, must be attached or removed only by a Supervisor. The Supervisor shall be responsible for worker safety during the lockout.
 4. Each employee engaged in any service work involving a lockout shall install his/or her lock and tag on the equipment.
 5. In the event of the client prohibiting contractor locks in the field, a variance will have to be approved by the project manager and the client prior to proceeding with the alternate log-out/tag-out procedure.
 6. In the case of a Supervisor change of duty, the Incoming Supervisor shall install his or her lock and tag prior to the outgoing Supervisor removing theirs.
 7. Only upon completion of the servicing, including a thorough inspection of the site, equipment, and personnel shall the locks and tags be removed by the Supervisor.

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B. Stationary Electrically Driven Equipment

1. All electrical switchgear to be worked on with energized moving equipment, such as pumps, blowers, screw conveyors, agitators, conveyers, centrifuges, compactors, etc., must be locked/tagged out.
2. Push buttons which operate the equipment to be worked on must be tried to ensure that the proper electrical circuit(s) have been isolated.
3. In cases where pumps or similar equipment are activated by a float valve, or where it is impossible to make a positive check on the safety of the lock out, safety jacks must be removed from Rowan starters and fuses pulled from all other type starters.
4. If such pumps, motors or equivalent are actuated by mechanical devices, such as floats, the devices must be tried manually to ensure that proper deactivation has been achieved.
5. All drive belts must be removed on multiple line shaft driven equipment.
6. Switches controlling electrical equipment must be locked out using a multiple lock adaptor. One padlock shall be used for each employee involved in the job. This is to prevent exposure to moving equipment when one employee completes his assignment and another employee is remaining, performing additional tasks.
7. Each employee who will work on equipment involving a lockout is to be provided with his or her own lock and key.
8. A padlock is to be installed by the employee involved in the job at the beginning of the job or work period and removed at the end of the job or work period. The employee or employees doing the work will retain the key to the padlocks being used.
9. When subsequent work crews are required on the job, actual changes of padlocks are involved. Incoming workers will attach their padlocks before the relieved workers remove theirs.
10. When locks are changed, the Supervisor(s) concerned should completely and thoroughly check the lockout as originally made to assure the continued protection of employees.
12. A "**Danger - Do Not Operate**" tag must be installed on the switches being locked out. The tag must be filled out with the date and name(s) of personnel involved on each crew. The tag to be filled out by the Supervisor.

C. Engine Driven Vehicles

1. When work must be performed on equipment or vehicles powered by an internal combustion engine, the engine must be rendered inoperable by one of the following means:
 - a. Removal of the ignition or starter actuation key.
 - b. Disconnecting of the battery cables and insertion of a padlock through the disconnected wire terminal.
 - c. Isolation by means of a lock type battery disconnect switch.
2. Attempt to actuate the equipment by operating the switch, button, or lever. Air and hydraulic pressure must be relieved when necessary.
3. The employee(s) working on the equipment will retain the keys to the ignition switch and/or padlocks used.

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4. A "**Danger - Do Not Operate**" tag must be installed on the control panel and/or at the battery disconnect point. The tag must be filled in by the Supervisor with the date and name(s) of personnel involved on the job.
- D. Interlocked Controllers and Starters
1. Interlocked controllers, Rowen controller and starters should be rendered safe by an electrician or qualified employee as determined by the Safety & Operations Departments.
 2. No fuses shall be removed or replaced unless being performed with a fuse puller.
- E. When piping valves cannot be locked out, the line must be double blocked or blanked. This will prevent any pressure, heated water or chemical from being introduced into the operation.
If repair is to be made on any lines where the leak can cause employee injury, the system will be shut down for repairs.
- F. Danger Tags
1. White, plastic danger tags will be used in conjunction with the lock-out of all equipment being prepared for maintenance work or isolating equipment for production reasons.
 2. When equipment is isolated for maintenance work, the Supervisor will date and sign the danger tag, then attach it to the valves, breakers or controls that are required to isolate the equipment. Only when the employee(s) has informed the Supervisor that the work has been completed and the equipment can be checked out for service, can the danger tag be removed. NOTE: When exposed to weather conditions plastic tags should be used.

5.0 SAFETY IN PREPARING STATIONARY ELECTRICAL POWER EQUIPMENT FOR SERVICING

Depending on the service to be performed, the equipment may or may not be de-energized. The Supervisor will make whatever arrangements are necessary with the affected employees or the customer, if field service, for performing the servicing in either mode, and outline this information with the employees involved.

In many cases, the transformer being serviced will be de-energized, but much of the equipment surrounding it will still be energized. Employees must know the work site and recognize what's energized and what's de-energized before performing any work. If employees are uncertain of anything, they must consult the Supervisor prior to commencing work.

To prepare a transformer for safe de-energized servicing, there are three major functions with several steps that must be performed prior to starting the actual servicing work.

The functions are:

- a. Switching - to de-energize primary and secondary of the transformer.
- b. Testing - to verify transformer is de-energized.
- c. Grounding - to ground the transformer primary and secondary to protect service personnel.

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The Supervisor will make all necessary arrangements and inform the employees as to what their jobs will be in these functions. Only qualified personnel, as determined by the project manager or field supervisor, may perform these functions. By performing this work unapproved, employees may endanger themselves or other workers. Always use extreme caution whenever working with electrical equipment, in either energized or deenergized modes. As always the minimum safety equipment in a substation is a hard hat, occupational safety glasses with side shields, and appropriate safety shoes.

A. Switching

1. The Supervisor will make arrangements to organize times, sequence, and durations of power outages.
2. With proper arrangements made, the load from the secondary breakers is removed. Once assured the load is off, the proper secondary breakers would be opened. The normal sequence would be to open the small "feeder" breakers first, then de-energize the main secondary breaker. The secondary main should then be racked out of the cubicle, then locked and tagged out of the circuit. However, in some substations there may be a tie breaker which allows the feeder breakers to receive power from another source, which in turn would allow de-energizing of the main breaker from the secondary of the transformer to be serviced, while the feeders are operated off another secondary main which may be at the substation being serviced, or a remote area. If this is the case, be extremely careful as conductors to the feeders will be energized. Employees must always check with the Supervisor for verification on what type system they are working with and what will remain energized.
3. After the transformer's secondary breaker is removed, the primary voltage shall be removed from the transformer's primary side. Typically, for an indoor substation there would be a switch located at the transformer which would be opened and locked out. The next step would be to open, remove, tag, and lock out the high voltage breaker which supplies the primary voltage to the transformer.
4. Verify all proceeding steps have been met, and all personnel involved are satisfied with the lockout and tagging before proceeding to the testing function.

B. Testing

1. High Voltage or Primaries
 - a. The Supervisor will verify all switching procedures and give the "all clear" for testing to begin.
 - b. After physically verifying its being de-energized, the access panels to the high voltage side of the transformer would be carefully removed, allowing access to the primary bushings. Under no circumstances should contact be made with any conductor until it is verified de-energized and properly grounded.
 - c. The actual testing for the presence of voltage is done with a voltage detector which is properly "sized" for the voltage being tested. The person performing this testing or detecting shall wear "hot" gloves and protectors while performing the tests along with the usual hard hat and safety glasses, and safety shoes. When utilizing a detector or indicator, the first step before testing the

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transformer primary bushings and switch for voltage shall be to test the voltage detecting/indicating device to assure it is operating properly. This may be done by testing the instrument for operation by using it on a voltage source known to be energized. If it responds to the known energized source, the next step is to verify the transformer primary bushings and switch are de-energized. (No presence of voltage indicated.) The final step is to retest on the known energized source to verify the instrument is still operating properly.

- d. Should any parts of the high voltage switch or cabling being worked on or adjoining equipment remain "energized", then these areas must be covered with dielectric blankets and tagged accordingly. All personnel involved must be aware of this before proceeding.
 2. **The Secondary Voltage**
 - a. The transformer's secondary access panels should be carefully removed. Under no circumstances should contact be made with any conductor until it is verified de-energized and properly grounded.
 - b. When utilizing a detector or indicator, the first step before testing the transformer secondary bushings and breaker for voltage would be to test the voltage detecting/indicating device to assure it is operating properly. This may be done by testing the instrument for operation by using it on a voltage source known to be energized. If it responds to the known energized source, the next step is to verify the transformer secondary bushings and breaker are de-energized. (No presence of voltage indicated). The final step is to retest on the known energized source to verify the instrument is still operating properly.
 - c. Should any parts of the secondary switchgear/breaker panel being worked on adjoining equipment remain energized, these areas must be covered with protective dielectric blankets to isolate them, and tagged to warn all involved personnel.
 3. Once both the primary and secondary of the transformer are tested and verified de-energized, the grounding function would take place.
- C. Grounding
1. The Supervisor will verify all testing procedures and give the "all clear" for grounding to begin.
 2. The person installing the grounding cables should first install the "tail" line of the ground cables to a secure substation ground, with (1), three phase set dedicated to the primary and (1), three phase set dedicated to the secondary of the transformer.
 3. The installer would then put on "hot" gloves with protective covers (he or she should already have a hard hat, occupational safety glasses with side shields, and steel toed safety shoes) to actually install the cables on the transformer, using a "hot" stick.
 4. Taking (1), three phase set of ground cables, and wearing all appropriate safety gear, the installer would approach the primary conductors, and

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- turn his head and "tap" the grounded cable against each conductor to verify that there is not residual inductance or capacitance on these lines.
5. Next, each phase would have an individual cable attached securely to it. Now the grounding of the primary is complete.
 6. Taking the second three phase set of ground cables the installer would approach the secondary conductors, and turn his head and "tap" the grounded cable against each conductor to verify that there is not residual inductance or capacitance on these lines.
 7. Next, each phase would have an individual cable attached securely to it. Now the grounding of the secondary is complete.
 8. All ground cables are to remain attached until all personnel are completed with the transformer servicing, and an "all clear" is given by the Supervisor to remove the ground.

6.0 SPECIAL INSTRUCTIONS

- A. Removal of Locks
 1. In the event an employee who installed a padlock or removed an ignition key from a piece of equipment has left the site for any reason, the following procedure shall be used:
 - a. The Supervisor must be assured that the employee is no longer at work on the equipment in question.
 - b. The Supervisor may cut the lock from the secured equipment after all other locks are removed by the respective employees.
 - c. The Supervisor assumes full responsibility for the safe re-energizing of the equipment involved. If the equipment belongs to a client, the client shall be responsible for actually re-energizing the equipment.
 - d. A written record should be made of the circumstances. (Attachment)

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REMOVAL OF LOCK(S) WRITTEN VERIFICATION FORM

DATE: _____

Employee(S) LOCK BEING REMOVED: _____

SUPERVISOR REMOVING LOCK:

PRINT NAME: _____

SIGNATURE: _____

WITNESS TO THE REMOVAL OF LOCK:

PRINT NAME: _____

SIGNATURE: _____

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LOCKOUT PROCEDURE

Date: _____ Authorized maintenance employee:

Equipment to be locked out:

Dept. & Location:

Circle energy sources: electrical, air, hydraulic, spring, flywheel, thermal, chemical, engine

Location to place isolating lockout(s):

1. Notify affected employees that the machine is to be shut down and locked out.
Employees notified:
2. If in operation, shut down machine with normal stopping procedure.
Circle method: turn off switch, turn off key, unplug, push stop button, other
3. Isolate all energy sources and apply lock(s). (ex. breaker locked off, “on” switch locked off)
Method:
4. Block or dissipate all stored energy.
Method:
5. Verify lockout by (circle) **A.** testing operating controls, **B.** test with electrical meter, **C.** visually verifying contact is open inside panel. **Power can still be connected even though the switch says OFF! REMEMBER TO RETURN CONTROLS TO “OFF” AFTER TEST.**

When machine is operational **remove tools, replace guards**, and return to service as follows:

1. Check that all employees are safely positioned: (Circle) YES NO
2. Notify all affected employees machine is ready for operation and locks will be removed.
Notified:
3. Remove all locks, blocks, or other energy restraints.
4. Restore all energy to the machine.

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Approved By: Signature on File

Date: 08/28/09

HOUSEKEEPING

1.0 PURPOSE

To provide a procedure defining housekeeping standards required to reduce accidents, minimize exposure to hazardous materials, and provide an efficient and effective work place.

2.0 SCOPE

This procedure applies to all TES employees at all work locations.

3.0 REFERENCES

- A. 29 CFR 1910.22, Occupational Safety and Health Standard, Walking-Working Surfaces, General Requirements

4.0 PROCEDURE

- A. General
 - 1. All stairways, passageways, gangways, and aisles must be kept free of materials, supplies, and obstructions at all times.
 - 2. The floor of every work area must be maintained in a clean and, as far as practical, a dry condition.
 - 3. All exits must be kept free of materials, supplies, and obstructions at all times for use in emergencies.
 - 4. All fire extinguishers and eye wash stations must be kept clear for emergency use.
 - 5. Tools, materials, extension cords, hose, or debris must not cause tripping or other hazards.
 - 6. Tools, materials, and other equipment subject to falling must be adequately secured.
 - 7. Accumulation of flammable and combustible liquids on floors, walls, etc., is prohibited. All spills of flammable or combustible liquids must be cleaned up immediately.

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8 All electrical panel boxes, circuit breakers, and other electrical control equipment must be kept clear for an area of 30" in all directions.

B. Break, Office and Change Areas

1. Break, Office and Change areas must be maintained in a clean condition at all times.
2. No one with chemical contaminated clothing (Tyvek, gloves, etc.) shall enter a break, office or change area without proper decontamination per Personnel Decontamination Policy.

C. Trash

1. All chemical contaminated clothing (Tyvek, gloves, etc.) shall be placed inside appropriately labeled waste containers and lids secured.
2. All clean, non-contaminated trash shall be disposed of properly in clean waste receptacles.

D. Hazardous Material Work Areas

1. Environmental cleanliness (good housekeeping) is essential in maintaining the lowest exposure levels. Work areas shall be cleaned frequently to reduce levels of contaminants present and decrease chances of exposure through inhalation, ingestion and/or absorption.

E. Spills

1. Each individual shall be responsible for cleaning or seeing that any spill material is promptly cleaned up. If the employee can not handle the material or quantity spilled, the project manager and/or site supervisor shall be notified to provide additional help.
2. All spills shall be cleaned up in accordance with the HASP and other site-specific guidance, if applicable.

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CHRONIC BERYLLIUM DISEASE PREVENTION PROGRAM

SOP-37
September 2009

Prepared for:

US ARMY CORPS OF ENGINEERS (USACE)

BUFFALO DISTRICT

Buffalo, New York

Formerly Utilized Sites Remedial Action Program (FUSRAP)

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**US Army Corps
of Engineers®**

Buffalo District

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1. PURPOSE AND SCOPE

1.1 Purpose

This program document outlines TerranearPMC and EnergySolutions (TES) practices for minimizing exposure to beryllium. This program shall apply to all facilities and activities involving exposure and/or the potential for exposure to beryllium during waste management activities. The practices listed throughout this document are designed to minimize occupational exposure to beryllium, provide guidelines to conduct exposure monitoring, and provide requirements for personnel working in potentially beryllium-contaminated areas. All appropriately identified TES employees and contractors are required to implement the applicable portions of this program.

This procedure is intended to establish a coordinated system among the TES Operations and Support Groups to protect worker health. Certain sections, as detailed in this procedure, will establish systems in order to comply with 10CFR850. For simplicity, the Chronic Beryllium Disease Prevention Program will be referred to as the Beryllium Program throughout this document. TES Operations and Support Groups, and their sublevel organizations (i.e., Division, Sections, and Projects) are referred to as TES Operations throughout the remainder of this document.

1.2 Scope

1.2.1 The Beryllium Program applies to:

- TES Operations responsible for facilities where beryllium operations have previously been conducted and to any current operation, including decommissioning and demolition that involves airborne beryllium exposures;
- Management of waste materials, release of equipment, salvage, and other material from these facilities and to the release of facilities for use by others; and
- TES employees who have previously been exposed or currently have the potential for exposure to beryllium while working at TES sites.

1.2.2 The Beryllium Program does not apply to beryllium articles (as defined in Section 4.1, *Definitions*).

1.2.3 When necessary, additional compliance requirements shall be established within Group, Division, Department, or Project compliance programs based on the needs of the customer, the geographic location of the Division's operations, or the line of business conducted.

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COMMITMENTS

- 2.1 10CFR850, Chronic Beryllium Disease Prevention Program - Final Rule (December 8, 1999 FR68854)
- 2.2 Occupational Safety and Health Administration (OSHA) Occupational Safety and Health Standards for General Industry 29CFR1910 Subpart Z, Toxic and Hazardous Substances
- 2.3 Occupational Safety and Health Administration (OSHA) Occupational Safety and Health Standards for General Industry 29CFR1910, Section 1200, Hazard Communication
- 2.4 Occupational Safety and Health Administration (OSHA) Occupational Safety and Health Standards for General Industry 29CFR1910, Section 141, Sanitation
- 2.5 TES “Excavation Volume Uncertainty Reduction Authorized under the Luckey FUSRAP Site” Health and Safety Plan

3. REFERENCES

- 3.1 A Strategy for Assessing and Managing Occupational Exposures, AIHA
- 3.2 ES-SH-PR-308, Respiratory Protection
- 3.3 ES-SH-PR-106, Personal Protective Equipment
- 3.4 ES-SH-PR-303, Hazard Communication
- 3.5 Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States, Shacklette, H.T., Boerngen, J.G. U.S. Geological Survey Professional Paper 1270. U.S. Government Printing Office. Washington D.C. 1984.

4. GENERAL

4.1 Definitions

- 4.1.1 *Action Level* — The amount of airborne or removable contamination beryllium that, if exceeded, requires the implementation of the Exposure Monitoring and Worker Protection Actions provision of this procedure to reduce potential exposures:
 - a. The action levels included in Table 1 below are for airborne beryllium in a workers breathing zone for an 8-hour, 10-hour, and 12-hour time-weighted average.

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Table 1: Action Levels for Beryllium

Type of Exposure	Time-Weighted Average (TWA) Exposure Duration	Concentration ($\mu\text{g}/\text{m}^3$)	Agency
Action Level	8-hour	0.2	TES Administrative Limit
	10-hour	0.14	
	12-hour	0.1	

Note: Facilities/operations who are not subject to DOE 10 CFR 850, may implement alternative action levels as directed by a Certified Industrial Hygienist.

