TETRA TECH EC, INC.

Final Site Health and Safety Plan (HASP)

November 2008

Fox River

Cleanup Group

Jim Hahnenberg

CONTROLLED DOCUMENT FORM

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FINAL

SITE HEALTH AND SAFETY PLAN

PHASE 2B

For the

IMPLEMENTATION OF THE REMEDIAL ACTION
2009 and beyond Remedial Activities

At the

LOWER FOX RIVER
OPERABLE UNITS 2 THROUGH 5

In

Brown, Outagamie, and Winnebago Counties, Wisconsin

Prepared for:
Appleton Papers Inc.
Georgia-Pacific Consumer Products LP
NCR Corporation

For Submittal to:
Wisconsin Department of Natural Resources
U.S. Environmental Protection Agency

Prepared by

Tetra Tech EC, Inc.
Anchor Environmental
J. F. Brennan
Boskalis Dolman

November 2008

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SITE SPECIFIC HEALTH AND SAFETY PLAN

Site:	**Lower Fox River, Operable Units 2 through 5**
Location:	**Brown, Outagamie, and Winnebago Counties, Wisconsin**
Prepared By:	**Tetra Tech EC, Inc.**
Date Prepared:	**November 2008**
Project Description:	**Phase 2B – 2009 and beyond Site Activities**

TETRA TECH EC, INC., TETRA TECH SUBCONTRACTORS, AND TETRA TECH'S CLIENT DO NOT GUARANTEE THE HEALTH OR SAFETY OF ANY PERSON ENTERING THIS SITE. DUE TO THE NATURE OF THIS SITE AND THE ACTIVITY OCCURRING THEREON, IT IS NOT POSSIBLE TO DISCOVER, EVALUATE, AND PROVIDE PROTECTION FOR ALL POSSIBLE HAZARDS WHICH MAY BE ENCOUNTERED. STRICT ADHERENCE TO THE HEALTH AND SAFETY GUIDELINES SET FORTH HEREIN WILL REDUCE, BUT NOT ELIMINATE, THE POTENTIAL FOR INJURY AT THIS SITE. THE HEALTH AND SAFETY GUIDELINES IN THIS PLAN WERE PREPARED SPECIFICALLY FOR THIS SITE AND SHOULD NOT BE USED ON ANY OTHER SITE WITHOUT PRIOR RESEARCH AND EVALUATION BY TRAINED HEALTH AND SAFETY SPECIALISTS.

APPROVALS

By their signature, the undersigned hereby certify that this Site Specific Health and Safety Plan has been reviewed and approved for use at the Lower Fox River, OUs 2-5 for the 2009 and beyond activities.

Donald Ray Mangrum Project Manager	Date
Grey Coppi, C.I.H. Project Environmental and Safety Manager	Date
Mike Estess Construction Manager	Date
William Welch Environmental Safety Supervisor	Date

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Donald Ray Mangrum — Date: 11/08
Project Manager

Grey Coppi, C.I.H. — Date: 11/08
Project Environmental and Safety Manager

Mike Estess — Date: 11/08
Construction Manager

William Welch — Date: 11/08
Environmental Safety Supervisor

1.0 INTRODUCTION

1.1 PURPOSE

This Site Health and Safety Plan (SHSP) addresses the health and safety practices that will be employed by all site workers participating in the Phase 2B remedial activities (i.e., 2009 and beyond) at the Lower Fox River, Operable Units (OUs) 2 through 5 as identified by the Records of Decision (RODs). The health and safety practices for the 2008 remedial activities are addressed in the Phase 2A SHSP. The RA activities are in response to the two Records of Decision (RODs) (December 2002 and June 30, 2003) and Record of Decision Amendment (June 26, 2007) issued by the U.S. Environmental Protection Agency (EPA) and the Wisconsin Department of Natural Resources (WDNR). The Phase 2B SHSP is also a requirement of the Administrative Order for the Remedial Action of the Lower Fox River and Green Bay for submittal to U.S. EPA and WDNR. The Administrative Order requires that the Plan be designed to protect on-site personnel and area residents from physical, chemical, and all other hazards posed by activities conducted as part of the Phase 2B Work and that the Phase 2B Work be performed in accordance with the approved Phase 2B SHSP. In addition, Section 10.0 of this SHSP includes the Emergency Response and Contingency Plan for the Phase 2B activities as required by the Administrative Order. This section of the SHSP addresses the Contingency Plan procedures for the Phase 2B activities and the requirements of the Contingency Plan as laid out in the Unilateral Administrative Order.

The SHSP takes into account the hazards inherent to the planned construction/marine activities. This SHSP also presents procedures to be followed by Tetra Tech EC, Inc. (TtEC), its subcontractors, and all other on-site personnel in order to avoid and, if necessary, protect against health and/or safety hazards. This document is to be used in conjunction with the Work Plans and will be supplemented with Site Specific Health and Safety Plans developed for each phase of the RA.

Activities performed under this SHSP will comply with applicable parts of Occupational Safety and Health Administration (OSHA) Regulations, primarily 29 CFR Parts 1910 and 1926, and TtEC's Environmental Health and Safety (EHS) Program. In addition, since the majority of site activities are being performed on or adjacent to water, they must also comply with 29 CFR 1917 Marine Terminals and the US Coast Guard Regulations. Many programs from the EHS Program are referenced in this SHSP and are included in the appendices. Modifications to the SHSP may be made with the approval of the Project Environmental and Safety Manager (PESM) for this project using the Field Change Request Form found in Appendix A.