- b. The action level for removable contamination in an Operational Area is $3\text{-}\mu\text{g}/100\text{ cm}^2$.
- 4.1.2 *Authorized Person* — Any employee that is required to work in a Beryllium Regulated Area.
- 4.1.3 *Beryllium (Be)* — Elemental beryllium, as well as any beryllium compound or alloy containing at least 0.1 % beryllium that may be released as an airborne particulate.
- 4.1.4 *Beryllium Activity* — Any activity conducted by workers that can expose them to airborne including but not limited to design, construction, operation, maintenance, or decommissioning, and which may involve a combination of facilities and operations or surface contamination of beryllium.
- 4.1.5 *Beryllium Article* — A manufactured item that is formed to a specific shape or design during manufacture that has end-use functions that depend in whole or in part on its shape or design during end use and that does not release beryllium or otherwise result in exposure to airborne concentrations of beryllium under normal conditions of use.
- 4.1.6 *Beryllium Associated Worker* — A current employee of TES, or its subcontractor, who is or were exposed or potentially exposed to airborne concentrations of beryllium at a TES project including:
 - a. A current Beryllium Worker; or
 - b. A current worker whose work history shows that the worker may have been exposed to airborne concentrations of beryllium at a TES facility ("previous worker"); or
 - c. A current worker who exhibits signs or symptoms of beryllium exposure; or

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- d. A current worker who is receiving medical removal protection benefits.
- 4.1.7 *Beryllium Emergency* — An occurrence such as, but not limited to, equipment failure, container rupture, or failure of control equipment or operations that results in an unexpected and significant release of beryllium.
- 4.1.8 *Beryllium-Induced Lymphocyte Proliferation Test (Be-LPT)* — An in-vitro test that measures the beryllium antigen specific, cell-mediated immune response.
- 4.1.9 *Beryllium Medical Removal Protection Benefits* — Benefits established as employment rights for beryllium-associated workers who voluntarily accept temporary or permanent medical removal from beryllium areas following a recommendation by the Site Occupational Medical Director.
- 4.1.10 *Beryllium Qualified Employee* – A current TES employee who has met all of the requirements (medical, training, etc.) to work in a beryllium regulated area.
- 4.1.11 *Beryllium Regulated Area* — A demarcated and regulated location in which activities produce either airborne concentrations of beryllium or removable beryllium surface contamination levels that exceed, or can reasonably, be expected to exceed, the action level.
- 4.1.12 *Beryllium Worker* — A current worker who is regularly assigned to perform a beryllium activity.
- 4.1.13 *Chronic Beryllium Disease (CBD)* – A lung condition that can develop after a person breathes beryllium dust or fumes. The immune system sees beryllium as a “foreign invader,” and builds an “army” of cells in the bloodstream that are prepared to react to beryllium wherever they see it in the body. When an individual is diagnosed with CBD, it generally means the battle between the immune system and the beryllium particles has resulted in scarring (called granulomas) in the lungs.
- 4.1.14 *TES Medical Administrator (MA)* — An individual assigned to administer all aspects of the medical surveillance program.
- 4.1.15 *Breathing Zone* — A hemisphere forward of the shoulders, centered on the mouth and nose, with a radius of 6 to 9 inches.

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- 4.1.16 *High Efficiency Particulate Air (HEPA) Filter* — Filter with a minimum efficiency of 99.97% on 0.3 µm particles at rated airflow.
- 4.1.17 *Industrial Hygiene Controls* — A hierarchy of actions implemented to control employee exposures to acceptable levels. The hierarchy of controls, listed in order of precedence is substitution, engineering controls, administrative controls and personal protective equipment.
- a. *Substitution* — Replacement of a substance used in a process with an equally effective, less hazardous material/substance.
 - b. *Engineering Controls* — Engineering controls minimize employee exposure by either reducing or removing the hazard at the source or isolating the worker from the hazards.
 - c. *Administrative Controls* — The practice of limiting employee exposure by job rotation, work practices, or medical restriction.
 - d. *Personal Protective Equipment (PPE)* — Including the principle governing selection, use and limitations of respirators and protective clothing. Included are respirator fit testing, breathing air specifications, glove permeability, eye protection, etc.
- 4.1.18 *Operational Area* — An area where workers are routinely in the presence of beryllium as part of their work activity and where regular housekeeping efforts are used to maintain removable contamination below the release criteria. Whenever routine surface sampling during non-operational or post-shift periods shows that removable contamination has exceeded the Action level, clean-up measures must be instituted.
- 4.1.19 *Permissible Exposure Limit (PEL)* — The 8-hour, 10-hour, and 12-hour time-weighted average airborne concentration limits are listed in Table 2 below as measured in the worker's breathing zone by personal monitoring.

Table 2: Exposure Limits for Beryllium

Type of Exposure	Time-Weighted Average (TWA) Exposure Duration	Concentration (µg/m ³)	Agency
Permissible Exposure Limit	8-hour	2	OSHA
	10-hour	1.4	
	12-hour	1	

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- 4.1.20 Release Criteria - The removable contamination level of equipment or item surfaces does not exceed the higher of 0.2 $\mu\text{g}/100\text{ cm}^2$ or the concentration level of beryllium in soil at the point of release, whichever is greater.
- 4.1.21 *Regulated Area* - An area demarcated by the responsible employer in which the airborne concentration of beryllium exceeds, or can reasonably be expected to exceed, the action level.
- 4.1.22 *Removable Contamination* — Beryllium contamination that can be removed from surfaces by nondestructive means, such as casual contact, wiping, brushing or washing.
- 4.1.23 *Worker* — A TES employee, affiliate, vendor, work provider or work provider employee who performs or supervises work at this facility.
- 4.1.4 *Worker Exposure* — The exposure of a worker to airborne beryllium that would occur if the worker were not using respiratory protective equipment.

4.2 Responsibilities

4.2.1 Facility/Project Managers

Facility/Project Managers shall ensure the requirements for Chronic Beryllium Disease Prevention are implemented.

4.2.2 Site Safety & Health Representative

The Site Safety & Health Representative shall:

- Conduct hazard assessments in identified beryllium areas and when new or modified activities take place.
- Perform and document beryllium hazard assessments as requested by the TES Medical Administrator, Project Manager, or TES S&H Director.
- Contact TES S&H Director with regards to establishing workplace evaluations and industrial hygiene/employee exposure data interpretation.
- Assist operations in developing and implementing engineering, work practice, and administrative controls for beryllium areas.
- Direct and/or conduct air, wipe and bulk sampling to assess worker exposure levels and surface contamination levels in accordance with established methods and techniques.

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- Provide recommendations and trending of sampling data to the PM regarding the appropriate PPE based on process review and monitoring results.
- Ensure that sampling equipment is calibrated and maintained according to manufacturer's specifications.
- Develop beryllium exposure sampling plans and direct and/or conduct sampling.
- Conduct data analysis on medical, job, and exposure data to assist in the identification of individuals or groups potentially at risk for chronic beryllium disease (CBD) and working conditions that are contributing to that risk.
- Construct succinct and peer reviewed reports that summarize safety and health activities involving beryllium sampling activities, hazard assessments, facility walkthroughs, etc.
- Design, develop, and provide beryllium awareness training.
- Assist the TES POC with the beryllium medical surveillance program for identified beryllium qualified employees.
- Evaluate whether an individual should participate in the medical surveillance program based on the developed baseline inventory and hazard assessments.

4.2.3 TES Operations

TES Operations shall:

- Conduct evaluations to determine the presence of beryllium contamination, including routine surface sampling and breathing zone monitoring, develop hazard assessments for all planned activities when the presence of beryllium has been confirmed.
- Institute appropriate controls for operational areas and regulated areas, including appropriate Worker Protection Actions including:
 - (1) Ensure adequate hygiene facilities are provided to comply with this procedure.
 - (2) Limit access to beryllium areas.
- Manage and maintain the baseline inventory.
- Develop implementing procedures for releasing beryllium contaminated equipment and items.
- Ensure personnel (engineering/maintenance) maintain ventilation, testing, calibration, and records associated with beryllium control equipment.

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- Ensure personnel collect and properly label reusable contaminated laundry as required.
- Provide information to the Site Occupational Medical Director needed to operate and administer Beryllium Medical Surveillance.
- Provide Beryllium Worker and General Beryllium Hazard Training.
- Ensure PPE is available to employees working in regulated areas.
- Establish records management requirements to maintain accurate beryllium records.

4.2.4 TES Medical Administrator (MA)

The TES Point of Contact shall:

- Schedule and ensure employees working in areas of potential beryllium exposure participate in the beryllium medical surveillance program as required.
- Serve as liaison between the Health Services provider and beryllium qualified employees in matters related to the beryllium medical surveillance program.
- Maintain required records of Health Services provider's written medical opinions related to the employee's ability to work in areas where exposure to beryllium is possible. These may be termed "Fit-For-Duty" records.
- Schedule counseling sessions as required by this procedure to assist beryllium-associated workers who are diagnosed to be sensitized to beryllium or to have CBD.
- For projects and/or facilities subject to compliance with 10CFR850, ensure that the Medical Removal Protection Benefits are provided to beryllium-associated workers affected by a medical removal from beryllium exposure.

4.2.5 Site Occupational Medical Director (SOMD)

The SOMD shall:

- Provide medical surveillance for TES beryllium workers and assist the Site Safety & Health Representative in efforts to identify current workers at risk for CBD.
- Conduct respirator fit testing annually for employees wearing respiratory protection equipment.

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- Maintain the roster of beryllium qualified employees at risk for developing CBD.
- Obtain a beryllium-associated worker's signature on the informed consent form before performing medical evaluations or any tests.
- Provide TES Operations and beryllium-assigned worker a written, signed medical opinion within 10 working days of the receipt of medical tests or procedures.
- Establish a multiple physician review process.
- Provide the appropriate worker consultation and document the recommendation for Medical Removal when it is medically appropriate to remove a worker from beryllium exposure.

4.2.6 TES Employees

TES employees shall:

- Comply with the requirements of this procedure, including practicing the precautions to prevent contact beryllium contaminated surfaces.
- Maintaining the appropriate level of training current;
- Wearing the specified personal protective equipment (PPE) and inspect it prior to use to ensure integrity;
- Immediately reporting any beryllium exposure incident to their supervisor.

5. BERYLLIUM SAFETY

5.1 Beryllium Inventory

5.1.1 The Beryllium Inventory shall identify locations of beryllium operations and other locations of potential beryllium contamination based on facility evaluations conducted by TES Operations.

- a. TES Operations shall conduct evaluations to determine the presence of beryllium contamination in each building, facility, and waste stream that is known or suspected to have been involved in beryllium operations. The presence or absence of beryllium will be determined by applying historical process knowledge and/or by collecting air, surface smear, and bulk samples.
- b. Surfaces sampling within regulated areas or suspected regulated areas shall be conducted by either surface wipes or collection of bulk materials. Surface wipe samples shall be compared to the

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release limit of 0.2 $\mu\text{g}/100 \text{ cm}^2$ while bulk sampling shall be compared to the background soil concentrations.

- 5.1.2 Beryllium workers shall be identified by activity and location as part of the inventory.
- 5.1.3 The TES Beryllium Inventory shall be reviewed annually and revised as more information is gathered as a result of building walk-downs, detailed area evaluations, and finally facility decontamination and demolition.
- 5.1.4 The individual managing this evaluation will be qualified, e.g., a Certified Industrial Hygienist, and individuals assigned to this task will have sufficient knowledge and experience to perform such activities properly.
- 5.1.5 Where a historical review of beryllium operations indicates that beryllium particulates were generated in the facility, areas of a facility that are not routinely accessed, such as areas above 8 feet elevation and closed ventilation systems, will be characterized as needed (building renovation, facility D&D, etc.).

5.2 Hazard Assessment

The identification of the possible presence of beryllium in a workplace does not, in and of itself, suffice to determine whether a hazard exists or whether various control measures must be employed. TES Operations is responsible to ensure that a hazard assessment for all planned activities when the presence of beryllium has been confirmed is performed.

- 5.2.1 The beryllium hazard assessment shall be conducted to characterize workplace beryllium exposure hazards. The hazard assessment will include:
 - a. A list of existing and planned operational tasks that are within the scope of the Beryllium Program.
 - b. An analysis of existing conditions, exposure monitoring data, medical surveillance trends, and the exposure potential of planned activities to ensure that the activities with the greatest risks of exposure are evaluated first.
- 5.2.2 The individual managing this assessment will be qualified, e.g., a Certified Industrial Hygienist, and individuals assigned to this task will have sufficient knowledge and experience to perform such activities properly.

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5.3 Exposure Monitoring

5.3.1 A qualified individual, e.g., a certified industrial hygienist, will manage exposure monitoring. Individuals assigned to perform monitoring will have sufficient industrial hygiene knowledge and experience to perform such activities properly.

5.3.2 TES Operations will collect personal breathing zone samples using a statistically based monitoring strategy according to guidelines established in Reference 3.1.

5.3.3 The decision to perform exposure monitoring will be based on a review of the work to be performed including specific beryllium tasks and previous beryllium sampling results.

Monitoring shall be conducted to establish a baseline of potential exposure for each employee or job position where there is a potential exposure to beryllium. Area air, personal breathing zone, surface, and/or bulk samples will be collected prior to performing beryllium-related operations. Personal breathing zone samples may be collected based on similar exposure group classifications as designated by a thorough exposure assessment strategy.

5.3.4 Both surface sampling (wipe or bulk methods) and airborne beryllium monitoring will be used to obtain information on beryllium levels for facilities and projects subject to 10CFR850. Although wipe sampling does not provide a direct indication of beryllium airborne employee exposure levels, it does provide information on the potential for exposure.

5.3.5 Additional exposure monitoring shall be performed if operations, maintenance or procedures change, or when the responsible employer has any when the responsible employer has any reason to suspect such a change has occurred.

5.3.6 Accuracy and Analysis of Monitoring Activities

a. The method of monitoring and analysis that has an accuracy of not less than plus or minus 25 percent, with a confidence level of 95 percent, for airborne concentrations of beryllium at the action level.

b. All samples collected shall be analyzed in a laboratory accredited for metals by the American Industrial Hygiene Association (AIHA)

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or a laboratory that demonstrates quality assurance for metals analysis that is equivalent to AIHA accreditation.

5.3.7 Sampling

- a. TES Operations shall conduct routine surface sampling sufficient to ensure that accessible surfaces contaminated with beryllium dusts and waste do not exceed the action level during non-operational periods.
- b. This sampling would not include the interior of installed closed systems such as enclosures, glove boxes, chambers, or ventilation systems.
- c. For areas adjacent to beryllium areas, TES S&H shall perform occasional wipe sampling to ensure that contamination has not migrated beyond the boundaries of the area.

5.3.8 Notification of Monitoring Results

- a. Employees shall be notified in writing within 10 working days after receipt of any monitoring results.
- b. Monitoring results may be either made personally to the affected worker, or posted in location(s) that is readily accessible to the affected worker, but in a manner that does not identify the individual to other workers.
- c. If exposure levels exceed the action level, this notification will identify that the action level has been met or exceeded and will include the Worker Protection Actions to be taken to reduce exposure levels.
- d. If the monitoring results indicate that worker exposure is at or above the release criteria, TES shall also notify the SOMD of these results, and where required, the client within 10 working days after receipt.

5.4 Operational Area Controls

5.4.1 Posting

TES Operations will ensure that each access point into an Operational Area have a warning sign (see Attachment 6.1) posted to warn workers of beryllium hazards. The area covered by the posting will depend on

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the size of the area of potential contamination and could include the entire facility.

5.4.2 Engineering and Administrative Controls

Engineering and administrative controls shall be implemented where feasible by each facility or project.

5.4.3 Housekeeping

- a. Accessible surfaces in beryllium areas shall be kept free of accumulations of beryllium dust.
- b. Whenever routine surface sampling during non-operational or post-shift periods shows that removable contamination has exceeded the release criteria, clean-up measures must be instituted.
- c. Cleaning beryllium-contaminated floors and surfaces shall be conducted using a wet method, vacuuming or other cleaning methods, such as sticky tack cloths, that avoid the production of airborne dust. Compressed air or dry methods must not be used for such cleaning.
- d. Portable or mobile vacuum units used to clean beryllium contaminated areas must be equipped with HEPA filters, which are changed as often as needed to maintain their capture efficiency.
- e. Cleaning equipment that is used to clean beryllium-contaminated surfaces shall be controlled such that it is not used for non-hazardous materials and shall be labeled.

5.5 Release Criteria

5.5.1 Beryllium-contaminated equipment and other items shall be cleaned to the lowest contamination level practicable before releasing the equipment.

5.5.2 Prior to releasing beryllium-contaminated equipment or other items, TES Operations must ensure that:

- a. The removable contamination level of equipment or item surfaces does not exceed the higher of 0.2 $\mu\text{g}/100 \text{ cm}$ or the concentration level of beryllium in soil at the point of release, whichever is greater; and
- b. The equipment or item is labeled (see Attachment 6.3).

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5.5.3 TES Operations must ensure that beryllium-contaminated equipment or other items released to the general public or for use in a non-beryllium area is conditioned on the recipient's commitment to implement controls that will prevent foreseeable beryllium exposure, considering the nature of the equipment or item and its future use and the nature of the beryllium contamination.

5.5.4 TES Operations must ensure that beryllium-contaminated equipment or other items released to another facility performing work with beryllium are enclosed or placed in sealed, impermeable bags or containers to prevent the release of beryllium dust during handling and transportation.

5.6 Waste Disposal

TES Operations shall control the generation of beryllium containing waste, and beryllium-contaminated equipment and other items that are disposed of as waste, through the application of waste minimization principles.

Beryllium-containing waste, and beryllium-contaminated equipment and other items that are disposed of as waste, must be disposed of in sealed, impermeable bags, containers, or enclosures to prevent the release of beryllium dust during handling and transportation. The bags, containers, and enclosures that are used for disposal of beryllium waste must be labeled (See Attachment 6.3).

All beryllium-contaminated waste must be managed in accordance with applicable environmental regulatory requirements for the disposal of beryllium or beryllium-contaminated materials. If beryllium is found in a waste stream along with other constituents (e.g., radiological, asbestos, lead, etc.), segregation and disposal of such waste will require strict adherence to federal, state, and local laws.

5.7 Worker Protection Actions

The following worker protection actions will be taken whenever airborne concentration of beryllium is at or above the action level, as measured in the worker's breathing zone by personal monitoring.

5.7.1 Periodic Exposure Monitoring

Periodic monitoring of workers who work in areas where airborne concentrations of beryllium are at or above the action level shall be conducted in a manner and at a frequency necessary to represent workers' exposure.

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This periodic exposure monitoring must be performed at least every 3 months.

5.7.2 Exposure Reduction and Minimization

- a. TES Operations must ensure that no worker is exposed above the Permissible Exposure Limit.
- b. TES Operations will develop a written plan for exposure reduction and minimization to reduce exposure levels to below the action level, if practicable, including:
 - (1) Annual goals for exposure reduction and minimization;
 - (2) A rationale for and a strategy for meeting the goals;
 - (3) Actions that will be taken to achieve the goals; and
 - (4) A means of tracking progress towards meeting the goals or demonstrating that the goals have been met.
- c. TES Operations shall implement exposure reduction and minimization actions using industrial hygiene controls.

5.7.3 Regulated Areas

- a. TES Operations will ensure that each access point into a Beryllium Regulated Area have a warning sign (See Attachment 6.2) posted to warn workers of beryllium hazards.
- b. TES Operations will control access into Beryllium Regulated Area to only Authorized Persons, and keep records of all Authorized Persons who access Regulated areas, including:
 - (1) Name,
 - (2) Date,
 - (3) Time in and out, and
 - (4) Work activity.
- c. Food, beverage, tobacco products, and the application of cosmetics are prohibited in Regulated Areas.

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5.7.4 Hygiene Facilities and Practices

- a. TES Operations will provide beryllium workers who are working in regulated areas:
 - (1) Change rooms, showers, hand washing facilities, and lunchroom facilities.
 - (2) Separate change rooms free of beryllium to change into, and store, personal clothing, showers and hand-washing facilities.
 - (3) Clean protective clothing and equipment to prevent cross contamination of clean change rooms or areas.
 - (4) Readily accessible lunchroom facilities with tables for eating that are free of beryllium.

Note: Change rooms, shower and hand washing facilities, and lunchroom facilities shall comply with Commitment 2.4.

- b. Areas that are used to remove beryllium-contaminated clothing and protective equipment must be maintained under negative pressure or located so as to minimize dispersion of beryllium into clean areas.
- c. No eating drinking, tobacco products, chewing gum, cosmetics, lip balm, food preparation, or food storage shall be permitted in beryllium areas.
- d. Personal items such as hats, jewelry, watches, and portable radios are prohibited in beryllium areas.
- e. All beryllium workers at facilities and projects subject to 10CFR850 who work in regulated areas shower at the end of the work shift.

5.7.5 Respiratory Protection

- a. TES Operations shall implement the requirements from Reference 3.2 (Respiratory Protection Program) to provide respirators to, and ensure that they are used by, all workers who:
 - (1) Are exposed to an airborne concentration of beryllium at or above the action level, or
 - (2) Are performing tasks for which analyses indicate the potential for exposures at or above the action level.
 - (3) Are performing tasks where a potential airborne exposure to beryllium exists, based on job-hazard assessments, while exposure assessment are being conducted.

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- b. TES Operations shall include in the respiratory protection program any beryllium-associated worker who requests to use a respirator for protection against airborne beryllium, regardless of measured exposure levels.

5.7.6 Protective Clothing and Equipment

- a. TES Operations shall implement the requirements from Reference 3.3 to provide protective clothing and equipment to beryllium workers and ensure its appropriate use and maintenance, where dispersible forms of beryllium may contact worker's skin, enter openings in workers' skin, or contact workers' eyes, including where:
 - (1) Exposure monitoring has established that airborne concentrations of beryllium are at or above the action level;
 - (2) Surface contamination levels measured or presumed prior to initiating work are above the release criterion;
 - (3) Surface contamination level results obtained to confirm housekeeping efforts are above the release criterion; and
 - (4) Any beryllium-associated worker who requests the use of protective clothing and equipment for protection against airborne beryllium, regardless of measured exposure levels.
- b. TES operations will implement procedures for donning, doffing, handling, and storing protective clothing and equipment that:
 - (1) Prevent beryllium workers from exiting areas that contain beryllium with contamination on their bodies or their personal clothing; and
 - (2) Include beryllium workers exchanging their personal clothing for full-body protective clothing and footwear before they begin work in regulated areas.
- c. Worker shall not remove beryllium-contaminated protective clothing and equipment from beryllium regulated areas, except for workers authorized to launder, clean, maintain, or dispose of the clothing and equipment.
- d. Removal of beryllium from protective clothing and equipment by blowing, shaking, or other means that may disperse beryllium into the air is prohibited.
- e. TES Operations shall clean; launder, repair, or replace as needed, protective clothing and equipment as to maintain effectiveness.

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Beryllium-contaminated protective clothing and equipment, shall be placed in containers that prevent the dispersion of beryllium dust and labeled (See Attachment 6.3) when removed for laundering, cleaning, maintenance, or disposal.

- f. TES Operations shall notify the beryllium-contaminated protective clothing or equipment laundry supplier that exposure to beryllium is potentially harmful, and that clothing and equipment should be laundered or cleaned in a manner prescribed by TES to prevent the release of airborne beryllium.

5.7.7 Beryllium Emergency Procedures

Operations shall ensure that procedures for emergency shutdown and response actions are developed and coordinated with the Site Safety & Health department. The procedures shall incorporate required exposure minimization practices and equipment, including PPE, when practical.

5.8 Beryllium Medical Surveillance

5.8.1 Site Occupational Medical Director

The 3rd party Medical Review Officer (MRO) is designated as the Site Occupational Medical Director (SOMD) providing medical surveillance for TES beryllium workers.

- a. TES Operations shall provide the following information to the SOMD:
 - (1) The current list of beryllium-associated workers who may be eligible for protective measures based on the hazard assessment, exposure records, and other information regarding the identity of beryllium associated workers;
 - (2) The Baseline Beryllium Inventory;
 - (3) Hazard assessment and exposure monitoring data;
 - (4) Synopsis of activities or operations that are covered under the scope of this procedure, including the related duties of beryllium-associated workers;
 - (5) Type of personal protective equipment used;
 - (6) A copy of this procedure, ES-SH-PR-002, Chronic Beryllium Disease Prevention; and
 - (7) A copy of 10CFR850 and its preamble.

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5.8.2 Medical Consent

- a. TES shall provide each beryllium-associated worker with information on the benefits and risks of the medical tests and examinations available to the worker at least one week prior to any such examination or test, and an opportunity to have the worker's questions answered.
- b. TES shall provide each beryllium-associated worker with a summary of the requirements for Beryllium Medical Surveillance (Section 5.8) before the first medical evaluation. This summary shall include:
 - (1) The type of data that will be collected in the medical surveillance program;
 - (2) How the data will be collected and maintained;
 - (3) The purpose for which the data will be used; and
 - (4) A description of how confidential data will be protected.
- c. The SOMD shall obtain a beryllium-associated worker's signature on the informed consent form (Attachment 6.4), before performing medical evaluations or any tests.

5.8.3 Medical Evaluations

TES shall provide a medical monitoring program for beryllium-associated workers.

- a. Baseline and annual medical evaluations will be provided to current beryllium workers.
- b. Baseline and periodic voluntary examinations will be provided at least every three years to workers who may have had previous exposure to beryllium.
- c. Baseline medical evaluation

Baseline medical evaluation shall include:

- (1) A detailed medical and work history with emphasis on past, present, and anticipated future exposure to beryllium;
- (2) A respiratory symptoms questionnaire;
- (3) A physical examination with special emphasis on the respiratory system, skin and eyes;

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- (4) A chest radiograph interpreted by a NIOSH B-reader of pneumoconiosis or a board-certified radiologist;
- (5) Spirometry consisting of forced vital capacity (FVC) and forced expiratory volume at 1 second (FEV1);
- (6) A Be-LPT; and
- (7) Any other tests deemed appropriate by the examining physician for evaluating beryllium-related health effects.

d. Periodic Medical Surveillance (annual)

The periodic medical evaluation must include:

- (1) A detailed medical and work history with emphasis on past, present, and anticipated future exposure to beryllium;
- (2) A respiratory symptoms questionnaire;
- (3) A chest radiograph (every five years) for beryllium-associated workers;
- (4) A physical examination with emphasis on the respiratory system;
- (5) A Be-LPT; and
- (6) Any other medical evaluations deemed appropriate by the examining physician for evaluating beryllium related health effects.

e. Emergency Medical Evaluations

TES shall provide emergency medical evaluations as soon as possible to any workers who may have been exposed to beryllium because of an emergency.

f. Written Medical Opinion and Recommendation

The SOMD shall provide each operation and beryllium-assigned worker a written, signed medical opinion within 10 working days of the receipt of medical tests or procedures.

g. Employee Counseling

Each worker who is diagnosed with beryllium sensitization or CBD will be offered an opportunity to meet with a medical professional and a safety and health professional to answer questions.

- (1) TES HR representative will coordinate this process.

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- (2) During this meeting, the worker will be offered beryllium monitoring (airborne or surface) to measure routine beryllium levels in the worker's primary work area.
- (3) Operations will offer temporary or permanent medical removal from further beryllium exposure as determined in the medical opinion.

h. Multiple Physician Review

The SOMD shall establish a multiple physician review process. This process provides for the:

- (1) Beryllium-associated worker's right to designate a second physician to review initial medical findings, determinations, or recommendations, and for additional examinations, consultations and laboratory tests, as the second physician deems necessary to facilitate this review.
- (2) Resolution of differing opinions, e.g., the findings, determinations, or recommendations of the second physician differ from those of the initial physician, then the responsible employer and the beryllium-associated worker must make efforts to encourage and assist the two physicians to resolve any disagreement.
- (3) Designation of a third physician to review any findings, determinations, or recommendations of the other two physicians; and conduct such examinations, consultations, laboratory tests, and consultations with the other two physicians, as the third physician deems necessary to resolve the disagreement among them.

5.8.4 Medical Removal

TES shall offer a beryllium-associated worker medical removal from exposure to beryllium if the SOMD determines in a written medical opinion that it is medically appropriate to remove the worker from such exposure.

a. Basis for Medical Removal

- (1) One or more positive Be-LPT results;
- (2) Chronic beryllium disease diagnosis;
- (3) Examining physician's recommendation; or
- (4) Any other signs or symptoms that the SOMD deems medically sufficient to remove a worker.

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Note: When an TES is medically removed, the basis for removal shall be evaluated for OSHA recordkeeping purposes.

b. Temporary Removal pending Final Medical Determination

TES shall offer a beryllium-associated worker temporary medical removal pending a final medical determination of whether the worker should be removed permanently. During temporary removal, TES Operations must:

- (1) Transfer the worker to a comparable job for which the worker is qualified or for which the worker can be trained in a short period and where beryllium exposures are as low as possible, but in no event at or above the action level.
- (2) Maintain the beryllium-associated worker's total normal earnings, seniority, and other worker rights and benefits as if the worker had not been removed.
- (3) If there is no such job available, the responsible employer must provide to the beryllium-associated worker the medical removal protection benefits (Section 5.8.4), until a job becomes available or for one year, whichever comes first.

c. Permanent Medical Removal

TES shall offer a beryllium-associated worker permanent medical removal from exposure to beryllium based on the SOMD's recommendation. TES shall ensure that the worker is provided the medical removal protection benefits for projects and facilities subject to 10CFR850 (Section 5.8.4).

d. Worker Consultation before Temporary or Permanent Medical Removal

If the SOMD determines that a beryllium-associated worker should be temporarily or permanently removed from exposure to beryllium, the SOMD must:

- (1) Advise the beryllium-associated worker of the determination that medical removal is necessary to protect the worker's health;
- (2) Provide the beryllium-associated worker with a copy of this rule and its preamble, and any other information the SOMD deems necessary on the risks of continued exposure to beryllium and the benefits of removal;

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- (3) Provide the beryllium-associated worker the opportunity to have any questions concerning medical removal answered; and
- (4) Obtain the beryllium-associated worker's signature acknowledging that the worker has been advised to accept medical removal from beryllium exposure as provided in this section, and has been provided with the information specified in this paragraph, on the benefits of removal and the risks of continued exposure to beryllium.

e. Return to Work After Medical Removal

TES shall not return a beryllium-associated worker who has accepted a Permanent Medical Removal to the worker's former job status unless the SOMD has:

- (1) Determined in a written medical opinion that continued medical removal is no longer necessary to protect the worker's health;
- (2) Fully discussed these matters with the worker; and
- (3) Provided a written determination authorizing the worker to return to his or her former job status.

5.8.5 Medical Removal Protection Benefits

- a. Payment of medical protection benefits are only applicable to those TES projects and facilities required by contract or location to comply with 10CFR850;
- b. Medical removal and job relocation for facilities and projects not subject to 10CFR850 shall work with Human Resources, ESHQA staff, and supervisory personnel to comply with applicable Americans with Disabilities Act requirements for job protection;
- c. If a beryllium-associated worker has been permanently removed from beryllium exposure (Section 5.8.3), TES must provide the beryllium-associated worker:
 - (1) The opportunity to transfer to another position which is available, or later becomes available, for which the beryllium-associated worker is qualified (or for which the worker can be trained in a short period) and where beryllium exposures are as low as possible, but in no event at or above the action level; or
 - (2) If the beryllium-associated worker cannot be transferred to a comparable job where beryllium exposures are below the

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action level, TES shall maintain the removed worker's total normal earnings, seniority and other worker rights and benefits, as though the worker had not been removed for a maximum of 2 years of permanent medical removal protection benefits;

- (3) If a removed beryllium-associated worker files a claim for workers' compensation payments for a beryllium related disability, then the responsible employer must continue to provide medical removal protection benefits pending disposition of the claim. The responsible employer must receive no credit for the workers' compensation payments received by the worker for treatment related expenses.
 - (4) TES obligation to provide medical removal protection benefits to a removed beryllium-associated worker shall be reduced to the extent that the worker receives compensation for earnings lost during the period of removal either from a publicly- or employer-funded compensation program, or from employment with another employer made possible by virtue of the worker's removal.
- d. The requirements to provide medical removal protection benefits is not intended to expand upon, restrict, or change any rights to a specific job classification or position under the terms of an applicable collective bargaining agreement.
- e. TES reserve the right to provide medical removal protection benefits based upon the beryllium-associated worker's participation in Beryllium Medical Surveillance.

5.9 Training

5.9.1 Beryllium Worker Training

TES Operations will provide Beryllium Worker Training to Beryllium-associated workers before or at the time of initial assignment and at least every two years thereafter. This training shall include:

- a. Hazard Communication training requirements of Reference 3.4 for Beryllium;
- b. The contents of this procedure; and
- c. Potential health risks to beryllium worker family members and others who may come in contact with beryllium on beryllium workers or beryllium workers' personal clothing or other personal items as the result of a beryllium control failure at a TES facility.

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5.9.2 Beryllium General Awareness Training

TES Operations will provide Beryllium General Awareness Training to all other individuals who work at a site where beryllium activities are conducted before or at the time of initial assignment and at least every two years thereafter. This training shall include general awareness about beryllium hazards and controls.

5.9.3 Beryllium Retraining

Retraining will be provided when there is reason to believe that a beryllium worker lacks the proficiency, knowledge, or understanding needed to work safely with beryllium, including at least the following situations:

- a. To address any new beryllium hazards resulting from a change to operations, procedures, or beryllium controls about which the beryllium worker was not previously trained; and
- b. If a beryllium worker's performance involving beryllium work indicates the worker has not retained the requisite proficiency.

5.9.4 Beryllium Counseling Program

TES shall develop and implement a counseling program to assist beryllium-associated workers who are diagnosed by the SOMD to be sensitized to beryllium or to have CBD. This counseling program must include communicating with beryllium-associated workers concerning:

- a. The medical surveillance program provisions and procedures;
- b. Medical treatment options;
- c. Medical, psychological, and career counseling;
- d. Medical benefits;
- e. Administrative procedures and workers rights under applicable Workers' Compensation laws and regulations.

5.10 Record Keeping

5.10.1 TES Operations will establish records management requirements to maintain accurate beryllium records of all beryllium inventory

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information, hazard assessments, exposure measurements, exposure controls, and medical surveillance.

- 5.10.2 Records associated with Chronic Beryllium Disease Prevention shall be retained for a minimum of seventy-five years.
- 5.10.3 TES shall link data on workplace conditions and health outcomes in order to establish a basis for understanding the beryllium health risk.
- 5.10.4 TES shall ensure the confidentiality of all work-related records generated under this rule by ensuring that:
 - a. All records that are transmitted to other parties do not contain names, social security numbers or any other variables, or combination of variables, that could be used to identify particular individuals; and
 - b. Individual medical information are:
 - (1) Either included as part of the worker's site medical records and maintained by the SOMD, or is maintained by another physician designated by the responsible employer;
 - (2) Maintained separately from other records; and
 - (3) Used or disclosed by the responsible employer only in conformance with any applicable requirements imposed by the Americans with Disabilities Act, the Privacy Act of 1974, the Freedom of Information Act, and any other applicable law.
- 5.10.5 TES shall transmit all records, in a format that protects the confidentiality of individuals, to regulatory authorities on request.
- 5.10.6 TES shall transmit, within 30 days after a request by a beryllium-associated worker, the information required to be provided to the examining physicians.
- 5.10.7 For projects or facilities subject to the requirement of 10CFR850, TES shall semi-annually transmit to the DOE Office of Epidemiologic Studies within the Office of Environment, Safety and Health an electronic registry of beryllium-associated workers that protects confidentiality. The registry must include, but is not limited to:
 - a. A unique identifier;
 - b. Date of birth;
 - c. Gender;

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- d. Site;
- e. Job history;
- f. Medical screening test results;
- g. Exposure measurements; and
- h. Results of referrals for specialized medical evaluations.

5.11 Performance Feedback

5.11.1 Management and Independent Assessments will be performed to establish the effectiveness of Chronic Beryllium Disease Prevention safety elements. If this assessment indicates that the Beryllium Program needs to be revised, an update will be performed.

5.11.2 This information will be communicated to affected organizations and individuals.

6. ATTACHMENTS AND FORMS

- 6.1 Operational Area Posting
- 6.2 Regulated Area Posting
- 6.3 Beryllium Contaminated Equipment Label
- 6.4 Chronic Beryllium Disease Prevention Medical Surveillance Informed Consent Form

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Attachment 6.1 - Operational Area Posting



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Attachment 6.2 - Regulated Area Posting



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Attachment 6.3 - Beryllium Contaminated Equipment Label



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Attachment 6.4

**Chronic Beryllium Disease Prevention
Medical Surveillance Informed Consent Form**

I, _____ have carefully read and understand the attached information about the Be-LPT and other medical tests. I have had the opportunity to ask any questions that I may have had concerning these tests. I understand that this program is voluntary and I am free to withdraw at any time from all or any part of the medical surveillance program. I understand that the tests are confidential, but not anonymous. I understand that if the results of any test suggest a health problem, the examining physician will discuss the matter with me, whether or not the result is related to my work with beryllium. I understand that my employer will be notified of my diagnosis only if I have a beryllium sensitization or chronic beryllium disease. My employer will not receive the results or diagnoses of any health conditions not related to beryllium exposure.

I understand that, if the results of one or more of these tests indicate that I have a health problem that is related to beryllium, additional examinations will be recommended. If additional tests indicate I do have a beryllium sensitization or CBD, the Site Occupational Medical Director may recommend that I be removed from working with beryllium. If I agree to be removed, I understand that I may be transferred to another job for which I am qualified (or can be trained for in a short period) and where my beryllium exposures will be as low as possible, but in no case above the action level. I will maintain my total normal earnings, seniority, and other benefits for up to two years if I agree to be permanently removed.

I understand that if I apply for another job or for insurance, I may be requested to release my medical records to a future employer or an insurance company. I understand that my employer will maintain all medical information relative to the tests performed on me in segregated medical files separate from my personnel files, treated as confidential medical records, and used or disclosed only as provided by the Americans with Disability Act, the Privacy Act of 1974, or as required by a court order or under other law. I understand that the results of my medical tests for beryllium will be included in the Beryllium Registry maintained by DOE, and that a unique identifier will be used to maintain the confidentiality of my medical information. Personal identifiers will not be included in any reports generated from the DOE Beryllium Registry. I understand that the results of my tests and examinations may be published in reports or presented at meetings, but that I will not be identified.

I consent to having the following medical evaluations:

- Physical examination concentrating on my lungs and breathing
- Chest X-ray
- Spirometry (a breathing test)
- Blood test called the beryllium-induced lymphocyte proliferation test or Be-LPT
- Other test(s). Specify:

Signature of Participant: _____ Date: _____

I have explained and discussed any questions that the employee expressed concerning the Be-LPT, physical examination, and other medical testing as well as the implications of those tests.

Name of Examining Physician: _____

Signature of Examining Physician: _____ Date: _____

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26 JULY 2010

FUGITIVE DUST SUPPRESSION

1. **PURPOSE.** Fugitive dust suppression measures will be implemented during structural demolition and scabbling/scarification activities associated with the Demolition of Building 401 to minimize site worker and eliminate public exposure to respirable dust and airborne contamination. These methods will consist of both dust suppression methods and ambient air monitoring to verify the success of dust suppression.
2. **SCOPE.** This procedure applies to all TES employees and subcontractors whose work activities have the potential to generate airborne dust.
3. **REFERENCES.**
28 CFR 1910.22, Occupational safety and Health Standard, Walking-Working Surfaces General Requirements.
4. **PROCEDURE.**

- a. Potential Dust Generating Activities

Activities that may generate fugitive dust on the NFSS Bldg. 401 Demolition include:

- i. Structural demolition of building 401 and adjacent silos
- ii. Scabbling/scarification of building slab

- b. Conventional Dust Suppression Methods

Conventional dust suppression methods will be used to suppress dust generated during the field investigative activities including:

- i. Wetting/misting demolition face, as appropriate
- ii. Applying water spray on equipment buckets moving debris from demolition site
- iii. Keeping heavy equipment movement speeds to a minimum
- iv. Ensure proper covering of debris piles to minimize dust spreading

- c. Controls

A water spray will be used to suppress fugitive dust while preventing overly wet conditions, avoiding ponding and runoff, and conserving water. Water collected in low areas will be collected for testing and appropriate disposal.