1.2 SITE DESCRIPTION

The project study area includes the Lower Fox River and Green Bay aquatic systems. Approximately 270,000 people live in the communities along the river. The Lower Fox River is located in northeastern Wisconsin within the eastern ridges and lowlands of the state. The Lower Fox River is defined as the 39-mile portion of the Fox River, beginning at the outlet of Lake Winnebago and terminating at the mouth of the river into Green Bay, Lake Michigan. The river flows north and drains approximately 6,330 square miles, making it a primary tributary to Green Bay and a part of the Great Lakes system. Green Bay is a freshwater system approximately 120 miles long which drains into Lake Michigan, and is located on the state border between

Wisconsin and Michigan along a northeast- to southwest-trending axis. The bay portion of the site includes all of Green Bay from the city of Green Bay to the point where Green Bay enters Lake Michigan. The site has been divided into five discrete operable units (OUs) by the Wisconsin Department of Natural Resources (WDNR) and the United States Environmental Protection Agency (U.S. EPA). The river and the bay operable units are:

- OU1 – Little Lake Butte des Morts
- OU 2 – Appleton to Little Rapids
- OU 3 – Little Rapids to De Pere
- OU 4 – De Pere to Green Bay
- OU 5 – Green Bay

The river has 12 dams and includes the highest concentration of pulp and paper mills in the world. During the 1950s and 1960s, these mills routinely used PCBs in their operations which ultimately contaminated the river.

1.3 SITE BACKGROUND

Historic discharges of PCBs from municipal, industrial, and agricultural sources in the Lower Fox River region have contaminated sediment and water quality in the Lower Fox River. Contaminated sediments acting as "sinks" for PCBs and other contaminants are also subject to physical and chemical processes that affect the overlying water column and adjoining water bodies in natural (uncontrolled) environments. For example, PCBs from sediment in the Lower Fox River are discharged into Green Bay at the mouth of the river through sediment transport and PCB dissolution in the water column.

1.4 SCOPE

This SHSP has been developed to address health and safety concerns when implementing the 2009 and beyond activities at the Lower Fox River. This SHSP and a copy of the work plan will be available onsite for review and reference during the entire course of each project. The majority of the activities that will be performed in 2009 and beyond include full-scale dredging operations of both TSCA and non-TSCA materials, sediment capping and cover material placement, dewatering operations, wastewater treatment plant operations, sheet pile installation (potential) and transportation and disposal (T&D) of dewatered sediments. In addition, the remaining equipment for the dewatering and water treatment facilities not installed in 2008 will be installed during the first part of 2009.

1.5 APPLICATION

The SHSP applies to all personnel involved in site tasks who wish to gain access to active work areas, including but not limited to:

- Client representatives.
- Federal, state or local representatives.
- TtEC employees and subcontractors.
- Other project visitors.

1.6 SUMMARY OF MAJOR RISKS

- Work on/ and around water.
- Heavy equipment hazards.
- Slips, Trips, and Falls.
- Exposure to PCBs.

1.7 ZERO INCIDENT PERFORMANCE

Zero Incident Performance (ZIP) describes our approach and expectations for both safety and project execution. We will achieve this level of performance excellence through teamwork and partnering with our client and our Subcontractors, and through the participation of every person on this project.

We (TtEC and our client) believe that:

- All incidents are preventable through proper planning, tasking, and execution of plans as written.
- Any goal besides *Zero Incident Performance* is unacceptable and sends the message that incidents cannot be prevented and that losses are tolerated. Incidents are defined as OSHA recordables, property damage cases, fires, explosions, spills or releases to the environment and safety-related work stoppages. In addition, an incident includes an event which could have resulted in one of these outcomes had the circumstances been different ("near miss").
- Active participation by all personnel is required to achieve *Zero Incident Performance.* This includes TtEC, the client, and all Subcontractor personnel.
- Each person on this project is individually responsible and accountable for their safety performance.
- If <u>any</u> incident does occur, it must be reported and investigated to identify root causes, take corrective actions, and communicate the lessons learned.

All TtEC and Subcontractor personnel will sign a *ZIP* pledge poster affirming their belief in and commitment to *ZIP*. The *ZIP* Banner will be posted conspicuously at the project site and the hours worked without a loss time incident will also be posted. The TtEC EHS will continually evaluate planning and project execution to ensure that *ZIP* is embedded in the work process. In addition, awareness programs are utilized to assist in implementation of our *ZIP* initiative.

A Subcontractor, after award of a contract, shall be required to attend a pre-construction Health and Safety Orientation meeting. This meeting will involve the Subcontractor's key personnel, and will cover such items as *ZIP* expectations and the Employee Participation Program (EPP),

2.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

This section outlines the TtEC Project Organization and responsibilities for the site activities.

2.1 PROJECT MANAGER (PM)

The Project Manager is Mr. Ray Mangrum for the implementation of the 2009 and beyond activities. It is the responsibility of the Project Manager to:

- Provide the major point of control to ensure that the program's technical, financial and scheduling objectives are achieved.
- Coordinate problem resolution/corrective action implementation.
- Ensure implementation of this program through coordination with the responsible Project Environmental and Safety Manager (PESM).
- Conduct periodic inspections.
- Participate in all incident investigations.
- Ensure the SHSP has all of the required approvals before any site work is conducted.
- Ensure that the PESM or Environmental and Safety Supervisor (ESS) is informed of project changes which require modifications of the SHSP.
- Have overall project responsibility for Project Health and Safety.

2.2 CONSTRUCTION MANAGER (CM)

The Construction Manager is Mr. Mike Estess for the implementation of the 2009 and beyond activities. It is the responsibility of the CM to:

- Lead the day-to-day activities at the site, including team management, field operations, and report development.
- Ensure that the SHSP is implemented in conjunction with the designated PESM and ESS.
- Ensure that field work is scheduled with adequate personnel and equipment resources to complete the job safely.
- Ensure that adequate communication between field crews and emergency response personnel is maintained.
- Ensure that field site personnel are adequately trained and qualified to work at the site.
- Enforce site health and safety rules.
- Investigates all incidents.
- Assist in conducting and documenting daily safety briefings.
- Conduct weekly site inspections.
- Act as the alternate Emergency Coordinator.