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Radiation Safety Plan
(Appendix B to the *Accident Prevention Plan*)

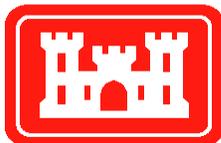
Building 401 Demolition
Niagara Falls Storage Site
FUSRAP Site
Lewiston, New York

Contract No. W912P4-07-D-0003-0002

Prepared by:
TPMC-EnergySolutions Environmental Services, LLC



Prepared for the
U.S. Army Corps of Engineers, Buffalo District
Buffalo, New York



US Army Corps
of Engineers®
Buffalo District

August 2010

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Radiation Safety Plan
Niagara Falls Storage Site
Building 401 Demolition
Lewiston, New York

Authored By: [REDACTED]
[REDACTED] CHP 09 August 2010
[REDACTED] Date

Reviewed By: [REDACTED]
[REDACTED] Program Manager, CHP 09 August 2010
[REDACTED] Date

Approved By: [REDACTED]
[REDACTED], PM/ CQM System Manager 09 August 2010
[REDACTED] Date

- New Plan
- Title Change
- Plan Revision
- Plan Rewrite

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CERTIFICATION OF INDEPENDENT TECHNICAL REVIEW

COMPLETION OF INDEPENDENT TECHNICAL REVIEW

TES, LLC (TES) has DRAFTED the *Radiation Safety Plan (Appendix B to the APP/SSHP)* for the Niagara Falls Storage Site Building 401 Demolition Project located in Lewiston, New York. Notice is hereby given that an independent technical review has been conducted that is appropriate to address all regulatory and compliance issues appropriate to the Niagara Falls Storage Site Building 401 demolition, as defined in the TES NFSS Accident Prevention Plan/Site Safety and Health Plan. During the independent technical review, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of assumptions; methods, procedures, and material used in analyses; alternatives evaluated; the appropriateness of data used and level of data obtained; and reasonableness of the results, including whether the product meets the customer's needs consistent with existing USACE policy.

Signature/ TES Report Preparer



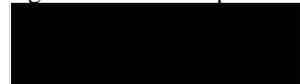
Date 2 JUNE 2010

Signature/ TES Independent Technical Reviewer



Date 2 JUNE 2010

Signature/ TES Independent Technical Reviewer



Date 2 JUNE 2010

Signature/ TES Independent Technical Reviewer



Date 2 JUNE 2010

Independent Technical Review Team Members: 

CERTIFICATION OF INDEPENDENT TECHNICAL REVIEW

Significant concerns and the explanation of the resolution are as follows:

Item	Technical Concerns	Possible Impact	Resolutions
Radiation Safety Plan			
1	See attached sheets		

As noted above, all concerns resulting from independent technical review of the plan have been resolved.



Signature/ 

Date 03 JUNE 2010

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ACRONYMS

ALARA	As Low as Reasonably Achievable
ALI	Annual Limit on Intake
ANSI	American National Standards Institute
CFM	Cubic Feet Per Minute
cm	Centimeter
CEDE	Committed Effective Dose Equivalent
CHP	Certified Health Physicist
COC	Contaminants of Concern
CQC	Contractor Quality Control
DAC	Derived Air Concentration
DOH	Department of Health
dpm	Disintegrations Per Minute
EMR	Experience Modification Rates
FUSRAP	Formerly Utilized Sites Remedial Action Program
ICRP	International Commission on Radiological Protection
IDW	Investigation-Derived Waste
lpm	Liters Per Minute
mrem	Milli-rem
microR/hr	Micro-Roentgen per Hour
MSDS	Material Safety Data Sheets
MSHA	Mine Safety and Health Administration
NIOSH	National Institute for Occupational Health
NIST	National Institute of Standards and Technology
NCRP	National Council on Radiation Protection
NFSS	Niagara Falls Storage Site
NIST	National Institute of Standards and Technology
NRC	Nuclear Regulatory Commission
NVLAP	National Voluntary Laboratory Accreditation Program
NYCRR	New York Codes, Rules and Regulations
OSHA	Occupational Safety and Health Administration
OSL	Optically Stimulated Luminescent Dosimeter
PM	Project Manager
PPE	Personal Protective Equipment
Ra	Radium
RCM	Radiation Control Manager

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RCOC	Radiological contaminants of concern
RCT	Radiological Control Technician
REM	Radiation Equivalent in Man
RMA	Radioactive Materials Area
RPE	Respiratory Protection Equipment
RSO	Radiation Safety Officer
RSP	Radiation Safety Plan
RWP	Radiation Work Permits
SHP	Senior Health Physicist
SRPD	Self Reading Pocket Dosimeter
TES	Terranear PMC-EnergySolutions Environmental Services, LLC
Th	Thorium
TLD	Thermoluminescent Dosimeter
U	Uranium
USACE	U.S. Army Corps of Engineers

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1.0 DISCLAIMER NOTICE AND APPLICABILITY

The radiological control and safety requirements/guidelines contained within this Radiation Safety Plan (RSP) were developed for the TerranearPMC-EnergySolutions Environmental Services (TES), LLC, Niagara Falls Storage Site (NFSS) Formerly Utilized Site Remedial Action Program (FUSRAP) site located in Lewiston, New York, specifically for the performance of various radiological release surveys, decontamination, recycling and waste management activities on the NFSS FUSRAP Site.

The NFSS FUSRAP Site Radiological Safety Program consists of this Radiation Safety Plan (RSP) and related implementing Field Procedures.

The NFSS FUSRAP Site RSP requirements and guidelines are effective only if each worker follows the requirements and guidelines. Disregard by management, workers, contractors, or subcontractors of the established RSP requirements/guidelines may result in unnecessary exposure or release of radiation or radioactive materials. Failure to follow the NFSS FUSRAP Site RSP whether intentional or unintentional shall be subject to disciplinary policies.

This RSP has been developed consistent with the requirements of the New York State Department of Labor Part 38, Ionizing Radiation since the NFSS FURAP Site is located in Lewiston, New York.

2.0 POLICY STATEMENTS

2.1 HEALTH AND SAFETY POLICY

It is the policy of the TES, LLC (TES) to provide employees and require all contractors/subcontractors and subcontractors to provide their respective employees with a safe workplace, in accordance with applicable federal, state, and local regulations. Safety of all employees is a primary consideration in the performance of TES Site preparation, surveys, sampling, decontamination, demolition and waste management activities. TES will identify, evaluate, and correct identified hazards at the NFSS FUSRAP Site.

2.2 ALARA POLICY

TES will incorporate the As Low As Reasonably Achievable (ALARA) philosophy into the planning of tasks involving exposure to radiation and radioactive materials. Recognizing that some radiation exposure may be required to accomplish these tasks, all reasonable efforts will be expended to minimize the exposures and the possibility of exposure, and in all cases to keep any exposure below permissible levels.

2.3 PERSONNEL DOSIMETRY PROGRAM

Based on the radiological exposure data obtained during characterization/investigative activities conducted at the NFSS Site, potential doses to workers above 10 percent of the specified limit for the radiological contaminants of concern (RCOC) (Uranium-234, Uranium-238, and

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Thorium-230) in EM-385-1-80, Chapter 5-5 Monitoring Requirements, are highly unlikely. **Therefore, a personnel monitoring program is not required per EM-385-1-80, Monitoring Requirements.**

2.4 AIR MONITORING PROGRAM

Based on the information from the previous characterization/investigations and the field activities planned to be conducted at the NFSS FUSRAP Site, potential doses to workers above 10% of the specified limits for the RCOCs in 10NYCRR16 Appendix 16-C Table 1, Column 2 are highly unlikely.

However, air monitoring will be performed to establish baseline and work area levels and to provide data ensuring protection of workers, public health and the environment for radionuclides.

Perimeter monitoring around the project will also be performed as discussed in Section 6.2 of this plan.

3.0 PURPOSE, SCOPE, RESPONSIBILITY

3.1 PURPOSE

This Radiation Safety Plan establishes the basic radiation control and protection practices to be implemented by TES consistent with Nuclear Regulatory Commission (NRC) Standards and Regulatory Guides; the New York State Department of Health, Part 16, Ionizing Radiation Protection Regulations; USACE ER 385-1-80, Radiological Safety; USACE EM-385-1-80, Radiation Protection Manual; the National Council on Radiation Protection and Measurement (NCRP), and International Commission on Radiological Protection (ICRP) recommendations. In addition, this plan describes the TES Procedures for maintaining radiation exposure As Low As Reasonably Achievable (ALARA) and within federally-mandated exposure limits.

3.2 SCOPE

This RSP has been developed commensurate with the scope and extent of project activities, to ensure compliance with the provisions of 10NYCRR16. Specifically, this Plan provides the radiation protection standards and controls that will be in effect at the NFSS FUSRAP Site. Adherence to these controls is the responsibility of each individual as well as members of TES line management. **Any deviation from this Plan requires the written approval of the TES Radiation Control Manager (RCM).**

This Plan establishes the radiological protection practices to be implemented at the NFSS FUSRAP Site for ensuring control of radioactive materials and for minimizing radiation exposures to personnel. It is the objective of TES to maintain radiation exposures to personnel and release of radioactive materials to the environment ALARA, and to keep radioactive material contained in the smallest practical volume at all times.

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3.3 RESPONSIBILITIES OF WORKERS

This Plan is available for review to all TES, contractor and subcontractor personnel working at the NFSS FUSRAP Site. All individuals working or frequenting the radiologically controlled areas of the NFSS FUSRAP Site are responsible for complying with the requirements of this Plan.

Each individual working at the NFSS FUSRAP Site is responsible to perform his or her job in accordance with TES procedures, job training, and in accordance with the principle of maintaining his or her exposure ALARA. Each person is expected to handle radioactive materials will receive instruction in the general and specific radiological aspects which he or she may encounter and will be made aware of his responsibility to the company, the District, and co-workers for safe handling of radioactive materials.

3.4 RESPONSIBILITIES OF TES MANAGEMENT

It is the responsibility of TES to provide its employees, and require all contractors and subcontractors to provide their employees with a safe workplace in accordance with applicable federal, state and local regulations, as well as TES Site procedures.

In addition, TES project management personnel are responsible for:

- (1) Being knowledgeable of the contents of this Plan.
- (2) Ensuring that employees have been fully informed of and possess a thorough understanding of the sections contained in this Plan which apply to their job assignment(s).
- (3) Ensuring that all necessary training is scheduled and completed, and for maintaining auditable training records which will include any follow-up training and any refresher training, as needed.
- (4) Reviewing this Plan and reviewing the efficiency of its implementation on an annual basis in accordance with EM-385-1-80.
- (5) Maintaining records related to the radiation control and protection program.

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4.0 PROJECT ORGANIZATION

4.1 ROLES, RESPONSIBILITY AND AUTHORITY

4.1.1 *General*

TES's organizational structure has been developed to carry out the objectives of the policy statements presented in Section 2.0 and may be reviewed and updated, if necessary, to reflect the current status of Site operations. The specific assigned individuals and qualifications are provided in the APP/SSHP and the QCP.

Key positions are filled by individuals who are responsible for assuring the safe and expedient support for the NFSS FUSRAP Site. The key positions for TES operations, Building 401 Demolition, radiological release surveys and sampling, and waste management activities are described below. Thus, all key positions may not be applicable to a specific project. Several key positions may be assumed by the same individual.

4.1.2 *TES Responsible Personnel*

4.1.2.1 Program Manager

The TES Program Manager has responsibility for facilitating the project via upper-level programmatic support.

4.1.2.2 Project Manager (PM)

The TES Project Manager (PM) has overall responsibility and authority for the planning and management of NFSS FUSRAP and related activities. The PM is responsible for ensuring that all NFSS projects and activities meet the established environmental health and safety and quality assurance requirements, technical performance, and budgeting and scheduling criteria.

4.1.2.3 Radiation Control Manager

The RCM is responsible for implementing policies and procedures in accordance with 10NYCRR16, and other applicable local, state and federal regulatory requirements. The RCM has direct recourse to the PM to prevent unsafe practices or to halt any operation which is deemed radiologically unsafe. The RCM is also responsible to oversee and control day-to-day radiation protection activities in accordance with the requirements contained in the RSP. The RCM will review RSP and related implementing procedures that are developed for project activities.

Specific duties of the RCM may include, but are not limited to the following:

- (1) Providing training to project personnel.
- (2) Verifying that Site personnel receive (or have received) appropriate radiological training.
- (3) Verifying implementation of the Radiological Control Program, including ALARA.

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- (4) Providing technical expertise to on-site radiation safety personnel.
- (5) Conducting periodic radiation safety audits at the Site.
- (6) Interfacing between Site radiation-safety personnel and Site management.
- (7) Reviewing surveys conducted during and after Site activities. This will include reviewing and signing free release surveys for recycling.
- (8) Developing and implementing radiation control procedures specific to the project.
- (9) Reviewing this Radiation Safety Plan and related implementing procedures.

Qualifications of the RCM are:

- (1) A minimum of a Bachelor's of Science degree in Engineering or Science
- (2) A minimum of five years of applied radiation protection experience.
- (3) Previous training consistent with items listed in Section 5.0 of this plan.

4.1.2.4 Senior Health Physicist/Certified Health Physicist

The Senior Health Physicist (SHP) will provide the radiological engineering and health physics support to the PM as required. Any changes to this plan will be written and approved by a certified health physicist.

4.1.2.5 Radiological Control Technicians/ Health Physics Technicians

Radiological Controls Technicians (RCTs) are responsible for adhering to radiological control procedures under the direction of the RCM.

Specific duties and authority include but are not limited to the following:

- (1) Surveying of areas, materials, equipment and personnel, as needed.
- (2) Recording of all survey findings on appropriate forms.
- (3) Packaging samples for shipment to the offsite lab in accordance with instructions from the shipper and the offsite laboratory, in accordance with DOE and IATA regulations.
- (4) Reporting unexpected findings to the RCM.
- (5) Advising the RCM of any potentially unsafe working conditions at the Site.
- (6) Advising the RCM on the removal employee(s) who have approached the established administrative radiation exposure limits or who have not demonstrated their continuing understanding of or need for compliance with radiological safety procedures.

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4.1.2.6 Waste Manager

The Waste Manager will manage and coordinate on-Site activities associated with collection packaging, handling and preparation for disposition of Building 401 debris, Investigation Derived Wastes (IDW), and other wastes generated as a result of Site operations. This individual will provide Site operations and logistics support for vehicles, equipment operation and maintenance, subcontractor and supplier coordination and support for sample collection, preparation and shipment.

4.1.2.7 Subcontractor and Contractor Personnel

All TES contractor and/or subcontractor Site personnel will comply with the requirements of this RSP. Contractor and subcontractor organizations may elect to utilize their respective RSP and implementing procedures provided their plans/procedures comply with the requirements contained in this plan and are approved by the RCM.

4.2 STOP-WORK AUTHORITY AND GROUNDS FOR DISMISSAL

Any TES employee or subcontractor individual has the authority to stop work when a situation appears to pose an immediate threat to life, health, property or the environment. When it becomes necessary to stop a job due to a safety hazard, conditions will be stabilized immediately, so that stopping the job does not in itself present an additional hazard. Site management will remove any employee from the job site who exhibits a reckless disregard for the safety regulations and standard operating procedures of the site or who exhibits a demeanor which detracts from the overall safe and successful completion of the work.

4.3 FIELD PROCEDURES AND REVIEW REQUIREMENTS

This plan establishes the policies and requirements to be followed during the conduct of Site preparation, and radiological surveys and characterization/sampling, building demolition, and waste management activities on the NFSS FUSRAP Site which involves the contact of radiologically contaminated materials or soil. Operational procedures listed in Attachment 2 will be used to support this RSP. Prior to field use, all procedures will be reviewed by the RCM. .

5.0 TRAINING REQUIREMENTS

5.1 INTRODUCTION

The purpose of radiation training for the NFSS FUSRAP Site Building 401 demolition project is to provide project personnel with an awareness of the radiological hazards at the Site, as well as instructions for safely working with or around radioactively contaminated material. Training will be required for those who will work within the established restricted areas of the NFSS FUSRAP Site.

Training will be required of, but not limited to:

- Workers involved in the day-to-day operations of the project (i.e., radiological controls technicians, TES personnel, contractors/subcontractors, general laborers)

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- Management personnel who will visit the Site regularly (i.e., for more than 40 hours or more during the project).

Site orientation will be provided to all Site personnel and visitors except delivery personnel. Radiation Safety training will be required for all radiation workers (and individuals who will be escorts).

5.2 SITE ORIENTATION AND TRAINING

Prior to entry into radiologically controlled areas of the facility, all personnel will be given a radiological orientation. The objectives of this orientation are to familiarize personnel to:

- (1) Recognize labeled hazardous chemicals and radioactive materials and understand the meaning of radiological and hazardous-chemical warning signs (if applicable);
- (2) Understand that as long as radiological control procedures and limits are followed, harmful effects to personnel or to the environment from radioactivity will be minimized; and
- (3) Recognize and understand the meaning of and proper response to emergency signals, emergency notification, and use of emergency equipment, such as fire extinguishers.
- (4) Understand their rights and responsibilities.

This orientation is required for all personnel visiting or working at the NFSS FUSRAP Site, including contractor, subcontractor and TES personnel.

All visitors will be escorted by personnel who have successfully completed the Basic Radiation Safety Training described in Section 5.3.2.

5.3 RADIATION SAFETY TRAINING

5.3.1 General

The radiation safety training will consist of either classroom, required/assigned reading and practical training, as appropriate, and will be in accordance with NYCRR16.13, *Notices, Instructions and Reports to Workers* and Site specific hazards. The radiation safety training will be commensurate with the potential health protection hazards associated with the established restricted areas of the NFSS FUSRAP and related demolition and waste packaging activities and the individual's assigned duties and will include at least the following topics, as applicable:

- Identification and location of licensed radioactive materials and radiological hazards present in the restricted area to be entered by the individual.
- Health protection problems associated with exposure to such radioactive materials or radiation.

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- Precautions and procedures to minimize exposures and the spread of contamination (e.g., use of Radiation Work Permits [RWPs], dosimetry, and frisking for personal contamination when leaving a contaminated zone).
- Purposes and functions of protective devices required (if any).
- Applicable NY Department of Health (DOH) regulations to be observed by individuals working in or frequenting restricted areas.
- Terms and conditions applicable to employees working in or frequenting restricted areas.
- Standard operating and emergency procedures to be followed by individuals working in or frequenting restricted areas.
- Responsibility of individuals to report promptly to TES management unsafe acts or conditions observed in restricted areas that may lead to or cause a violation of regulations or unnecessary exposure to radioactive materials or radiation.
- Rights of employees to receive radiation exposure reports upon request (10NYCRR16.13(d)).

5.3.2 Basic Radiation Safety Training

Personnel who will require routine unescorted Site access (i.e., TES Site personnel, PM, contractors/subcontractors) will receive Basic Radiation Safety Training or will have demonstrated knowledge or documented training within the last year.

The Basic Radiation Safety Training course will include the following specific topics:

- (1) Fundamentals of Radiation
- (2) Biological Effects of Radiation
- (3) Risk of Low-Level Occupational Exposures to Radiation
- (4) Basic Radiation Protection, Exposure and Contamination Control Concepts
- (5) Radiation Protection Policies and Procedures
- (6) Employee and Management Responsibilities for Radiation Safety
- (7) ALARA
- (8) Signs and Postings
- (9) Radiation Detection Instruments
- (10) Personnel Monitoring and Dosimetry (including Bioassay)
- (11) Proper Use of Protective Clothing and Frisking Techniques
- (12) Decontamination
- (13) Use of Radiation Work Permits (RWPs)
- (14) Prenatal Exposure (Regulatory Guide 8.13)
- (15) Contents of 10NYCRR16.13: Notices, Instructions and Reports to Workers

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(16) Emergency Procedures.

At the conclusion of the training, each worker's knowledge, competency and understanding of the above-listed radiation protection areas will be evaluated. A written test will be administered to document adequate understanding of the subjects covered. Satisfactory completion will be indicated by a test score of 80% or greater.

Personnel (i.e., TES Program Manager, Corporate Health and Safety Manager and other TES management personnel), who may make periodic visits to the project Site or who supervise/are responsible for staff individuals who perform work in restricted areas and auxiliary personnel, will receive Radiological Protection Awareness Training.

The Radiological Protection Awareness Training will include the following specific topics:

- (1) Overview of this Radiological Safety Plan
- (2) Specific instructions on Field Procedures that apply to their task/work scope

5.3.4 Refresher Training

Although the NFSS Site activities are scheduled to last for a relative short duration (4 months) and refresher training will not be likely, this section was included for completeness. Personnel who will require routine unescorted Site access will receive refresher training annually on the following:

- (1) Review of initial training subjects
- (2) Site-specific training requirements
- (3) Any critique of incidents that have occurred in the past that can serve as training examples and
- (4) Any other relevant topics
- (5) Additional training will be provided whenever there is a significant change in personnel duties, regulations or terms.
- (6) Current Site conditions regarding presence of contaminated soil. Lessons learned and/or events that occurred during the performance of field activities
- (7) Results of USACE or TES internal/external audits/inspections, as applicable
- (8) Changes or modification to plans, procedures, or Site, as appropriate.

The annual refresher training (classroom and practical) requirements may be waived for Radiological Control Technicians at the discretion of the Radiation Control Manager. A letter stating such will be issued by the Radiation Control Manager and placed in the individual Radiological Control Technician's personnel file.

Management, maintenance, auxiliary, and emergency radiological coverage personnel will receive refresher training annually on the same topics as the initial training.

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5.3.5 Training Verification and Documentation

All persons working on NFSS FURSAP Building 401 project will have evidence of initial training and pertinent refresher training as (e.g., training certificates, training lists, completion letters, letter of certification) prior to being permitted to perform work involving a potential for exposure to radiation hazards.

All training documentation, including the content of any site-specific training, test results, attendance sheets, any other subsequent training (e.g., periodic safety meetings, specific task safety training), and personnel training files will be maintained on Site as part of the TES files and available for inspection. TES will ensure the training records are available for all personnel associated with the NFSS FUSRAP field investigation.

5.4 EMPLOYEE ACCESS TO INFORMATION

All pertinent information concerning the health and safety of on-site workers will be conveyed initially via site-specific training. Subsequently, documents such as the RSP, Material Safety Data Sheets (MSDS), and regulatory standards will either be provided to employees or be made available to them upon request. In addition, any new information concerning safety or health conditions associated with this project will be conveyed to project personnel.

Furthermore, in accordance with 10NYCRR16.13, current copies of the following documents will be made available for examination by all employees:

- 10NYCRR16 regulations
- Administrative and field procedures applicable to project activities
- Any notice of violation involving radiological working conditions, proposed imposition of civil penalty, and any response from TES.

Notices which describe the documents and where the documents are available for review will be posted in conspicuous locations throughout the work area.

Copies of the New York Department of Health “Notice to Employees” will be posted in each facility where employees are engaged in activities subject to the radiation protection rules of 10NYCRR16.13 to permit employees working or frequenting the restricted area to observe a copy on their way to and from their place of employment. The NYS DOH “Notice to Employees” is provided as Attachment 1 to this plan.

6.0 ENVIRONMENTAL MONITORING

6.1 INTRODUCTION

Activities will be controlled such that no member of the general public will exceed the NYS 10NYCRR16.7(a)(1)(ii) non-occupational limit of 100 mrem/year. Operations will be conducted such that minimal releases to the environment of airborne and liquid radioactivity will occur.

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The concentration limits for specific radionuclides are taken from 10NYCRR16, Appendix 16-C, Table 2.

In any event, exposure to the public due to direct, inhalation, and ingestion exposures of radioactive materials from the NFSS FUSRAP Site will be limited to 100 mrem in any year. Sampling for airborne and liquid radioactive materials when deemed appropriate by the Radiation Control Manager (RCM) will be performed in accordance with Sections 6.2.2 and 6.2.3 of the Radiation Safety Plan and/or the direction of the Radiation Control Manager (RCM).

6.2 MONITORING

Based on the data from previous investigations and characterization of the NFSS FUSRAP Site and the planned surveys and demolition to be conducted at the Site, potential doses to the public above 100 mrem/yr or airborne and concentration limits established in 10NYCRR16, Appendix 16-C, Table 2 are unlikely. Therefore, direct exposure monitoring will not be required.

However, air monitoring will be performed to establish baseline and public and work area levels and to provide data ensuring protection of workers, public health and the environment for radionuclides. TES will prepare air monitoring and fugitive dust procedures and decontamination procedures to comply with OSHA work requirements for safety while also providing procedures for equipment entering and exiting areas under investigation. Airborne monitoring for radionuclides will be performed in accordance with Section 6.2.2.

To ensure that there is no non-occupational dose to the public, monitoring of the environment around the perimeter of the work Site will be performed. The inhalation pathway will be monitored. The project building demolition will not alter the direct exposure, and therefore environmental thermoluminescent dosimeters TLDs or optically-stimulated luminescent (OSL) dosimeters around the Site are not anticipated to be used for this project

6.2.1 Direct Exposure

IF required or deemed appropriate by the RCM, direct exposures will be monitored with environmental TLDs or OSLs. TLDs/OSLs will be placed at strategic locations along the perimeter of the Site. The TLDs/OSLs will be changed by the TES quarterly and analyzed and evaluated by a dosimeter processor that holds current dosimetry accreditation from the National Voluntary Laboratory Accreditation Program (NAVLAP) of the National Institute of Standards and Technology (NIST). Additionally, TLDs/OSLs will be established at background locations that are not influenced by the project Site.

Dose rate measurements will be taken periodically as part of the general Site radiation survey program. These measurements will be performed with calibrated instruments by qualified personnel and in accordance with approved procedures.

6.2.2 Airborne Radioactive Materials and Perimeter Air Monitoring

Airborne materials will be included in the environmental monitoring program to determine possible inhalation exposures to radioactive materials by the public. Air samples will be collected around the perimeter of the project Site using low-volume or variable-rate air samplers

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(with flow rates of approximately 60 to 70 lpm). The collection and analysis of the air samplers will be performed by qualified personnel, in accordance with approved procedures and with calibrated equipment as described in Section 13.0. The minimum detectable activity the air sample and counter combination must be less than the radionuclide-specific administrative control limit.

The primary radionuclide of concern is natural uranium, therefore, unless otherwise directed by the RCM, the airborne effluent concentration from 10NYCRR16 Appendix 16-C Table 2 will be 5E-14 uCi/ml for uranium. Onsite air sample analysis using a Ludlum Model 2929 will be performed using a count time sufficient to see 25% of the 5E-14 uCi/ml concentration. If other RCOs are determined to be significant, then a weighted effluent air concentration limit will be determined in accordance with CS-RS-PR-015, *Air Sampling and Analysis*.

Air samplers will be positioned downwind of building demolition, waste staging and packaging operations, at the Site perimeter to collect air that may contain radioactive material during NFSS project activities (i.e., downwind of soil excavation, hauling, and placement operations). The predominant wind direction is assumed to be from the West so a low-volume air sampler will be located on the East side of facility.

In addition, air samplers will be located in locations that cover the remaining three quadrants (spaced on the perimeter, approximately 90 degrees apart) North, South, and West

Air samples will be analyzed on Site using gross alpha and gross beta counting. Samples showing elevated activity may need to be recounted after a sufficient decay period to eliminate interference from short-lived radon progeny. If any sample result is greater than the 75% of the effluent concentration limit, the RCM, and PM will be notified. Although not a requirement of this work, the 10NYCRR16 tables will be used as guidance. For sample results are greater than the 10NYCRR16, Appendix 16-C, Table 2 limits, an evaluation will be performed to determine proper corrective action. Per the MARC, TES will submit air monitoring data to the USACE on a weekly basis.

6.2.3 *Liquid Radioactive Materials*

Although they are not anticipated, liquid radioactive materials generated as a result of characterization or remediation activities will be collected, sampled and analyzed to determine that the materials conform to the limits and restrictions set forth in 6NYCRR Subpart 380-11, Table III. Sample collection and analysis will be performed with qualified lab in accordance with approved procedures and calibrated equipment/instrumentation.

Investigation derived waste water will be collected in poly tanks and stored until the end of the project at which time it will be filtered using a 5 micron screen, sampled, and then sent to the City of Lock Port Waste Water Treatment facility.

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6.3 ACTIONS

If any environmental pathway exposure exceeds the 75% of the effluent concentration limits, then project operations will be reviewed to determine the cause of increased pathway exposure and the effect of the exposure on the public and the environment.

Additional measures will be initiated to reduce the exposure pathway and activities may continue only with the concurrence of the PM and RCM.

7.0 IDENTIFICATION AND MONITORING OF CONTROLLED/RESTRICTED AREAS

7.1 INTRODUCTION

The NFSS FUSRAP Site will be divided into distinct areas for radiation exposure control, as appropriate. These areas are unrestricted, controlled, and restricted areas.

- Restricted Area means any area access to which is controlled by the TES for purposes of protection of individuals against undue risks from exposure to radiation and radioactive materials. Within the restricted areas, different zones will be designated to aid in radiation exposure control and control of the radioactive materials present. Radiologically restricted areas will be delineated with radiological rope and appropriate signage.
- Unrestricted Area means any area access to which is neither limited nor controlled by the TES for purposes of protection of individuals from exposure to radiation and radioactive materials.
- Controlled Area means an area, outside a restricted area, but inside the Site boundary, access to which can be limited by the TES for any reason.
- Uncontrolled Area means any access to which is neither limited nor controlled by the TES.

In all cases, the radiologically restricted areas will be delineated with distinctive barrier tape or rope and signs. The signs will have the radiation symbol, standard colors, and appropriate wording to warn workers of the potential hazard. A description of the radiation symbol and sign can be found in 10NYCRR16.12. The radiation symbol will not be used for any purpose other than radiological control.

All radiological posting will be done by or at the direction of radiological control personnel. Movement or removal of posted radiation warning signs, tags, or boundary markers by personnel other than radiological personnel or without their approval may be cause for disciplinary action.

Restricted areas and specific zones within the restricted area will be posted with the appropriate signs such that posting is readily identifiable from ordinary avenues of approach.

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7.2 RADIOACTIVE MATERIALS AREA

A Radioactive Materials Area (RMA) is an area that contains radioactive materials in amounts exceeding 10 times the 10NYCRR16, Appendix 16-A limit. Each RMA must be posted with signs meeting applicable standards, including the radiation symbol and the words "CAUTION - RADIOACTIVE MATERIALS AREA" or "DANGER - RADIOACTIVE MATERIALS."

7.3 RADIATION AREA

Radiation Area means any area accessible to personnel in which radiation levels could result in an individual receiving a dose equivalent in excess of 5 mrem in 1 hour at 30 centimeters from the radiation source or from any surface that the radiation penetrates.

Entrance to Radiation Areas will be conspicuously posted with "CAUTION - RADIATION AREA" signs. We do not anticipate any areas of the project work Site to require "radiation area" posting.

7.4 CONTAMINATED AREA

A contamination area is an area or surface which contains loose radioactive material which can spread. The amount of contamination is measured in disintegrations per minute per 100 cm². Loose surface contamination above the limits specified in US NRC Regulatory Guide 1.86¹ (also provided as Table 11-1 to this plan) will constitute a contamination area.

The area will be isolated and posted. The posting will read "CAUTION - CONTAMINATED AREA". There are a few isolated areas with the building that exceed limits and will be posted to reflect this potential hazard.

7.5 AIRBORNE RADIOACTIVITY

Areas accessible to personnel, such as a room, enclosure, or area will be posted as Airborne Radioactivity Areas if airborne radioactivity composed wholly or partly of licensed material exists in concentrations:

- (1) In excess of the derived air concentrations (DACs) specified in 10NYCRR16, Appendix 16-C, Table I.
- (2) To such a degree that an individual present in an area without respiratory protective equipment could exceed, during the hours an individual is present in a week, an intake of 0.6 percent (0.006) of the annual limit on intake (ALI) or 12 DAC hours.

Each Airborne Radioactivity Area must be posted with signs meeting applicable standards, including the radiation symbol and the words "CAUTION - AIRBORNE RADIOACTIVITY AREA".

¹ Regulatory Guide 1.86 Table I values are identical to those found in EM 385-1-80 Table 6-4.

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Additional instructions or requirements, such as "RWP required, TLD required, Contact Health Physics (or Radiological Control Technician) Prior to Entry," as appropriate, may be attached as inserts to each of the above specified postings.

NOTE: The levels of radioactive material are not expected to be such that airborne radioactive areas are generated.

8.0 RADIATION WORK PERMITS

8.1 INTRODUCTION

The Radiation Work Permit (RWP) is an administrative tool used to control work occurring inside the radiologically restricted area and to make all of the personnel involved with the work aware of specific hazards and precautions in the specific work area. Additionally, the RWP will instruct the workers as to what protective equipment may be needed and what monitoring will be required.

An RWP will be required for any of the following conditions:

- Entering a radiation area.
- Entering a contaminated area.
- Entering an airborne radioactivity area.
- Unknown radiological conditions in an area to be entered or equipment to be opened.

8.2 WORK CONTROL

All work will be administratively controlled via RWPs. RWPs will be issued daily, weekly or more, depending on the length of the work task, and reviewed daily by the RCM or designee. The RWP will list the following information:

- (1) Task(s) to be performed.
- (2) Location of task(s).
- (3) Radiological hazards involved with task(s).
- (4) Most recent radiation survey results.
- (5) Required personal protective equipment.
- (6) Special units or restraints.
- (7) Signature of the RCM or designee.
- (8) Signature(s) of the individual(s) performing the required work

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A daily safety meeting will be conducted with all workers to review safety and radiological conditions and/or changes to the RWP, as appropriate.

An RWP will be issued at the start of remediation operations, then annually thereafter or when conditions change.

9.0 EXTERNAL RADIATION EXPOSURE LIMITS AND CONTROL

9.1 INTRODUCTION

Control of exposure to ionizing radiation is based on the assumption that any dose received as a result of exposure involves some incremental risk; however, exposure within acceptable limits represents a very small increase in risk compared to the normal hazards of life. Therefore, it is the objective of the TES RSP not only to maintain exposures within the limits established by federal and state law, but also to minimize exposures to individuals, the total work force, and the general population in accordance with the As Low As Reasonably Achievable (ALARA) principle.

Site operations will be controlled such that no member of the public will exceed 10NYCRR16 non-occupational limits. Occupational exposures are expected to be less than 10% of the limits in 10NYCRR16.6 the total of all workers' exposures will be limited to the lowest reasonably achievable.

In addition, remediation activities will be controlled such that there will be no release to the environment of airborne radioactivity greater than the concentration limit of 10NYCRR16, Appendix 16-C, Table 2, or no release to surrounding water of radioactive liquids greater than 10NYCRR16, Appendix 16-C, Table 2 limits.

9.1.1 *Control of Personnel Exposure*

9.1.1.1 Occupational Radiation Exposure Limits

Radiation exposure limits are used for controlling radiation exposure to personnel (excluding medical and dental exposures) to levels which are believed to cause no ill effects even if the employee was exposed to these levels throughout his/her entire working life. The occupational exposure limits of 10 NYCRR 16.6 and the TES administrative exposure limits for radiation workers to external radiation are given in Table 9-1. It will be the goal of the TES to maintain individual radiation exposure to less than 10% of the occupational exposure limits.

Most individuals will not be badged with a TLD or OSL because they are not expected to receive 500 mrem during the project. However, if an individual's radiation exposure conditions change during the project, or a subsequent evaluation shows that exposure is likely to exceed 10% of any dose limit, then the RCM will estimate, record, and report the dose received when monitoring was not provided. These estimates may be made on any combination of work location radiation monitoring or survey results, monitoring results of individuals in similar work situations, or other estimates to produce a "best estimate" of the actual dose received. No employee will exceed the administrative limits without a written extension by the RCM or designee. When an extension is

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required the previous exposure will need to be estimated and documented and the individual(s) will be issued TLDs/OSLs to monitor external exposure.

9.1.1.2 Occupational Radiation Exposure Controls

The three most important methods to minimize exposure in fulfillment of ALARA objectives are the proper use of time, distance, and shielding. Each of these items is discussed as follows:

- **Time**. The less time an individual spends in a radiation area, the less exposure to radiation he/she will receive. To fully utilize the time that is spent in radiation areas, all jobs should be preplanned. Such preplanning should include:
 - (1) Making sure all the tools and equipment required for the job are obtained prior to entering the area.
 - (2) Being familiar with the equipment and work plans prior to entering the area.
 - (3) Knowing the radiation levels as well as component location prior to entering the area.
- **Distance**. Exposure to radiation can be significantly reduced by keeping as much distance between the individual worker and source as possible.
- **Shielding**. The third method of controlling/minimizing radiation exposure is by means of shielding. The TES will utilize shielding as necessary to limit exposure to personnel.

9.1.1.3 Personnel Monitoring for External Radiation

The purpose of personnel monitoring for external radiation is to provide an indication of the level of external radiation to which an individual has been exposed.

The individual will provide an estimate of the current year's exposure and the facilities where he was monitored for radiation will be provided and signed. Exposures to the worker during the course of project activities will be documented on a USNRC Form 5 or equivalent, when required. As previously noted, we do not expect to exceed 10% of any external radiation dose limit, and thus no external monitoring is warranted or directed.

9.1.1.4 Exposure to Minors

The annual occupational dose limits for minors specified in 10NYCRR16.6 is 10 percent of the annual dose limits specified for adult workers. However, to minimize exposures to minors, individuals under the age of 18 are not permitted to enter any restricted area or any radiation area at the NFSS FUSRAP sites without the authorization of the RCM.

9.1.1.5 Exposure to Embryo/Fetus

Because of the high radio-sensitivity of newly formed and fast-growing cells, employees who work in controlled areas and their supervisors will be advised of the National Council on

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Radiation Protection and Measurement recommendations to keep radiation exposure to an embryo or fetus to the lowest practical level during the entire gestation period and to limit the dose to the unborn child to a maximum 500 mrem or less during the entire period of pregnancy, as specified in 10NYCRR 16.6(h).

The dose to an embryo will be taken as the sum of the deep-dose equivalent to the declared pregnant woman and the dose to the embryo/fetus from radionuclides in the declared pregnant woman.

The TES policy regarding exposure to an embryo or fetus is derived from those of Regulatory Guide 8.13.

- As stated in 10NYCRR16.2(29), a "declared pregnant woman" is a woman who has voluntarily informed her employer in writing of her pregnancy.
- Upon declaration of pregnancy, it is the responsibility of TES management to insure that all proper precautions are taken to minimize exposure to the unborn child of the female employee.

As part of the radiation safety training (and reverification training) and prior to issuance of TLDs or OSLs, all personnel authorized to receive radiation exposure will be given specific instruction about prenatal exposure risks to a developing embryo and fetus. This instruction will include the applicable information contained in the appendix to U.S. Nuclear Commission Guide 8.13. The signed statements will be kept with the training records and will be retained by TES as part of the TES project files.

9.1.1.6 Exposure to Visitors

TES will control the exposure of visitors to its worksites to levels ALARA. For exposure control purposes, a "visitor" is defined as any person who has not completed the Basic Radiation Safety Training described in Section 5.3.2 and who requires access to restricted areas.