2.3 PROJECT ENVIRONMENTAL AND SAFETY MANAGER (PESM)

The PESM is a senior Health & Safety staff member with experience in hazardous and non-hazardous waste site investigations, remediation, mitigation, and construction activities. The

PESM for TtEC for the 2009 and beyond activities is Mr. Grey Coppi, CIH. Mr. Coppi's responsibilities include the following:

- Provide for the development and approval of the SHSP.
- Serve as the primary contact to review health and safety matters that may arise.
- Approve revised or new safety protocols for field operations.
- Approve individuals who are assigned Environmental and Safety Supervisor (ESS) responsibilities.
- Approve ESS to fulfill other project roles.
- Coordinate revisions of this SHSP with field personnel.
- Coordinate upgrading or downgrading of personal protective equipment with the ESS.
- Assist in the investigation of all accidents.
- Conduct quarterly inspections for compliance with the SHSP and safety elements of the Construction Management Plan.

2.4 ENVIRONMENTAL AND SAFETY SUPERVISOR (ESS)

The ESS is a person knowledgeable in appropriate safety and health regulations with at least one year of experience or specialized training in serving in a health and safety (H&S) staff role on hazardous waste or non-hazardous sites. The ESS is Mr. Bill Welch for the 2009 and beyond activities. The ESS has the following responsibilities:

- Works as a member of the project team to ensure implementation of the SHSP.
- Ensures that all health and safety activities identified in the SHSP are conducted and/or implemented.
- Identifies operational changes which require modifications to health and safety procedures and the site safety plan, and ensures that the procedure modifications are implemented and documented through changes to the SHSP.
- Directs and coordinates health and safety monitoring activities.
- Ensures that proper personal protective equipment is utilized by field teams.
- Assists in conducting and documenting daily safety briefings.
- Monitors compliance with this SHSP.
- Notifies PESM of all incidents.
- Coordinates with the Project Manager in any incident investigation.
- Maintains Incident Report Forms.
- Determines upgrade or downgrade of personal protective equipment (PPE) based on site conditions.
- Reports to PESM to provide summaries of field operations and progress.
- Acts as the Emergency Coordinator.
- Maintains health and safety field log books.
- Displays/maintains postings and handbooks such as:
    - OSHA Job Safety and Health Poster.
    - OSHA Noise Regulation.

- Department of Labor Postings (Minimum wage, fair labor standards).
- Hazard Warning Signs.
- Noise Hazard Warning Sign.
- Do It Right Poster.
- Client Service Quality (CSQ) Poster.
- TtEC Shared Vision.
- TtEC Mission Statement.
- TtEC Hot Line Poster.
- TtEC Work Rules.
- TtEC Environmental Safety Quality (ESQ) Policy Poster.
- Zero Incident Performance (ZIP) Bulletins.
- Flash reports.
- Emergency telephone numbers.
- Diagrams showing the location of fire extinguishers and emergency equipment.
- Emergency exit, evacuation routes and staging area.
- Project Rules Handbook.

2.5 SITE PERSONNEL

Site personnel include all other persons entering the site for the purpose of assisting in the completion of the project. This includes but is not limited to client representatives, subcontractors, regulatory personnel, and site workers. It is the responsibility of all site personnel to:

- Report any unsafe or potentially hazardous conditions to the ESS and/or CM.
- Maintain knowledge of the information, instructions and emergency response actions contained in the SHSP.
- Comply with rules, regulations and procedures as set forth in this SHSP and any revisions.
- Prevent admittance to work sites by unauthorized personnel.
- Inspect all tools and equipment daily, including PPE, prior to use.

3.0 POTENTIAL HAZARDS OF THE SITE

This section presents an assessment of the chemical, biological, and physical hazards that may be encountered during the site activities at the Lower Fox River project.

3.1 CHEMICAL HAZARDS

3.1.1 On-site Chemicals

Activities will be performed on and around the Lower Fox River whose sediments are known to be contaminated with PCBs some areas with concentrations greater than 50 ppm. Worker exposure to PCBs would occur primarily through physical contact, ingestion, or inhalation of contaminated sediments. Potential worker exposure will be primarily during the dewatering operations and transportation and disposal (T&D) activities. There is minimal to no contact using proposed methods to dredge contaminated sediments and therefore worker exposure to PCBs is not considered a risk during dredging. For activities (i.e., dewatering operations and T&D) where exposure through inhalation is expected to be of concern, air monitoring procedures have been established in Section 6.0. Public protection during these activities is addressed in the *Community Health and Safety Plan.* In general, standard safe work practices, good hygiene, and proper PPE will minimize if not eliminate exposure to PCBs via physical contact or ingestion.

Table 3-1 lists the OSHA and/or the American Conference of Governmental Industrial Hygienists (ACGIH) worker exposure limits for PCBs. Also listed are significant physical and chemical data and symptoms of exposure. In addition, potential chemicals brought on-site may pose a potential exposure hazard to site workers. Material Safety Data Sheets will be made available to site personnel for all chemicals brought on-site and the SHSP will be amended as appropriate.

3.1.2 Fuel

Any fuel stored onsite must meet TtEC's Procedure for Hazardous Material Storage and Transportation (EHS 3-7). Only UL approved metal flammable liquid storage containers will be used at the project site with the exception of outboard motor gas which will be in approved plastic gas tanks. All fuel storage containers will be labeled properly (i.e., Flammable and Diesel/Gasoline) in accordance with NFPA. Bulk storage containers will be stored in secondary containment that meets 110% of the largest container or double wall storage tanks may be used instead of secondary containment. A properly rated fire extinguisher will be located adjacent to the fuel storage facility. The tank and containment will be inspected regularly (i.e., during the weekly EHS Inspections or monthly if double walled tanks are used) to verify that it is in good condition and that rainwater is emptied from the containment area. MSDSs for onsite fuels will be made available to all site personnel. When refueling, personnel will place a drip pan or spill pads underneath the pump to catch any spillage or overflow.

Site Specific Health and Safety Plan
Phase 2B
Lower Fox River (OUs 2-5)
Table 3-1
Chemical Data

Chemical CAS No.	ACGIH TLV	OSHA PEL	OSHA IDLH	Routes of Exposure	Symptoms of Exposure	Target Organs	Physical Data
Polychlorinated Biphenyls[1] (as Aroclor 1242) 53469-21-9	1 mg/m^3	1 mg/m^3	5 mg/m^3	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, chloracne; liver damage; reproductive effects; [potential occupational carcinogen]	Skin, eyes, liver, reproductive system	BP: 617-691°F Sp. Gr: 1.39 Insoluble Solid
Polychlorinated Biphenyls[1] (as Aroclor 1254) 11097-69-1	0.5 mg/m^3	0.5 mg/m^3	5 mg/m^3	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, chloracne; liver damage; reproductive effects; [potential occupational carcinogen]	Skin, eyes, liver, reproductive system	BP: 689-734°F Sp. Gr: 1.38 Insoluble Solid

[1]PCBs in the Fox River are not in the pure state, but are "mixed in" with paper residuals. Sediments are contaminated with up to 3000 ppm concentrations of PCBs.

3.2 BIOLOGICAL HAZARDS

3.2.1 Insects and Other Arthropods

Insects, including bees, wasps, hornets, and spiders may be present at this site making the chance of a bite or sting possible. Although some of the insects or other arthropods may not be common in the area, care must be taken on equipment that is brought in from other parts of the country. Some individuals may have a severe allergic reaction to an insect bite or sting that can result in a life threatening condition.

3.2.1.1 Insects

The ESS will instruct the field crew in the recognition and procedures for encountering poisonous insects at the site. Additionally, any individuals who have been bitten or stung by an insect will notify the ESS. The following is a list of preventive measures:

- Apply insect repellent prior to fieldwork and as often as needed throughout the work shift. Apply DEET (vapor-active repellent) to any exposed skin surface (except eyes and lips), and apply the permethrin repellent spray to field clothing. Note: Allow the permethrin to dry before using the treated clothing.
- Wear proper protective clothing (work boots, socks and pants).
- Field personnel who may have insect allergies will provide this information to the ESS prior to commencing work, and shall have allergy medication on site.

Mild insect bites should be treated by applying a baking soda paste or ice wrapped in a wet cloth. Bee stingers should be gently scraped off the skin, working from the side of the stinger. The suction device in commercially available snakebite kits can also be used to remove the stinger. If insect bites become red or inflamed or symptoms such as nausea, dizziness, shortness of breath, etc., appear, medical care will be sought. Immediate care is needed if a person is allergic to insect bites/stings. If an allergic person receives a spider bite or insect bite/sting, seek immediate medical attention, keep the victim calm, and check vital signs frequently. Rescue breathing should be given if necessary to supply oxygen to the victim.

3.2.1.2 Spiders

Various spiders may be encountered at Lower Fox River, however, only one spider in the area is poisonous –the Black Widow. The Black Widow spider varies from dark brown to black in color. Its body is ¼ inch wide and overall size is 1-½ inches with legs extended. Only the female is poisonous and can be determined by the red or yellow hourglass marking the underside of the abdomen. The victim will experience the following if a Black Widow spider has bitten them:

- The spider's bite will feel like a sharp pinprick or may not even be noticed at all. In 15 minutes or less, the person will feel a dull numbing pain in the bitten area. A faint red bite mark appears.
- **Black Widow** - If the bite is in the lower part of the body or legs, the victim will have muscle stiffness or cramps in their abdomen. If the bite is on the upper body or arms, the victim will have muscle stiffness or cramps affecting the shoulders, back, or chest. Additionally, the victim may experience headache, chills, fever, heavy sweating, dizziness, nausea, vomiting, and severe abdominal pain.

First aid procedures for a Black Widow bite are as follows:

- Clean the bitten area with soap and water or rubbing alcohol. Do not apply a constricting band because the black widow venom's action is swift; there is little to be gained by trying to slow absorption with a constriction band.
- To relieve pain, place an ice pack over the bite.
- Keep the victim quiet and monitor breathing.
- Seek immediate medical attention.
- If possible, catch the spider to confirm its identity, even if the body is crushed.

3.2.1.3 Ticks

Both Lyme Disease and Rocky Mountain Spotted Fever (RMSF) are caused by bites from infected ticks that are common in and near wooded areas, tall grass, and brush. Ticks are small, ranging from the size of a comma up to about one-quarter inch. When embedded into the skin, they may resemble a small freckle. Tick season extends from spring through summer, but may extend year-round in areas without significant cold weather.

3.2.1.3.1 Lyme Disease

Lyme disease is caused by infection from a deer and lone star ticks that carries a spirochete. Deer ticks range in size from approximately one-eighth inch to one-quarter inch and can be black or brick red in color. Lone star ticks are larger and chestnut brown in color. During the painless tick bite, the spirochete may be transmitted into the bloodstream, which could lead to the worker contracting Lyme disease. Lyme disease may cause a variety of medical conditions including arthritis, which can be treated successfully if the symptoms are recognized early and medical attention is received. Treatment with antibodies has been successful in preventing more serious symptoms from developing. The effects of the disease vary from person to person, which often makes it difficult to diagnose. Typically, the incubation period ranges from two days to two weeks. Early signs may include a flu-like illness, an expanding skin rash and joint pain. If left untreated, Lyme disease can cause serious nerve or heart problems as well as a disabling type of arthritis.

Symptoms can include a stiff neck, chills, fever, sore throat, headache, fatigue and joint pain. This flu-like illness is out of season, commonly happening between May and October when ticks are most active. A large expanding skin rash usually develops around the area of the bite. More than one rash may occur. The rash may feel hot to the touch and may be painful. Rashes vary in size, shape, and color, but often look like a red ring with a clear center. The outer edges expand in size. It is easy to miss the rash and the connection between the rash and a tick bite. The rash develops from three days to as long as a month after the tick bite. Almost one third of those with Lyme disease never get the rash. Joint or muscle pain may be an early sign of Lyme disease. These aches and pains may be easy to confuse with the pain that comes with other types of arthritis. However, unlike many other types of arthritis, this pain seems to move or travel from joint to joint.