Entry by a visitor to a controlled area will require the following:

- (1) Escort by a qualified radiation worker at all times while in the restricted area.
- (2) Documentation of the following information:
 - (a) Name
 - (b) Social Security Number, (last 4 digits)
 - (c) Date of Visit
- (3) Assignment of a self-reading dosimeter (SRD) at the discretion of the RCM (see Sections 6.2 and 9.2).

Visitors are not allowed access to any area where there is a significant risk of internal deposition of radioactive material.

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9.2 PERSONNEL EXTERNAL EXPOSURE MONITORING

Based on the radiological data obtained from various previous investigations/characterization and the planned field investigation activities to be conducted at the NFSS project Site, potential doses to workers above 10 percent of the specified limit for the RCOCs in 10NYCRR16.6 are highly unlikely. Therefore, a mandatory personnel monitoring program is not required per OAC 10NYCRR16.11.

If Site conditions change which require personnel monitoring, then the requirements contained in the subsequent sections will be followed.

9.2.1 Equipment

As stated previously, the purpose of personnel monitoring for external radiation is to provide an indication of the level of external radiation to which an individual has been exposed. Monitoring for external radiation exposure will be accomplished with the use of primary dosimetry and radiation survey dose-rate meters. The primary dosimeter will be the TLD or the OSL, capable of measuring the worker's whole-body (deep and shallow dose equivalent) exposure.

Other devices that will be available for exposure control are self-reading dosimeters (SRDs) and dose-rate survey meters. The SRDs may be used by visitors to the Site when directed by the RCM.

The radiation survey dose rate meter for this project will be a Bicron MicroRem meter or equivalent. Radiation and/or contamination instrumentation and specifications are presented in Section 13.0.

9.2.2 Calibration

Portable dose rate survey instrumentation used to evaluate personnel exposure will be calibrated annually by a qualified vendor in accordance with industry standard guidance for each type of radiation of concern at the Site. Portable instrumentation will be source-checked each day the instrument is in use. All calibrations will be performed using standards traceable to the National Institute of Standards and Technology (NIST).

Self-reading dosimeters, if used, will be tested semi-annually by a qualified vendor in accordance with ANSI N13.5-1972 1989 guidance. TLD badges do not require field calibration, but must meet the performance criteria found in ANSI N13.15-1985.

9.2.3 Survey and Dosimetry Requirements

9.2.3.1 Surveys

Surveys for radiation levels and/or contamination levels will be performed using appropriate portable radiation survey dose-rate meters to aid in the establishment of appropriate radiological controls prior to working on materials suspected of being contaminated.

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These surveys will be performed by qualified individuals using calibrated instruments and in accordance with approved procedures. Technicians performing surveys will have at least 3 years of experience performing radiological surveys.

9.2.3.2 Dosimetry

Consistent with 10NYCRR16.11, all personnel who are likely to receive a dose in excess of 10 percent of the limits specified in 10NYCRR16.6 in one year from sources external to the body will be monitored by dosimeters. **While it is unlikely that any worker will receive a dose in excess of 10 percent of the specified limits, personnel entering an area posted as a radiation area may be monitored with dosimeters at the discretion of the RCM.** However, Radiation Areas are not expected for this project.

9.2.3.2.1 Thermoluminescent Dosimeter

If radiological conditions change which require personnel monitoring, TES may use TLD badges or OSL badges to measure personnel radiation exposure for permanent record purposes. The TLD or OSL measures both beta and gamma exposure. Extremity TLDs will be made available by TES if the need arises. Extremity TLDs will be TLD finger rings or TLDs oriented toward the source of radiation.

The results of the TLD or OSL badge measurements are the basis of the legal record of an employee's exposure.

An individual's TLD or OSL badge will be worn on the front of the body between the waist and neck, facing away from the body. TLD or OSL badges are to be placed in the special on-site storage rack when not being used. TLD badges are not to be taken off the Site (i.e., home, car).

Personnel required to work in the restricted area will be provided with a primary dosimeter (TLD) if it is likely that exposure will be at least 10% of the limits in 10NYCRR16.6. This dosimeter will be worn daily throughout the duration of the project. Dosimetry will be analyzed yearly or at the time of employee termination to determine radiation exposure of the individual.

9.2.3.2.1.1 Issuance

Workers will not be issued a TLD until the worker has:

- Provided evidence of the medical exam and release (when required)
- Successfully passed the Radiation Safety Training Course (score of 80% or higher)
- Completed exposure history or has supplied an NRC Form 4
- Provided a urine sample for baseline bioassay to the RCM (when required).

All employees upon permanent departure from the project will turn in dosimetry and provide a urine sample for closeout bioassay (when required).

9.2.3.2.1.2 Loss or Damage of TLDs/OSLs

Each instance of a lost or damaged TLD/OSL must be reported promptly to radiological control personnel.

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Individuals who lose or damage their TLD/OSL while in a restricted area will immediately exit the area and report the condition to the Radiological Control Technician (RCT). The individual will be prohibited from entering restricted areas until an exposure estimate has been completed and a new TLD/OSL issued.

9.2.3.2.1.3 Estimate of Dose

All exposures indicated by the TLD/OSL will be considered to have been received by the individual, unless it can be clearly demonstrated to be erroneous.

If an exposure measurement result from a TLD/OSL is lost or reasonably appears erroneous, an estimate of the dose received by the individual during the period in question will be calculated by the RCM or designee and documented as part of the employee's exposure record.

Estimates of dose received will consider at least the following:

- (1) Dose rates in the individual's work area.
- (2) Actions taken by the individual during the time for which dose information is desired. This review should include consideration of work position, time in restricted areas, etc.
- (3) Doses received by other personnel doing similar work in the area.

9.2.3.2.1.4 Wearing TLDs/OSLs

If/when required, the wearing of TLDs/OSLs will be strictly enforced. TLDs will be worn on the front of the body between the waist and neck, facing away from the body. Any action by an employee which invalidates the TLD measurements is cause for disciplinary action.

9.2.3.2.1.5 Tracking Radiation Exposure

Prior to personnel performing work at the NFSS project Site, an NRC Form 4, Occupational External Radiation Exposure History, or equivalent will be completed to determine personnel current year exposure. NRC Form 5, Current Occupational External Radiation Exposure, or equivalent will be completed to determine personnel exposure for the current year.

9.2.3.2.2 Self-Reading Pocket Dosimeters

Self-reading pocket dosimeters (SRPD) may be issued to individuals who enter controlled areas. These dosimeters, if used, will be utilized as required and will be returned to the RCT for processing. If the SRPD is worn with a TLD, the SRPD will be worn next to the permanent TLD.

Pocket dosimeters will be read by the wearer prior to entering radiation or high-radiation areas and periodically thereafter to control the wearer's own radiation exposure while in these areas. To prevent misleading cumulative offscale readings, low-range dosimeters will be recharged whenever the reading exceeds 150 mrem.

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9.2.4 Analysis

Dosimetry will be provided, processed and evaluated by an off-site dosimetry processor that:

- (1) Holds current personnel dosimetry accreditation from the National Voluntary Laboratory Accreditation Program (NAVLAP) of the National Institute of Standards and Technology (NIST); and
- (2) Approved for the type of radiation (gamma and high-energy beta from depleted uranium) that most closely approximates the type of radiation for which the individual wearing the dosimeter is monitored.

Dosimeters will be processed on a semi-annual basis or at the time of employee termination, whichever is appropriate.

9.2.5 Recordkeeping

9.2.5.1 Dosimetry

When self-reading dosimeters are used, the daily exposure will be recorded and tracked on a separate form for visitors and as a portion of the Radiation Work Permit (RWP) for radiation workers. Copies of TLD/OSL results will be maintained on Site and available for inspection. Personnel monitoring reports will be maintained in accordance with the guidance of NRC Regulatory Guide 8.7, Rev. 1, 1992.

Copies of individual exposure results (NRC Form 5 or equivalent) will be transmitted to each employee at the end of each year. Copies of NRC Form 4 or equivalent (see Section 9.1.1.1) and Form 5 or equivalent for individual workers will be maintained as part of the TES project files for the duration of the project.

9.2.5.2 Radiation and Contamination Surveys

Records of radiation and contamination surveys will include, as appropriate:

- (1) Date and time of survey.
- (2) Type(s) of instrument(s) used, including the model numbers and calibration information.
- (3) Sketch and description of survey area.
- (4) Contact and general exposure rates and/or contamination levels.
- (5) Location of any boundaries and step-off pads (i.e., control points).
- (6) Name of individual performing the survey and the reviewing supervisor.

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Records of all surveys will be maintained by TES for the duration of the NFSS FUSRAP or as directed by the USACE.

**TABLE 9-1
RADIATION EXPOSURE LIMITS**

Exposure	OCCUPATIONAL EXPOSURE LIMIT	TES ADMINISTRATIVE LIMITS
Total Effective Dose Equivalent	5 rem/yr	0.5 rem/yr
Sum of deep dose equivalent plus committed dose equivalent to any individual organ or tissue	50 rem/yr	5 rem/yr
Lens of eye, skin and extremities	15 rem/yr	1.5 rem/yr
Shallow dose	50 rem/yr	5 rem/yr
Minor	10% of occupational dose limits	10% of Administrative Dose Limits. However, no minors are permitted to enter a restricted area*
Embryo/fetus	0.5 rem/gestation period	0.5 rem/gestation period
General public	0.1 rem/yr	0.1 rem/yr

** No minors are permitted to enter a restricted area without the authorization of the RCM.*

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10.0 INTERNAL RADIATION LIMITS AND EXPOSURE CONTROL

10.1 INTRODUCTION

It is the policy of the TES to maintain the internal exposure of radioactive materials to As Low As Reasonably Achievable (ALARA). The use of engineering controls to the maximum extent possible will be employed. If engineering controls are not adequate, as demonstrated by work-area air sampling, then respiratory protection will be considered to control internal exposures to radioactive materials. The effectiveness of the internal exposure control program will be confirmed through the use of air sampling surveys and bioassay.

10.2 ENGINEERING CONTROLS

Engineering controls will be utilized to the maximum extent possible to control the production of dusts during the project. Engineering controls may be, but are not limited to using tarps or coverings, water misting, or dust-control additives.

10.3 MONITORING OF AIRBORNE RADIOACTIVITY

Based on the results of previous investigations/characterization and the planned field activities to be conducted at the NFSS FUSRAP, potential doses to workers above 10% of the specified ALIs for the RCOCs in EM-385-1-80 are highly unlikely.

However, air monitoring will be performed to establish baseline and public and work area levels and to provide data ensuring protection of workers, public health and the environment for radionuclides. Airborne monitoring for Site workers will be performed in accordance with the subsequent sections.

To demonstrate compliance with the specified limits, when the potential for airborne contamination exists, air sampling of the work areas and worker breathing zone will be performed daily during execution of the building remedial actions. The frequency and location of sampling equipment will be dictated by the field activities. An adequate number of samples will be collected to be representative of the air in the work area.

Representative samples will be collected daily in the general work areas, at the breathing zone of workers. If work involves the use of heavy equipment, air samples will be collected in the operators' cabs daily, or as directed by the RCM. The minimum volumes required for air samples will be as directed by the RCM.

If work involves activities outside the operator cab, or when otherwise deemed appropriate by the RCM, representative samples will be collected daily in the general work area as close to the workers as practical.

If air sampling determines the possibility of worker exposure exceeding 2 DAC-hrs in one day or 10 DAC-hrs in a week, then the RCM along with the CHP will evaluate the possibility of an intake. Evaluation may include, but not be limited to nasal smears and bioassay methods to determine exposures due to an intake of the specific radionuclides.

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To demonstrate compliance with the limits specified in 10NYCRR16, Appendix 16-C, Table 2, during field activities, site-perimeter air samples will be collected and analyzed weekly. The sampler(s) will be positioned at appropriate locations downwind of the Site to collect potential releases from the Site, and as described in Section 6.2.2 of this plan.

Air-sample collection and analysis will be performed by qualified personnel using calibrated equipment/instrumentation and in accordance with approved procedures.

10.4 EQUIPMENT

Air sampling equipment will be calibrated annually. A number of different types of air samplers will be used for the project (low volume air samplers will typically be used for perimeter monitoring, high volume air samplers will typically be used for work area monitoring). The RCM will determine the number and types of samplers to be used for the project. Air samplers will be available that have flow rates ranging from 0.05 to 14 CFM. The analysis of air samples will be performed with equipment capable of a minimum detectable activity of the radionuclide of concern to verify the concentration is below the established limits of 10NYCRR16, Appendix 16C, Table I Column 3.

10.5 ANALYSIS

Results of air samples will be compared with the air concentrations in 10NYCRR16 Appendix 16-C. If the air sample results are above 10% of the Appendix 16-C air concentrations, then the RCM and PM will be notified.

10.6 RESPIRATORY PROTECTIVE EQUIPMENT

While it is not anticipated that respiratory protective equipment for airborne radioactive material exposures will be required for the planned NFSS Site demolition work, this section is included for completeness and for use at the discretion of the RCM.

10.6.1 Selection

To maintain the internal exposure of radioactive materials to ALARA, engineering controls will be used to the maximum extent possible. If engineering controls are not adequate, as demonstrated by work-area air sampling, then respiratory protection will be considered to control internal exposures to radioactive materials.

All respiratory protective equipment (RPE) will be recommended by the RCM or designee prior to the initiation of each new task or operation.

RPE will always be selected on the basis of hazard or presumed hazard. Whenever the degree of hazard can not be determined prior to task initiation, a conservative approach for protecting personnel will be assumed.

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10.6.2 RPE Use

Consistent with the applicable portion of the 10NYCRR16.26, the following requirements will apply to the use of RPE at this project:

- (1) RPE will only be used by those persons who have been examined by a licensed physician and found medically qualified to wear the prescribed equipment.
- (2) Project personnel will use the prescribed RPE in accordance with their training/fit test and the requirements of the work permit.
- (3) Only NIOSH and MSHA-approved respiratory equipment that is approved for use by the RCM will be used.
- (4) Only approved equipment that has been maintained and inspected by the user or issuing company (i.e., TES, contractor/subcontractor) prior to commencement of work will be permitted.
- (5) Only equipment that has been properly fitted in accordance with the acceptable methods contained in NUREG-0041 will be permitted for use.
- (6) Only equipment that has been adequately decontaminated will be permitted to be reused.
- (7) Communications (voice, visual, or signal line) will be maintained between all individuals present. Planning will be such that one individual, unaffected by any likely incident, will have the necessary resources to assist the others in case of any emergency.
- (8) Respiratory protective equipment will not be worn when conditions exist that prevent a good face-to-facepiece seal (i.e., beards, mustaches).
- (9) Cartridges and filters used in conjunction with air-purifying respirators will be changed daily or upon increased breathing resistance, whichever comes first.
- (10) No contact lenses will be permitted when wearing respiratory protection.

Additional requirements may be identified as work progresses.

10.6.3 Maintenance and Repair

All RPE will be maintained and repaired in accordance with the manufacturer's recommendations, using only manufacturer-approved replacement parts by personnel who are knowledgeable in the maintenance/repair procedure to be performed. Some procedures may be performed by the user, while other procedures must be performed by the manufacturer or an

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authorized service center. The following subsections describe the maintenance procedures anticipated for this project.

10.6.3.1 Maintenance/Repair by the User

All personnel who have been issued RPE will be responsible for:

- (1) Daily cleaning or disposal of assigned equipment.
- (2) Cartridge/filter replacement.
- (3) Proper storage of assigned equipment.
- (4) Possession of assigned equipment.
- (5) Requesting maintenance/repair as needed.
- (6) Proper use/handling.
- (7) Breathing-air replenishment.
- (8) Periodic frisking for radioactive contamination.

10.6.3.2 Survey of Cleaned RPE

All RPE coming into contact with the skin will be surveyed for radioactive contamination prior to use by a qualified Radiological Control Technician (RCT).

10.6.3.3 Maintenance/Repair by the Manufacturer

All equipment that cannot be maintained, serviced, or repaired by the user will be sent to the manufacturer or authorized service center for service. Some of the procedures that are not anticipated to be handled in-house include:

- (1) High-pressure regulator maintenance/repair.
- (2) Cylinder maintenance/repair/refill.
- (3) High-pressure hose maintenance/repair.

Prior to returning RPE to a manufacturer for repair, the equipment will be surveyed for radioactive contamination, decontaminated if necessary, and resurveyed for unrestricted release.

10.6.3.4 Inspection

All RPE will be inspected by the user prior to each use and during cleaning/reassembly. In the case of respiratory protection, the content of inspections will be as prescribed by the manufacturer. In addition, all respirators will be periodically monitored for radioactive contamination. If airborne radioactivity is indicated by the airborne sampling program (Section

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10.3), then respirators will be monitored for radioactive contamination after each use. This will be accomplished by direct surveying and swipe testing for loose contamination. Contaminated respirators will be decontaminated immediately and retested prior to being used again. Decontamination will be in accordance with established contamination limits (see Chapter 11.0).

Note: The RCM or designee will be responsible for fit testing and instructing TES personnel. Contractors/subcontractors will be required to “fit test” and instruct their personnel.

10.7 TRAINING AND INSTRUCTIONS ON PPE AND RPE

When personnel protective equipment (PPE) and respiratory protection equipment (RPE) is required, as part of Basic Radiation Safety Training, individuals will be instructed in the proper donning and doffing of respirators. It will also be confirmed that they have been properly fit tested and instructed on the proper field test to be used to insure an adequate fit.

Note: In addition, individuals will be instructed on the proper maintenance and cleaning of their respirators.

The worker will also be advised that he or she may leave the work area any time for relief from respirator use in the event of respirator failure, physical/psychological distress, or other emergency situations.

10.8 BIOASSAY

When internal exposures due to inhalation or ingestion of airborne radioactivity could exceed 10% of an ALI in 10NYCRR16 Appendix 16-C, Table I, bioassays will be obtained and evaluated to demonstrate compliance. This bioassay methodology will be consistent with the applicable portions of US NRC Regulatory Guide 8.9.

10.8.1 In-Vitro Bioassay

If bioassays are needed urine samples will be collected as directed by the RCM in consultation with the project CHP.

10.8.4 Dose Commitment

When an internal monitoring is performed, the employee's committed effective dose equivalent (CEDE) will be estimated using metabolic modeling consistent with reports 26, 30 and 54 of the International Commission on Radiological Protection (ICRP) and US NRC Regulatory Guide 8.9. The calculated CEDE will be reported to the employee and will become a part of his/her exposure history file (NRC Form 5 or equivalent).

10.9 WORK RESTRICTION

An employee may have radiation work activities altered or limited as a result of:

- (1) Approaching the control levels specified in Table 9-1
- (2) Unknown exposure status

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- (3) Increased potential for internal exposure, such as an open skin break
- (4) Repeated violations of radiological or general safety requirements
- (5) Is pregnant.

The RCM is responsible for implementing work restrictions, when necessary. The employee's supervisor will be notified in writing that a work restriction has been imposed. Copies of work restrictions will be maintained in the employee's dosimetry record.

No person will exceed the administrative control levels of Section 9.1 without prior written approval of the RCM and the PM.

An employee whose exposure status is unknown (e.g., lost dosimeter) shall not enter a controlled area until his/her current exposure status is determined by the RCM or designee.

When an employee has an internal deposition of a radioisotope induced for medical diagnostic purposes, he/she will be restricted from wearing a TLD until the medical isotope is eliminated from the body and shall be restricted from work in the restricted area. This is done to avoid including exposure from the medical isotope to that exposure received from this contact with radioactive material.

Employees who work with radioactive materials will report any skin breaks which they may have to their immediate supervisor and radiological control personnel. Skin breaks include unhealed wounds, open cracks from chapping, injuries such as lacerations, abrasions, punctures, and blisters or burns. A clearly open wound may be sufficient reason to prohibit entry to a restricted area.