Lyme disease can affect the nervous system. Symptoms include stiff neck, severe headache, and fatigue usually linked to meningitis. Symptoms may also include pain and drooping of the muscles on the face, called Bell's Palsy. Lyme disease may also mimic symptoms of multiple sclerosis or other types of paralysis. Lyme disease can also cause serious but reversible heart problems, such as irregular heartbeat. Finally, Lyme disease can result in a disabling, chronic

type of arthritis that most often affects the knees. Treatment is more difficult and less successful in later stages. Often, the effects of Lyme disease may be confused with other medical problems.

3.2.1.3.2 Rocky Mountain Spotted Fever

RMSF is an infection caused by rickettsia bacteria carried by the dog tick in the eastern United States and by the wood tick in the Rocky Mountain states. The lone star tick is also, though rarely, a carrier in the West. It is not as likely that personnel working at the Lower Fox River site will contract RMSF, however information on RMSF has been included as a precautionary measure. The signs and symptoms of RMSF may follow within 1-14 days of a tick bite. But in many cases, someone who develops the infection does not remember being bitten by a tick. Symptoms of RMSF usually begin suddenly. There is a high fever, often 103 °F (39 °C) to 105 °F (40 °C); chills; muscle aches; and a severe headache that may center around the forehead area. Eyes may become red, muscles may be tender to the touch, and there may be generalized body swelling.

The rash may begin anytime between 1-10 days after the fever and headache start, but it most often appears on the third to fifth day. The rash looks like small red spots or blotches that begin on the wrists, ankles, palms and soles. It spreads up the arms and legs toward the trunk, but often spares the face. As the infection progresses, the original red spots may change in appearance to look more like bruises or bloody patches under the skin. Rarely, RMSF may cause either mild symptoms or no symptoms at all. Usually it causes a moderate to severe illness that can damage the liver, kidneys, and lungs.

3.2.1.3.3 Prevention

Control measures to prevent contracting Lyme Disease and RMSF include:

- Avoid dense or high brush, when possible.
- Wear light colored clothing.
- Spray DEET on your skin and Permethrin on clothing and work boots.
- Tuck pant legs into socks and shirts into gloves, if possible.
- Self/Buddy check of neck, hairline, groin, and body after working in areas that may contain deer ticks. Shower immediately after returning home from the job site.

If a tick is found biting an individual, the ESS will be contacted immediately. The tick can be removed by grasping the tick with tweezers as close to the skin as possible, and pulling gently or using a tick removal system (e.g., Pro-Tick, www.scs-mall.com/store/). The affected area should then be disinfected with alcohol or similar antiseptic. If personnel feel sick or have signs similar to those above, they will notify the ESS immediately. Additionally, employees finding engorged ticks on their body will be given a medical examination.

3.2.2 Snake Bites

There are only two species of poisonous snakes living in the wilds of Wisconsin. These are the timber rattlesnake and the massasauga (erroneously called "pygmy rattler"). Only the massasuga may potentially be encountered at the project site. Pictures are provided in Appendix B. However, the following precautions should be used when working in areas potentially containing snakes:

- Wear appropriate protective equipment (e.g., work boots, snake chaps, etc.).
- Be alert and aware of your surroundings.
- Avoid walking in wooded areas, rock piles, stacks of old boards, heavy brush or tall grass if possible.
- Never handle a "dead snake," they may not be completely dead and can bite due to reflex action.
- If a snake is encountered, do not attempt to catch or kill it. This is a major safety violation and grounds for dismissal from the site.

Immediately following a snake bite:

- Try to safely and quickly identify the species of snake if practical. DO NOT TRY TO CATCH OR KILL THE SNAKE. Move victim to safety. Try to keep the victim calm and comfortable. The victim's condition is assisted with an observation that calm and competent assistance is being firmly applied.
- Remove any jewelry or tight fitting clothing. Quickly tie a light-restricting band both above and below the bite area a few inches away from the puncture/bite marks. Immobilize the bitten area and keep it lower than the heart.
- Without cutting, apply strong suction using a commercial bite kit, preferably within seconds of the bite, directly on the main or deepest puncture/bite marks. Time is critical, as any venom present will become destructive very quickly.
- Apply antiseptic cleanser to the entire area and place a cold compress as close as possible to the wound without interfering with the suction process.
- Continue strong suction and alternate the location of compress to avoid injury from severe cold.
- Check constriction bands periodically as swelling may occur and loosen as appropriate.
- Monitor for symptoms of shock and be prepared to administer appropriate treatment. At any sign of major stress, shock or unusual/unexplained discomfort, check for the need to apply other first aid techniques – elevate legs from lying down position, keep warm, etc.
- Do not administer alcohol or cause additional stress to victim. Avoid food or liquid intake.
- Keep victim warm and immobilize as practical. Movement to proper treatment facility is more crucial than maintaining immobile status. Maintain above treatment functions throughout.
- Transport safely at the earliest possible time to competent medical service. Ideally, all of the above steps can be administered concurrently with transport phase.

3.2.3 Wild Animals

Wild animals (e.g. skunks, wild turkey, pheasant, snakes) present hazards to site personnel due to their potential to carry diseases (e.g. rabies) and inflict physical injuries. The following rules shall be followed when animals are present:

- Sighted animals will not be approached.
- When an animal is sighted, it should be avoided. A minimal level of disturbance should be employed.

- If the animal appears to behave strangely or aggressively, personnel will leave the area.
- At no time will personnel attempt to feed indigenous wildlife.

Workers shall use discretion and avoid all contact with wild animals. If these animals present a problem, the PESM will be notified and will develop a plan to alleviate the problem.

3.2.4 Poisonous Plants

The potential for contact with poisonous plants (i.e., poison ivy, poison oak, and poison sumac) exists when performing fieldwork in undeveloped and wooded areas. Poison ivy can be found as vines on tree trunks or as upright bushes. Poison ivy consists of three leaflets with notched edges. Two leaflets form a pair on opposite sides of the stalk, and the third leaflet stands by itself at the tip. Poison ivy is red in the early spring and turns shiny green later in the spring. Poison ivy has white berries and red or yellow foliage in the fall of the year. Additional information on Poison ivy is provided in Appendix B. Poison sumac can be present in the form of a flat-topped shrub or tree. It has fern-like leaves, which are velvety dark green on top and pale underneath. The branches of immature trees have a velvety "down". Poison sumac has white, hairy berry clusters.

Contact with poison ivy may lead to a skin rash in susceptible individuals. A rash results from a toxin found in the sap that is extruded from the leaves and contained in the stems and roots. The rash is characterized by reddened, itchy, blistering skin that needs first aid treatment. If you believe you have contacted one of these plants, immediately wash skin thoroughly with soap and water, taking care not to touch your face or other body parts.

Avoidance of plant/sap contact is the only effective means of preventing the poisoning. A person experiencing symptoms of poisoning should remove contaminated clothing; wash all exposed areas thoroughly with soap and water, taking care not to touch your face or other body parts. Apply calamine or other poison ivy lotion if the rash is mild. Seek medical advice if a severe reaction occurs, or if there is a known history of previous sensitivity. Employees will be trained in the identification of these species and will be advised to wear protective clothing such as gloves and long sleeve shirts when working conditions permit. Employees should also consider applying barrier lotions (e.g. Ivy Block) to skin that has the potential to contact these species. Clorox Wipes, Dawn liquid soap and Technu can be used to decontaminate skin and reusable clothing to prevent exposure to poison ivy. Gloves should be worn when removing and decontaminating clothing potentially exposed to poison ivy.

3.2.5 Bloodborne Pathogens

Bloodborne pathogens enter the human body and blood circulation system through punctures, cuts or abrasions of the skin or mucous membranes. They are not transmitted through ingestion (swallowing), through the lungs (breathing), or by contact with whole, healthy skin. However, under the principle of universal precautions all blood should be considered infectious, and all skin and mucous membranes should be considered to have possible points of entry for pathogens.

There are a number of infections that are transmitted by insects and arthropods where the infection cycle includes the human blood system. Examples include malaria and Lyme disease, which are transmitted by mosquitoes and ticks, respectively. These diseases are serious, and the possibility for infection should be considered. However, these diseases cannot be transmitted through personal contact with human blood, and are not covered by the OSHA *Bloodborne Pathogen Standard.* Potential bloodborne pathogen exposure include:

- Medical emergency response operations such as administering First Aid or cardiopulmonary resuscitation (CPR).
- Contact with human wastes such as domestic sewage.

Two primary bloodborne pathogens include Hepatitis B and Acquired Immune Deficiency Syndrome (AIDS).

To reduce the risk of contracting a bloodborne pathogen, take the following precautions:

- Avoid contact with blood and other bodily fluids.
- Use protective equipment when giving First Aid/CPR, such as disposable gloves and breathing barriers.
- Thoroughly wash your hands with soap and water immediately after giving care.

When cleaning up blood or other bodily fluids:

- Clean up the spill immediately or as soon as possible after the spill occurs.
- Use disposable gloves and other PPE when cleaning spills.
- Wipe up the spill with paper towels or other absorbent materials.
- After the area has been wiped up, flood the area with a solution of ¼ cup of liquid chlorine bleach to 1 gallon of fresh water and allow it to stand for at least 20 minutes.
- Dispose of the contaminated material used to clean up the spill in a labeled biohazard container.

The ESS should be notified of any potential contact with blood or bodily fluids resulting from first aid or CPR administered on the job.

3.3 PHYSICAL HAZARDS

Safety hazards specific to the 2008-2009 activities will be addressed in the Activity Hazard Analyses (AHA) in Appendix C. In addition to the AHAs, general work rules and other safety procedures are described in Section 9.1 of this SHSP.

3.3.1 Heavy Equipment Operations and Traffic Control Activities

The work activities planned for this project may present physical hazards that are inherent to working around heavy equipment (e.g., potential for "struck by," "caught between," noise). Working with and near heavy equipment poses many potential hazards that can result in serious physical harm.

The following precautions will be taken to help prevent injuries and accidents.

- Prior to the start of on-site equipment operations, all personnel will be briefed on the potential hazards posed by these operations.

- Brakes, hydraulic lines, light signals, fire extinguishers, fluid levels, steering, tires, horn, and other safety devices will be checked and maintained in good working order throughout the duration of field activities. Heavy Equipment Inspection Forms are provided in Appendix D.
- While equipment is in operation, all personnel not directly required in the area will keep a safe distance.
- Personnel directly involved in the activity will avoid moving in the path of operating equipment. Areas blinded from the operator's vision will be avoided. Spotters will be used when personnel may be in areas where the operator's view is obstructed.
- Additional riders will not be allowed on equipment unless it is specifically designed for that purpose and has seats with seat belts.
- Personnel needing to enter the heavy equipment exclusion zone will get the attention (make eye contact) of the operator and signal their intentions. The operator will secure the equipment (e.g., bucket grounded) and motion to the personnel desiring entrance. At that point, entrance is authorized.
- Construction and heavy equipment will be provided with the necessary safety equipment including seat belts, roll-over protection, overhead protection, emergency shut-off during roll-over, backup warning lights, and audible alarms.
- Blades and buckets will be lowered to the ground and parking brakes will be set before shutting off any heavy equipment or vehicle.
- The heavy equipment operator will perform checks and document inspections at the beginning of each shift to assure that parts, equipment, and accessories are in safe operating condition and free of apparent damage that could cause failure while in use.
- The immediate area of the heavy equipment activities should be checked for any electrical wires. A minimum safe distance of 10 feet shall be maintained from power lines rated 50 kV or less. The minimum safe distance may be calculated as follows: minimum safe distance = 10 ft + 0.4 in for each 1 kV of lines rated over 50 kV or twice the length of the line insulator (but never less than 10 feet).
- Speed limit signs will be posted along truck routes. Where possible one-way traffic routes will be established.
- Field support vehicles will be equipped with a first-aid kit and appropriate fire extinguisher.
- Heavy equipment operators must be trained and qualified in the operation of the equipment.