Safeguards will be maintained by supervision to minimize the likelihood of accidental introduction of radioactive materials beneath the skin. If the skin is broken while working with radioactive materials, the employee will immediately report to his/her immediate supervisor who will have the skin break surveyed by an RCT. The RCM or designee will determine if additional followup action is required.

Contaminated personnel will be decontaminated in accordance with the approved procedures listed in Section 11.0 of this plan.

11.0 CONTAMINATION CONTROL

11.1 INTRODUCTION

Control of radioactive materials is needed to minimize the spread of contamination. When radioactive contamination is spread, the potential for an individual's exposure to radiation will increase. In the event that radioactive contamination is spread, then decontamination efforts must be implemented.

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Decontamination may be required whenever personnel and equipment exit potentially or known contaminated areas of the project Site. Proper decontamination will be necessary for personal protection and to minimize the potential for transfer of contaminants to previously unaffected areas. The subsections below present the personal and equipment decontamination requirements applicable to this project.

TES has established an objective for the NFSS project that no material or equipment will leave the controlled area for unrestricted release with measureable radioactive contamination distinguishable above ambient instrument background levels. Any material or equipment suspected to have radioactive contamination levels above background will be re-surveyed and decontaminated as necessary.

11.2 CONTAMINATION CONTROL

Spills of radioactive materials will be isolated and cleaned up as quickly as possible. All equipment and personnel exiting the radiologically restricted area will be monitored for contamination. Limits for contamination and associated personnel protective equipment are given in Table 11-1.

Equipment entering the Site will be surveyed for contamination.

The following contamination control practices will also be implemented on the NFSS Building 401 demolition project.

- All debris will be covered if stored outside.
- Storage areas, decon pads, and the open building will be bermed to facilitate collection of water for sampling and disposal at a permitted site.

11.3 EQUIPMENT DECONTAMINATION

11.3.1 General

All equipment used on Site will be thoroughly decontaminated prior to being cleared for release from the project Site. This requirement will apply to all equipment, including but not limited to the following:

- (1) Vehicles and heavy equipment.
- (2) Contaminated materials-transport equipment (conveyors, hoppers, piping, containers, etc.).
- (3) Air-monitoring instruments.
- (4) Sampling apparatus.
- (5) Hand tools.

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11.3.2 Requirements

Small items of equipment (i.e., hand-held items such as hand tools) will be taken to a personnel decontamination area and decontaminated by the user. Larger items such as vehicles will be taken to an established equipment decontamination area or decontamination pad.

Small items will be protected from contacting contamination to the extent possible through practices such as bagging instruments or taping (if applicable/possible), and avoidance of setting items on potentially-contaminated surfaces. Decontamination of small items will typically involve wiping the item with a masslin rag or a soap-and-water wash and a clean-water rinse followed by instrument frisking/screening.

Exceptions to these requirements may include:

- (1) Items made of absorbent materials (e.g., wooden handles on tools) may be discarded and not subjected to decontamination efforts after reasonable effort is made to decontaminate. Absorbent materials in the contamination area will be kept to a minimum.
- (2) Items that require special decontamination procedures, such as samples and/or sampling apparatus.

Large items of equipment (i.e., Site vehicles, bulldozers, backhoes,) will undergo decontamination at the Equipment Decontamination Area/Pad. The procedures utilized at this location will include high-pressure steam or water cleaning of all exterior surfaces. Pre- and post-decontamination screening/surveying may be performed to identify potential hot spots from a radiological standpoint. These measurements will be taken on both exterior and accessible interior surfaces.

A final release survey will be performed on the equipment prior to its leaving the restricted area (decontamination area/pad). Areas used for decontamination will be controlled such that all water is collected.

11.3.3 Contaminated Release Limits

Guidance for specific radionuclide contamination limits for materials and equipment are specified in "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of License for Byproduct, Source, or Special Nuclear Materials" (*NRC, August 1987*). (See Table 11-1 for guidance on contamination limits.)

11.4 PERSONNEL DECONTAMINATION

11.4.1 General

It is not expected that personnel exiting the radiological control zones will be contaminated after removal of the outer layer of protective clothing. However, if personnel are determined to be contaminated then personnel decontamination procedures will be performed (see Table 11-2).

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The only exception to this requirement would be in the event of an extreme emergency when the urgency of the situation outweighs the need for decontamination. An example of this is a medical emergency where medical attention requires priority treatment. Once the medical emergency has passed, proper decontamination procedures will be performed.

11.4.2 Procedures

Personnel decontamination protocol will be comprised of removing items of personal protective equipment and clothing (Tyvek and outer boots), followed by surveying for radioactive contamination. Radiological survey instrumentation and specifications are presented in Section 13.0. Personnel contaminated above the limits specified in Table 11-1 will be decontaminated using the procedures specified in Table 11-2.

All personnel will receive training in proper decontamination procedures and sequences as part of site-specific training for this project.

11.4.3 Facilities

Personal decontamination facilities will consist of, at a minimum, a bermed area lined with plastic. The decontamination facility will have provisions for containers containing soapy water, rinse water, and receptacles for waste, water and trash. All materials will be tested for radioactive contamination prior to release from the decontamination facility.

11.5 REUSE OF PERSONAL PROTECTIVE EQUIPMENT (PPE)

Reuse of items of PPE will be permitted provided that such items are successfully decontaminated and that they satisfactorily pass the instrument screening/frisking process. Examples of PPE items that may be reused include:

- (1) Hard hats.
- (2) Respirators (exception: air-purifying respirator cartridges).
- (3) Work boots.
- (4) Boot covers.
- (5) Eye and face protection.
- (6) Ear protection (exception: disposable ear plugs).
- (7) Cloth coveralls and/or Tyvek.
- (8) Work gloves.

Items that cannot be properly decontaminated will be handled as waste products, containerized, and disposed of in accordance with TES requirements for disposal of radioactive waste.

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11.6 CONFISCATION OF CONTAMINATED ARTICLES

All Site personnel will be made aware as part of site-specific training that any item brought on Site may be confiscated if it becomes radioactively contaminated and cannot be successfully decontaminated. In this regard, Site personnel will be informed that personal articles should not be brought on Site.

11.7 PPE REQUIREMENTS FOR DECONTAMINATION AREAS

Personnel working in decontamination areas during decontamination operations will need to utilize items of PPE to protect themselves from the contaminants that may be present on the surfaces that are being decontaminated. PPE requirements for personnel working in the personnel decontamination areas will generally be consistent with the items of PPE worn by the workers being decontaminated.

For those workers assigned to the equipment decontamination pad, an increased potential for contact with liquids exists due to the use of a high-pressure steam or water generator. Therefore, minimum PPE requirements for workers in this area will typically involve:

- (1) Hooded coveralls made of moisture-repellant material or rain suits.
- (2) Full-face shield.
- (3) Boot covers.
- (4) Moisture-resistant gloves.

These PPE requirements may be modified based on project Site conditions, including the use of full-face air-purifying respirators as conditions warrant.

11.8 PERSONAL HYGIENE

Due to the nature of operations and contaminants involved at this Site, practicing sound personal hygiene will be emphasized to all Site workers both initially during Site training, and on an on-going basis.

Eating, drinking, chewing gum or tobacco, and smoking will be prohibited in the contaminated or potentially-contaminated areas and where the possibility for the transfer of contamination exists.

11.9 PERSONAL CONTAMINATION (FRISKING AND DECONTAMINATION)

As part of Radiation Worker Training, all personnel will be instructed in the proper method of removing outer clothing/Tyveks and boot covers and monitoring for personal contamination. Friskers (personal contamination monitors) will be available at each exit from a controlled area. Instructions will be provided at each personal frisking station. Instrumentation/specification of instruments used to monitor for personal contamination are presented in Section 13.0.

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In the event that personnel contamination is suspected or found, the RCT will be notified and appropriate action as directed by the RCM be taken. Table 11-1 gives contamination levels for personnel contamination. Table 11-2 provides guidance for skin decontamination methods.

11.10 WASTE MINIMIZATION

As a result of carrying out the project activities at the Site, radioactive waste in the form of protective clothing, rags, gloves, wipes, tools, and equipment will be generated.

It is TES policy to minimize the amount of radioactive waste to the extent practical. To achieve this objective, the following guidance shall apply:

- Radwaste receptacles are for contaminated trash only. Do not throw clean trash into these containers.
- Take only the amount of material (bags, wipes, rags, etc.) that you need to perform the immediate job. Avoid taking bulk volumes of material into the contaminated area.
- Bag or tape tools or equipment to minimize the potential for the article to become contaminated.
- Reuse to the extent possible tools and equipment that are already contaminated. Reuse of contaminated tools and equipment will reduce the amount of radioactive material generated.
- Equipment entering the Site will be surveyed for contamination.
- All tools and equipment removed from contaminated areas must be surveyed by radiological control personnel to determine if they are contaminated prior to removal. Contaminated tools and equipment should be stored for future use and contaminated trash should be disposed of as radwaste. Tools, equipment, and trash that are frisked "clean" may be stored or discarded as everyday non-radioactive material.
- If cleaning solutions are to be used for decontamination purposes, make sure that the solution is not a hazardous chemical that will generate a "mixed waste" if it becomes contaminated with radioactivity and has been declared waste. A water-based decontamination solution is the preferred option.

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TABLE 11-1 RADIOACTIVE CONTAMINATION LIMITS

NUCLIDES ^a	AVERAGE ^{b, d, f}	MAXIMUM ^{b, d, f}	REMOVABLE ^{b, e, f}
U-nat, U-235, U-238 and associated decay products	5,000 dpm $\alpha/100 \text{ cm}^2$	15,000 dpm $\alpha/100$ cm^2	1,000 dpm $\alpha/100$ cm^2
Transuranics, Ra-226, Ra-228, Th-230, Th-228, Pa-231, Ac-227, I-125, I-129	100 dpm/100 cm^2	300 dpm/100 cm^2	20 dpm/100 cm^2
Th-nat, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126, I-131, I-133	1,000 dpm/100 cm^2	3,000 dpm/100 cm^2	200 dpm/100 cm^2
Beta-gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others noted above.	5,000 dpm $\beta\gamma/100 \text{ cm}^2$	15,000 dpm $\beta\gamma/100 \text{ cm}^2$	1,000 dpm $\beta\gamma/100 \text{ cm}^2$
Personnel	200 dpm $\beta\gamma$ 20 dpm α		

^a Where surface contamination by both alpha- and beta-gamma-emitting nuclides exists, the limits established for alpha- and beta-gamma-emitting nuclides apply independently.

^b As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

^c Measurements of average contaminant should not be averaged over more than one square meter. For objects of less surface area, the average should be derived for each such object.

^d The maximum contamination level applies to an area of not more than 100 cm^2 .

^e The amount of removable radioactive material per 100 cm^2 of surface area is determined by wiping that area with dry filter or soft absorbent paper, applying moderate pressure, and assessing the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of less surface area is determined, the pertinent levels are reduced proportionally and the entire surface is wiped.

^f The average and maximum radiation levels associated with surface contamination resulting from beta-gamma emitters should not exceed 0.2 mrad/hr at 1 cm and 1.0 mrad/hr at 1 cm, respectively, measured through not more than 7 milligrams per square centimeter of total absorber.

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TABLE 11-2
SKIN DECONTAMINATION METHODS

METHOD	ADMINISTRATING PERSON	EFFECTIVE FOR	INSTRUCTIONS
Masking Tape	RC Technician	Visible Particulate	Apply tape to skin by light patting. Remove carefully.
Waterless Hand Cleaner	RC Technician	All Skin Contamination	Apply to affected area and allow it to melt onto skin. Remove with cotton or soft disposable towel.
Soap and Tepid Water	RC Technician	All Skin Contamination	Wash area with low alkaline, non-abrasive soap and tepid water. Repeat until further attempts do not reduce the level. A surgical hand brush may be used with moderate pressure.
Cornmeal Detergent Paste	RC Technician	All Skin Contamination	Mix cornmeal and powder detergent in equal parts with enough water to form a paste. Put onto affected area for five-minutes. Remove with cotton or disposable towel. Rinse skin.
Shampoo	RC Technician	Hair Contamination	Wash hair and rinse. Repeat as necessary. Remove any hair that cannot be decontaminated. DO NOT SHAVE HAIR. Cut hair as close to the skin as possible with scissors.
Nose Blowing	Individual	Nasal Contamination	Blow nose into a rag, tissue, kim wipe, etc. Monitor tissue after attempt. Stop when no increase in activity is noted.

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TABLE 11-2 (continued)
SKIN DECONTAMINATION METHODS

METHOD	ADMINISTRATING PERSON	EFFECTIVE FOR	INSTRUCTIONS
Titanium Dioxide Paste	Medical Personnel	Fission Product Contamination	Form a paste of Titanium Dioxide powder and water. Apply small amounts of water to paste to keep it moist while massaging it onto area. Continue massage for five minutes. Remove paste with cotton. Rinse thoroughly with lukewarm water followed by a wash with soap and water.
EDTA Cream*	Medical Personnel	Fission Product Contamination	Mix a cream consisting of 1% EDTA, 3% powdered detergent, 8% Carboxy-Methyl-Cellulose, and 8% distilled water. Scrub area with cream. Remove with cotton.
Potassium	Medical	Alpha	Mix an equal volume of a saturated solution of Potassium Permanganate (6.4 grams) $KMnO_4/100$ ml water) with 1% Sulfuric Acid solution (0.2N). Pour this solution over WET contaminated areas. Rub lightly for several minutes with surgical hand brush. Rinse with tepid water to remove the resulting brown stain. Pour a freshly prepared 5% Sodium Bisulfite solution (10 g $NaHSO_3/200$ ml water). Rinse with tepid water and scrub lightly for several minutes. This procedure may be repeated several times without harm. Limit washing to two minutes each.

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* *Note: Do not use EDTA on halogens such as I¹³¹ contamination*

12.0 RADIATION SURVEYS

12.1 INTRODUCTION

In order to adequately determine the extent of the radiation hazards for the NFSS FUSRAP Site routine and non-routine radiation surveys will be performed. These surveys will consist of direct radiation surveys, total and loose contamination surveys, and airborne radiation surveys.

Specific procedures will be available to provide adequate information to determine the true extent of the radiation hazard at the NFSS FUSRAP Site and to minimize personnel exposure to As Low As Reasonably Achievable (ALARA). The routine and non-routine radiation surveys will be performed by qualified RCTs using calibrated equipment/instruments and in accordance with approved procedures.

The radiation survey program is designed to provide the following;

- (1) Inform the workers of existing radiological hazards at the Site and in their work area
- (2) Provide a means for analyzing trends in Site radiological conditions
- (3) Verify that the radioactive material is being adequately controlled and not spreading to uncontrolled areas
- (4) Verify the effectiveness of contamination controls
- (5) Verify the effectiveness of engineering controls and/or respiratory protection
- (6) Provide radiological release surveys of the building and equipment

12.2 GENERAL REQUIREMENTS AND STANDARDS

- (1) Surveys will only be conducted by individuals specifically trained in the use of radiation monitoring equipment.
- (2) Surveys are classified as routine and non-routine surveys. Routine surveys are surveys performed on a regular basis while non-routine surveys are performed as necessary to support remediation activities. A schedule of routine surveys will be developed by the Radiation Control Manager (RCM).
- (3) Surveys will be performed with instruments calibrated for the type and energy of the radiation being monitored.

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- (4) A sufficient number of survey points will be taken in order to adequately assess the radiological status of the area being surveyed.
- (5) Radiological postings and other control measures should be reviewed for adequacy following surveying. The posting will be updated as needed or at the direction of the RCM.
- (6) All radiological surveys will be recorded on standard forms. The forms will contain spaces for the following information:
 - Date and time
 - Name of survey and surveyor
 - Space for sketches or drawings of material or areas to be surveyed
 - Space for survey results
 - Space for the instrument(s) being used, serial number(s), calibration date(s), background(s) and efficiencies.

Continuation sheets can be used to complete survey information, however continuation sheets will contain enough information to tie it to the cover sheet.

12.3 RADIATION SURVEYS

Radiation surveys will be performed at predetermined points in active work areas and adjacent areas whenever operations are performed that have the potential for changing radiation or contamination levels.

12.3.1 Survey Frequencies

Radiation surveys are performed as necessary to ensure personnel do not exceed radiation exposure limits and to meet requirements for posting radiation areas. These surveys are performed to determine whether abnormal radiation levels exist and to determine the extent and magnitude of radiation levels. The following surveys will be the minimum performed.

12.3.1.1 Facilities Containing Radioactive Material

Radiation surveys will be performed to control radiation exposure whenever operations are performed that might be expected to change existing radiation levels. Examples of such operations include accumulation of waste and relocation of radioactive materials.

Temporary boundaries (e.g., rope boundaries) of radioactive material/contamination areas will be surveyed weekly to ensure restricted areas do not extend beyond posted boundaries.

Gamma surveys and contamination-control surveys will be performed at least weekly in occupied posted radiation areas, in all occupied areas of radiological facilities, and in radioactive short-term material storage areas.

Other surveys will be performed as necessary to control personnel exposure to gamma, beta, and alpha radiation.

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12.3.1.2 Following Accidents

Radiation surveys will be performed as necessary to assess the extent and magnitude of a radiation condition in the event of an accident.

12.3.1.3 Records

Records of radiation surveys will be retained by the TES until project termination and will be submitted to the USACE. The survey information will be recorded on a standard form, as specified in the TES field procedure, or on locally prepared forms which are consistent with the TES field procedure and contain at least the following information:

- Date and time of survey.
- Reason for survey and type of radiation measured (e.g., weekly gamma).
- Type and identifying number of instruments used.
- Instrument calibration due dates.
- Location (shown on a survey map or listed in a table).
- Radiation level measured.
- Remarks.
- Signature of surveyor.
- Signature of persons reviewing results (e.g., RCM or RCM designee).

12.3.2 Safety Precautions

The following safety precautions will be observed by personnel using portable radiation-monitoring equipment.

- (1) Only personnel trained in the use of portable radiation monitoring equipment will be allowed to use this equipment. As a minimum, training will consist of a lecture on the use of the instrument, the meaning of its measurements, a demonstration of its proper use and handling, and a period of supervised use.
- (2) Damage to or loss of radioactive source can result in spreading, inhaling, or ingesting contamination. Therefore, radioactive sources require careful handling and accountability control. If a source is lost, immediate steps will be taken to recover the source and minimize radiation exposure to or contamination of personnel as a result of the lost source (see Section 16.5).
- (3) Except for sources which are permanently attached to monitoring instruments, check sources which are not in use will be kept in a locked cabinet on Site. The number of keys will be kept at a minimum. Combination locks are permitted and, when used, the number of personnel having the combination will be kept to a minimum. The RCM will maintain a list of individuals who are authorized to access the cabinet. A log entry will be made each time a source is used or removed from its repository.

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12.3.3 Calibration and Maintenance of Survey Instruments

Radiological control supervisory personnel will ensure that the appropriate survey instruments are available, functional, and calibrated using accepted standards for performing radiation surveys.

The types and uses of specific radiation-monitoring devices recommended for use are listed in Section 13.2.

12.4 AIRBORNE RADIOACTIVITY SURVEYS

If implemented, airborne radioactivity surveys (monitoring/sampling) provide assurance that airborne radioactivity is adequately controlled. The airborne survey consists of drawing a known volume of air through a 0.5 micron, 47 mm diameter (or equivalent) air filter and analyzing the air filter for appropriate radionuclides. Additionally, the airborne survey can act as a guide in the selection of the appropriate respiratory protection equipment.