If any unauthorized individual does enter the construction area, work shall cease until the person has been escorted out of the area.

3.3.2 Cranes

Cranes may be used during the installation of the dewatering and water treatment equipment and the sheet piles. Crane lifts will be in accordance with OSHA and TtEC Procedure CP-13 Critical Lifts. The following start-up inspection will be conducted:

- All control mechanisms for maladjustment that could interfere with proper operation.

- All control mechanisms for excessive wear of components and contamination by lubricants or other foreign matter.
- All operator aids, motion and load limiting devices, and other safety devices for malfunction and inaccuracy of settings.
- All chords and lacing.
- All hydraulic and pneumatic systems – with particular emphasis given to those which flex in normal operation of the crane.
- Hooks and lattices for deformation, chemical damage, cracks, and wear.
- Rope for proper spooling onto the drum(s) and sheave(s) and rope reeving for compliance with crane manufacturer's specifications.
- Electrical apparatus for malfunctioning, signs of excessive deterioration, dirt, and moisture accumulation.
- Hydraulic system for proper oil level.
- Tires for recommended inflation pressure (mobile cranes).
- Wedges and supports for looseness or dislocation (climbing tower cranes).
- Braces and guys supporting crane masts.
- Anchor bolt base connections for looseness or loss of reload (tower cranes and derricks).
- Derrick mast fittings and connections for compliance with manufacturer's recommendations.

Prior to use of a crane at the site a Critical Lift Plan will be prepared, if required. This plan will specify the exact size and weight of the load to be lifted and all crane and rigging components that add to the weight. The manufacturer's maximum load limits for the entire range of the lift, as listed in the load charts, will also be specified. Additionally, if the crane is set on a barge (i.e., on the water) list should also be taken into account. The plan will specify the lift geometry and procedures, including the crane position, height of the lift, the load radius, and the boom length and angle for the entire lift range. The crane operator, lift supervisor, and rigger will be designated in the plan and their qualifications stated.

The critical lift plan will include a rigging plan that shows the lift points and describes rigging procedures and hardware requirements. The plan will describe the ground conditions, outrigger or crawler track requirements and, if necessary, the design of mats to achieve a level, stable foundation of sufficient bearing capacity for the lift. For lifting cranes or derricks, the plan will describe the operating base (platform) condition. Environmental conditions under which lift operations will be stopped will be listed in the plan. Coordination and communication requirements for the lift operations will also be specified. For tandem or tailing crane lifts, the plan will specify the make and model of the cranes, the line, boom, and swing speeds as well as requirements for an equalizer beam.

Three overhead gantry cranes will be used to process sediments in the dewatering facility. In addition the procedures above, OSHA's procedures for overhead and gantry cranes (29 CFR 1910.179) will be followed:

- All new overhead and gantry cranes constructed and installed on or after August 31, 1971, shall meet the design specifications of the American National Standard Safety Code for Overhead and Gantry Cranes, ANSI B30.2.0-1967.

- Cranes may be modified and rerated provided such modifications and the supporting structure are checked thoroughly for the new rated load by a qualified engineer or the equipment manufacturer.
- Outdoor storage bridges shall be provided with automatic rail clamps. A wind-indicating device shall be provided which will give a visible or audible alarm to the bridge operator at a predetermined wind velocity. If the clamps act on the rail heads, any beads or weld flash on the rail heads shall be ground off.
- Rated load marking. The rated load of the crane shall be plainly marked on each side of the crane, and if the crane has more than one hoisting unit, each hoist shall have its rated load marked on it or its load block and this marking shall be clearly legible from the ground or floor.
- Minimum clearance of 3 inches overhead and 2 inches laterally shall be provided and maintained between crane and obstructions in conformity with Crane Manufacturers Association of America, Inc, Specification No. 61.
- Where passageways or walkways are provided obstructions shall not be placed so that safety of personnel will be jeopardized by movements of the crane.
- Clearance between parallel cranes. If the runways of two cranes are parallel, and there are no intervening walls or structure, there shall be adequate clearance provided and maintained between the two bridges.
- Only designated personnel shall be permitted to operate a crane covered by this section.
- The general arrangement of the cab and the location of control and protective equipment shall be such that all operating handles are within convenient reach of the operator when facing the area to be served by the load hook, or while facing the direction of travel of the cab. The arrangement shall allow the operator a full view of the load hook in all positions.
- The cab shall be located to afford a minimum of 3 inches clearance from all fixed structures within its area of possible movement.
- Access to the cab and/or bridge walkway shall be by a conveniently placed fixed ladder, stairs, or platform requiring no step over any gap exceeding 12 inches. Fixed ladders shall be in conformance with the American National Standard Safety Code for Fixed Ladders, ANSI A14.3-1956.
- Carbon tetrachloride extinguishers shall not be used in overhead and gantry cranes.
- Light in the cab shall be sufficient to enable the operator to see clearly enough to perform his work.
- If sufficient headroom is available on cab-operated cranes, a footwalk shall be provided on the drive side along the entire length of the bridge of all cranes having the trolley running on the top of the girders. Where footwalks are located in no case shall less than 48 inches of headroom be provided.
- Footwalks shall be of rigid construction and designed to sustain a distributed load of at least 50 pounds per square foot. Footwalks shall have a walking surface of antislip type. NOTE: Wood will meet this requirement.
- The inner edge shall extend at least to the line of the outside edge of the lower cover plate or flange of the girder.