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13.0 INSTRUMENTATION

13.1 INTRODUCTION

Direct radiation and contamination monitoring using portable or laboratory measurements will be performed using instrumentation and techniques necessary to detect applicable radioactive contamination limits specified in Table 11-1. Instruments will be calibrated with radiation sources traceable to the National Institute of Standards and Technology (NIST) and having energy spectrum consistent with the radionuclides being measured.

13.2 EQUIPMENT SPECIFICATIONS

Portable Contamination Monitor (Beta/Gamma)

Range	-	0 to 500,000 counts per minute
Accuracy	-	±10% of reading between 10% and 100% of full scale on any range
Response Time	-	20 seconds (slow response)
Instrument	-	Ludlum model 3 with Ludlum model 44-9 probe (or equivalent)

Portable Alpha Survey Monitor

Range	-	0 to 200,000 counts per minute
Accuracy	-	±15% of reading between 10% and 100% of full scale on any range
Response Time	-	5 seconds (slow response)
Efficiency for Pu239	-	16%
Instrument	-	Ludlum Model 3 with Ludlum 43-1 zinc sulfide probe (or equivalent)

Direct Radiation Meter (Gamma)

Range	-	0 to 5,000 micro R/hr scales
Accuracy	-	±10% of reading between 10% and 100% of full scale on any range
Instrument	-	Bicron MicroRem meter, Ludlum Model 2350-1 or 2360 with 44-10 detector (or equivalent)

Scaler (Alpha and Beta/Gamma)

Range	-	0 to 999,999 counts
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- | | | |
|------------|---|---|
| Accuracy | - | ±10% of reading between 10% and 100% of full scale on any range |
| Instrument | - | Ludlum 2929 dual channel analyzer (or equivalent) |

Air Samplers

- | | | |
|------------|---|---|
| Flow Rate | - | 0.05 to 14 cubic feet per minute (2 to 400 lpm) |
| Instrument | - | various |

Dosimetry

- | | | |
|-----------------------------------|---|--|
| Personnel Dosimetry, Record | - | Landauer TLD, Landauer OSL (or equivalent) |
| Personnel Dosimetry, Self-Reading | - | various |

The above-identified radiation survey instruments will be calibrated annually.

Instrument calibration records and daily source-check records will be maintained by the RCM or designee and available at the TES Site project office for inspection.

14.0 MEDICAL SURVEILLANCE

14.1 INTRODUCTION

This section describes the medical surveillance program applicable to personnel who will work within the radiologically controlled areas at the NFSS FUSRAP Site, when required by contract or by determination of TES management. The purpose of the Medical Surveillance Program is to determine Site personnel fitness for duty. The data obtained from the Medical Surveillance Program in conjunction with information generated via employee exposure monitoring will be utilized to evaluate the health status of Site personnel.

The TES Medical Surveillance Program consists of the following elements, as required:

- (1) Administration of the program by TES.
- (2) Initial and annual and termination medical examinations for all personnel engaged in field work.
- (3) A standard protocol for medical examinations, modified as necessary to reflect site-specific concerns not addressed by the standard protocol.
- (4) Maintenance and retention of medical records.

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14.2 MEDICAL EXAMINATIONS

The TES Project Medical Surveillance Program requires that all personnel engaged in field work involving potential exposure to health, safety, and/or radiological hazards participate in the program. An initial examination is performed on the employee prior to assignment to field work. At least annually thereafter, the employee must submit to an additional examination. All project personnel will have had a medical examination meeting the requirements of the program within the past 12 months of any field work.

TES contractors and subcontractors must demonstrate that their employees are participants in a medical surveillance program that is at least as comprehensive as the TES program by providing TES with a written description of their program and the name and telephone number of their examining physician or medical consultant.

14.3 PHYSICIAN'S WRITTEN OPINION

Physicians performing examinations of TES employees are provided with the following information:

- (1) A description of the employee's duties as they relate to the employee's exposures.
- (2) The employee's exposure levels or anticipated exposure levels.
- (3) A description of any personal protective equipment to be used, including the potential use of air-supplied or negative-pressure air-purifying respirators.
- (4) Any information from previous medical examinations in the possession of TES or the contractor which is not readily available to the examining physician.

This information and the results of the examination are used as the basis of the physician's written opinion regarding the medical status of the employee.

Upon completion of an initial or annual medical examination of an TES contractor employee, the employee and/or contractor is required to provide medical clearance prior to the employee engaging in on-site work activities.

14.4 RECORDKEEPING

The clinics or physicians utilized by TES to perform medical examinations will maintain records of all examinations. TES will maintain a medical surveillance file on all current employees, as well as terminated employees.

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15.0 RECORDS AND REPORTS

15.1 GENERAL

All records, audits, and reports related to the TES Radiological Control Program will be maintained by the TES until the NFSS FUSRAP is complete or as directed by the USACE, as appropriate. Employee exposure records will be retained by TES indefinitely.

15.2 EXPOSURE RECORDS AND REPORTS

The RCM will assure that records are maintained to permit a ready accounting of an employee's accumulated radiation exposure. This occupational exposure record will include:

- (1) Any known prior employment occupational exposure history (NRC Form 4 or equivalent).
- (2) External and internal exposure received occupationally, while on the NFSS Building 401 demolition project (NRC Form 5 or equivalent).
- (3) Special dose evaluations and work restrictions.
- (4) Reports of unusual exposure, or incidents with potential for internal deposition. The incident forms will be supplied by the TES.

If the worker was required to be monitored under the provisions of 10NYCRR16.11, TES will provide each worker with his/her occupational exposure annually. The RCM will provide each worker with a copy of his/her occupational exposure upon request. These reports will be furnished within 30 days from the time the request is made, or within 30 days after the exposure has been determined by the TES, whichever is later.

15.3 FORMS AND RECORDS

Specific forms or records will be developed and used for the following items:

- (1) Direct and contamination surveys.
- (2) Personnel contamination survey.
- (3) Airborne survey (monitoring/sampling) calculation data sheets.
- (4) Daily instrument operational check and calibration sheets.
- (5) Daily report of work and surveys completed.
- (6) Radiation Work Permits (RWPs).

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- (7) NRC Form 5 or equivalent to track individual worker exposure.
- (8) Self-reading dosimeter usage.
- (9) Incidents and accidents.

15.4 RECORDS MAINTENANCE

TES will maintain records consistent with 10NYCRR16.14 requirements as applicable and will make such records available for inspection. The following is a general listing of the records that will be maintained by TES for the project.

- (1) The provisions of the Radiation Protection and Control Program.
- (2) Audits and other reviews of the Radiation Protection and Control Program content and implementations.
- (3) Results of surveys and calibrations required by 10NYCRR16.10.
- (4) Records of surveys to determine the dose from external sources and used in the absence of or in combination with individual monitoring data in the assessment of individual dose equivalents.
- (5) Records of measurements and calculations used to determine individual intakes of radioactive material and used in the assessment of internal dose.
- (6) Records of the results of air sampling, surveys, and bioassays.
- (7) Records of measurements and calculations used to evaluate the release of radioactive effluents to the environment.
- (8) Records of doses received by all individuals for whom monitoring was required pursuant to 10NYCRR16.11. These records must include, when applicable:
 - (a) The deep-dose equivalent to the whole body, eye-dose equivalent, shallow-dose equivalent to the skin, and shallow-dose equivalent to the extremities;
 - (b) The estimated intake of radionuclides;
 - (c) The committed effective dose equivalent (CEDE) assigned to the intake of radionuclides;
 - (d) The specific information used to calculate the CEDE;

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- (e) The total effective dose equivalent (TEDE); and
- (f) The total of the deep-dose equivalent and the committed dose to the organ receiving the highest total dose (when required).
- (9) TES will maintain the records specified on NRC Form 5 or equivalent, in accordance with the instructions for NRC Form 5 or equivalent, or in clear and legible records.
- (10) Records sufficient to demonstrate compliance with the dose limit for individual members of the public.
- (11) Records of the disposal of licensed materials.
- (12) TES will maintain the records of dose to an embryo/fetus with the records of dose to the declared pregnant woman.
- (13) Incident reports, as required by 110NYCRR16.15.

16.0 EMERGENCY ACTIONS

Accidents, industrial events, and medical emergencies that occur at the NFSS FUSRAP Site will be handled in accordance with the TES NFSS FUSRAP Health and Safety Plan and related emergency action procedures.

On-site first aid emergency response will be supported by the local emergency response (fire and medical) organizations. Radiation awareness training will be provided by the RCM or designee to transport and treatment personnel, if requested or deemed necessary by the RCM.

The emergency response protocol for various accidents and emergencies are summarized in subsequent sections. TES will notify the USACE of any accident or emergency.

16.1 ACCIDENTAL SPILLAGE OF RADIOACTIVE MATERIALS

Should radioactive or contaminated materials be released from their container, the following actions should be taken. TES personnel are to follow the instructions below, which have been developed using the SWIMS acronym:

- S** = Stop the spill
- W** = Warn other personnel
- I** = Isolate the spill area
- M** = Minimize personnel exposure
- S** = Secure the appropriate equipment

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Stop the spill. If the spill has occurred from a source which may continue or is continuing to add material to the spill, take such measures as necessary to stop the spill, such as closing a valve or blocking the path of the fluid with absorbent material. A balance of risk to the individual versus action to be taken to stop the spill must be weighed. At no time should the individual put his personal safety at risk, unless it involves a life saving situation. If mechanical action is needed, such as closing a valve or disabling a pump, knowledge of the effect on the total system or machinery involved is required prior to such actions.

Warn other personnel. Others in the immediate area and those entering the area must be told of the event to enable all personnel to take the appropriate response actions. The RCM and PM must be notified as soon as possible.

Isolate the spill area. Non-vital personnel must be kept out of the immediate vicinity. Personnel who have been contaminated will remain in the immediate vicinity to prevent the spread of contaminants until health physics personnel release them. An exception to this is when the ambient radiation levels are high or if a traumatic injury requiring leaving the area has occurred.

Minimize personnel exposure. The event may include both a radiological and a chemical hazard. Personnel will remain in the immediate vicinity until health physics personnel arrive both to assist in spill control and for surveying of exposed individuals. The nature of the spill, both chemical and radiological, and the need to monitor the spill, will dictate how close personnel should remain.

Secure the appropriate equipment. Ventilation or other operating equipment may be selected for shutdown due to the nature of the spill and to prevent further occurrence. Knowledge of the system and equipment involved is necessary prior to taking such action.

16.2 FIRE IN A RESTRICTED AREA

Areas will be evacuated by all non-emergency personnel when a fire, heavy smoke, or fumes occur in a controlled area. Health physics, operational and/or fire response personnel will be immediately notified. This is true for all fire events, including those where personnel in the immediate vicinity have extinguished a minor event, such as a wastebasket fire.

- When possible, the fire will be extinguished by personnel in the immediate vicinity rather than allowing it to grow into larger proportions while designated personnel are on their way.
- If a fire cannot be rapidly extinguished, the local fire department will be summoned for fire detail.
- Fire extinguishing agents such as CO₂, foam, or dry chemicals, are preferred as these minimize the volume of potentially contaminated liquids.

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- All firefighting personnel will be surveyed prior to exiting the event area except for those in need of immediate medical assistance outside the controlled area. Minimization of the spread of contamination will be kept in mind at all times.

16.3 CONTAMINATED INJURY

Medical emergencies or accidents can be divided into two categories. The first category is non-life-threatening and the second is life-threatening.

16.3.1 Non-Life-Threatening Incidents

Non-threatening medical-emergency victims will be given first aid on the NFSS FUSRAP Site. Prior to the victim's leaving the Site, the victim will be monitored for radioactive contamination. If the individual is contaminated, decontamination procedures will be followed unless it is determined that the emergency is life-threatening.

Specific emergency actions may include:

- Wash minor wounds immediately under running water, spreading the edges of the gash. If at all practical, collect and retain cotton sponges, bloody gloves, fluids, etc., for analysis.
- Report all radiation accidents involving personal wounds, ingestion, or inhalation to the Radiation Control Manager (RCM) or designee as soon as possible.
- Call a qualified physician at once to treat radiation injuries and to collect additional bioassay samples.
- Prepare a complete history of the accident and subsequent activity related thereto for the RCM or designee.

16.3.2 Life-Threatening Incidents

In the event that a life-threatening accident or injury occurs, the victim's life takes precedence over any radiation or contamination controls at the NFSS FUSRAP Site. The victim will be treated and transported to the local medical center as soon as possible. Attempts will be made to minimize the spread of contamination and the medical center will be notified of the potential for radioactive contamination of the victim being transported to the facility.

In emergency situations where an individual is seriously injured in a contaminated area, the first priority is to treat the injury.

Other actions include:

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- Contact the RCM or designee.
- Call or have someone call an ambulance.
- Notify the nearest hospital qualified to treat contaminated injuries that a potentially contaminated injured person would soon arrive.

A Radiological Control Technician (RCT) equipped with appropriate survey instruments will accompany the contaminated injured individual to the hospital.

Once at the hospital, the RCT will survey the emergency transport vehicle and paramedic crew. The RCT will support the medical staff treating the patient regarding survey results, accident history, etc.

No contaminated injured individual may return to work without written approval of the attending physician and the RCM.

16.3.3 Medical Facility and Transportation

Arrangements will be made by the PM and/or RCM with the local medical center and emergency response and transportation services to transport, receive, and treat potentially-contaminated injury victims. If requested, training will be provided to the medical center and ambulance transportation organization personnel for the treatment of radioactively contaminated victims.

A listing of emergency contacts and phone numbers will be provided.

16.4 HIGH AIRBORNE RADIOACTIVITY

Particulate radioactivity above the 10NYCRR16, Appendix 16-C limits in occupied radiological areas:

Note: Although high airborne contamination is not expected in Building 401 demolition tasks, this section is included for completeness.

Immediate Action: Notify RCM.

- (1) Evacuate personnel from affected areas. The responsible radiological control person will don appropriate PPE/RPE.
- (2) Verify that the high airborne results (i.e., from air sampling or elevated instrument readings) are correct.
- (3) Stop operations which might be causing high airborne radioactivity until adequate control of airborne radioactivity is established.
- (4) Secure air-moving equipment (e.g., fans, window air conditioners, and unit heaters) in the affected spaces.

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- (5) Determine the extent of the airborne radioactivity by analyzing the affected area and adjacent area portable air samples that were obtained during the event.
- (6) Continue to collect air samples to continue to evaluate the conditions.

16.4.1 Supplementary Action

- (1) Attempt to identify the radionuclide causing the airborne radioactivity (Radium-226, Thorium-230, Uranium-234 and Uranium-238 are the major radiological contaminants on Site).
- (2) Measure and control surface contamination in areas affected by high airborne radioactivity.
- (3) Perform surveys of ventilation filters and ducts and measure surface contamination in the vicinity of the ventilation exhaust discharge point.
- (4) When resuming operations, take a portable air sampler to verify that the cause of high airborne radioactivity is corrected.
- (5) Check personnel exposed to high particulate radioactivity for internal radioactivity.

16.4.2 Follow-up Action

A report of any incident involving high airborne radioactivity, other than natural background, in areas occupied by personnel not wearing or wearing inappropriate respiratory equipment will be submitted to the TES. The report will include results of internal monitoring and will be submitted within ten (10) working days.

16.5 LOSS OF RADIOACTIVE MATERIAL

If radioactive material is lost, the following protocol will be followed:

- TES or TES contractor personnel will immediately conduct a search. The primary reason for this is to assure/ensure that no persons will receive inadvertent internal or external exposure from the material.
- If the material cannot be located before the end of the work day, TES will review the requirements for reports in 10NYCRR16.15 and notify the New York State Department of Health Bureau of Radiation Protection, as appropriate.

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Attachment 1
NY State DOH “Notice to Employees”

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STATE OF NEW YORK
NOTICE TO EMPLOYEES
STANDARDS FOR PROTECTION AGAINST RADIATION



YOUR EMPLOYER'S RESPONSIBILITY

The transfer, receipt, possession or use of all sources of ionizing radiation in the State of New York is controlled by the applicable rules, regulations and orders of either the New York State Department of Health or the New York City Department of Health and Mental Hygiene. These agencies require either the registration or licensing of all significant radiation sources, and they require your employer to post or otherwise make available to you a copy of the applicable regulations, license and registration and the operating procedures applying to the work in which you are engaged and to explain relevant provisions to you. The applicable regulations for this installation are found in Part 16 of the New York State Sanitary Code and Code Rule 38 of the New York State Industrial Code.

INQUIRIES

Inquiries dealing with matters outlined above can be directed to:

Bureau of Environmental Radiation Protection
New York State Department of Health
547 River Street, Room 530
Troy, NY 12180-2216
(518) 402-7550 or (518) 402-7556

YOUR RESPONSIBILITY AS A WORKER

You should familiarize yourself with the provisions of Part 16, Code Rule 38, the license or registration and the operating procedures, which apply to the work in which you are engaged. You should observe these provisions for your own protection and the protection of your co-workers.

WHAT IS COVERED BY THESE REGULATIONS

1. Limits on exposure to radiation and radioactive material in controlled and uncontrolled areas;
2. Measures to be taken after accidental exposure;
3. Personnel monitoring, surveys and equipment;
4. Caution signs, labels and safety interlock equipment;
5. Exposure records and reports; and
6. Related matters.

REPORTS ON YOUR EXPOSURE TO RADIATION

If you work where personnel monitoring equipment is required, your employer is required to provide you, upon request, a written report of your exposure to radiation both annually and at the time that you terminate employment. Your employer to give you a written report if you receive any exposure in excess of the limits set for occupational exposure.

INSPECTIONS

All activities licensed or registered with the regulatory agencies in the State of New York are subject to inspection by representatives from these agencies.

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POSTING REQUIREMENT

Copies of this notice must be posted where employees working in or frequenting any portion of controlled areas can observe a copy on the way to or from their place of employment. Copies of Part 16, Code Rule 38 and other applicable documents, if not posted, are available for review at the following location:

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Attachment 2

List of Procedures Supporting this Radiation Safety Plan

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Procedure Number	Procedure Title
Energy Solutions	
CP-CHM-205	Sample Preparation For Gross Alpha And Gross Beta Analysis
CP-IN-WI-235	Calibration Of The Ludlum Model 2929 Scaler
CS-FO-PR-001	Performance of Radiological Surveys
CS-FO-PR-002	Calibration and Maintenance of Radiological Survey Instruments
CS-FO-PR-003	Soil Surveys; Collection of Water, Sediment, Vegetation, and Soil Samples; and Chain-of-Custody Procedure
CS-FO-PR-004	QA/QC of Portable Radiological Survey Instruments
CS-FO-PR-005	General Operations of Radiological Survey Instruments
CS-RS-PG-002	Respiratory Protection Program
CS-RS-PR-001	Selection and Use of Radiological Protective Clothing
CS-RS-PR-002	Personnel Survey and Decontamination Procedure
CS-RS-PR-004	Radiation Work Permit Procedure
CS-RS-PR-005	Emergency Actions Procedure
CS-RS-PR-006	Unconditional Release of Tools, Equipment and Waste Materials from Projects
CS-RS-PR-008	Airborne Radiation Control Procedure
CS-RS-PR-010	Personnel Monitoring for Exposure
CS-RS-PR-015	Air Sampling and Analysis

The above procedures have been written, reviewed and approved by EnergySolutions. The responsibilities within the procedures vary slightly from those listed in this plan. Within the procedures, the following personnel are called out and for this project the equivalent positions are described below:

- Project Health Physicist (PHP) is offsite support provided by a Certified Health Physicist for this project.
- Radiation Protection Supervisor (RPS) is the RCM (as described in this plan)
- Radiation Safety Officer (RSO) is the Certified Health Physicist providing support for this project.