- Toeboards and handrails for footwalks shall be in compliance with 29 CFR 1910.23.
- Gantry cranes shall be provided with ladders or stairways extending from the ground to the footwalk or cab platform. Stairways shall be equipped with rigid and substantial metal handrails. Walking surfaces shall be of an antislip type. Ladders shall be permanently and securely fastened in place and shall be constructed in compliance with 29 CFR 1910.27.
- Trolley stops shall be provided at the limits of travel of the trolley. Stops shall be fastened to resist forces applied when contacted. A stop engaging the tread of the wheel shall be of a height at least equal to the radius of the wheel.
- A crane shall be provided with bumpers or other automatic means providing equivalent effect, unless the crane travels at a slow rate of speed and has a faster deceleration rate due to the use of sleeve bearings, or is not operated near the ends of bridge and trolley travel, or is restricted to a limited distance by the nature of the crane operation and there is no hazard of striking any object in this limited distance, or is used in similar operating conditions. The bumpers shall be capable of stopping the crane (not including the lifted load) at an average rate of deceleration not to exceed 3 ft/s/s when traveling in either direction at 20 percent of the rated load speed.
- The bumpers shall have sufficient energy absorbing capacity to stop the crane when traveling at a speed of at least 40 percent of rated load speed. The bumper shall be so mounted that there is no direct shear on bolts. Bumpers shall be so designed and installed as to minimize parts falling from the crane in case of breakage.
- A trolley shall be provided with bumpers or other automatic means of equivalent effect, unless the trolley travels at a slow rate of speed, or is not operated near the ends of bridge and trolley travel, or is restricted to a limited distance of the runway and there is no hazard of striking any object in this limited distance, or is used in similar operating conditions. The bumpers shall be capable of stopping the trolley (not including the lifted load) at an average rate of deceleration not to exceed 4.7 ft/s/s when traveling in either direction at one-third of the rated load speed. When more than one trolley is operated on the same bridge, each shall be equipped with bumpers or equivalent on their adjacent ends. Bumpers or equivalent shall be designed and installed to minimize parts falling from the trolley in case of age.
- Bridge trucks shall be equipped with sweeps which extend below the top of the rail and project in front of the truck wheels.
- If hoisting ropes run near enough to other parts to make fouling or chafing possible, guards shall be installed to prevent this condition. A guard shall be provided to prevent contact between bridge conductors and hoisting ropes if they could come into contact.
- Exposed moving parts such as gears, set screws, projecting keys, chains, chain sprockets, and reciprocating components which might constitute a hazard under normal operating conditions shall be guarded. Guards shall be securely fastened. Each guard shall be capable of supporting without permanent distortion the weight of a 200-pound person unless the guard is located where it is impossible for a person to step on it.
- Each independent hoisting unit of a crane shall be equipped with at least one self-setting brake, hereafter referred to as a holding brake, applied directly to the motor shaft or some part of the gear train.
- Each independent hoisting unit of a crane, except worm-geared hoists, the angle of whose worm is such as to prevent the load from accelerating in the lowering direction shall, in

addition to a holding brake, be equipped with control braking means to prevent overspeeding.

- Holding brakes for hoist motors shall have not less than the following percentage of the full load hoisting torque at the point where the brake is applied.
    - 125 percent when used with a control braking means other than mechanical.
    - 100 percent when used in conjunction with a mechanical control braking means.
    - 100 percent each if two holding brakes are provided.
- Holding brakes on hoists shall have ample thermal capacity for the frequency of operation required by the service. Holding brakes on hoists shall be applied automatically when power is removed. Where necessary holding brakes shall be provided with adjustment means to compensate for wear. The wearing surface of all holding-brake drums or discs shall be smooth.
- Each independent hoisting unit of a crane handling hot metal and having power control braking means shall be equipped with at least two holding brakes.
- A power control braking means such as regenerative, dynamic or countertorque braking, or a mechanically controlled braking means shall be capable of maintaining safe lowering speeds of rated loads. The control braking means shall have ample thermal capacity for the frequency of operation required by service.
- Foot-operated brakes shall not require an applied force of more than 70 pounds to develop manufacturer's rated brake torque. Brakes may be applied by mechanical, electrical, pneumatic, hydraulic, or gravity means. Where necessary brakes shall be provided with adjustment means to compensate for wear. The wearing surface of all brakedrums or discs shall be smooth. All foot-brake pedals shall be constructed so that the operator's foot will not easily slip off the pedal. Foot-operated brakes shall be equipped with automatic means for positive release when pressure is released from the pedal.
- Brakes for stopping the motion of the trolley or bridge shall be of sufficient size to stop the trolley or bridge within a distance in feet equal to 10 percent of full load speed in feet per minute when traveling at full speed with full load. If holding brakes are provided on the bridge or trolleys, they shall not prohibit the use of a drift point in the control circuit. Brakes on trolleys and bridges shall have ample thermal capacity for the frequency of operation required by the service to prevent impairment of functions from overheating.
- On cab-operated cranes with cab on trolley, a trolley brake shall be required as discussed above. A drag brake may be applied to hold the trolley in a desired position on the bridge and to eliminate creep with the power off. On cab-operated cranes with cab on bridge, a bridge brake is required as specified above. On cab-operated cranes with cab on trolley, a bridge brake of the holding type shall be required. On all floor, remote and pulpit-operated crane bridge drives, a brake of noncoasting mechanical drive shall be provided.
- Where multiple conductor cable is used with a suspended pushbutton station, the station must be supported in some satisfactory manner that will protect the electrical conductors against strain. Pendant control boxes shall be constructed to prevent electrical shock and shall be clearly marked for identification of functions.
- Electrical equipment shall be so located or enclosed that live parts will not be exposed to accidental contact under normal operating conditions. Electric equipment shall be

protected from dirt, grease, oil, and moisture. Guards for live parts shall be substantial and so located that they cannot be accidently deformed so as to make contact with the live parts.

- Cranes not equipped with spring-return controllers or momentary contact pushbuttons shall be provided with a device which will disconnect all motors from the line on failure of power and will not permit any motor to be restarted until the controller handle is brought to the "off" position, or a reset switch or button is operated.
- Lever operated controllers shall be provided with a notch or latch which in the "off" position prevents the handle from being inadvertently moved to the "on" position. An "off" detent or spring return arrangement is acceptable. The controller operating handle shall be located within convenient reach of the operator. As far as practicable, the movement of each controller handle shall be in the same general directions as the resultant movements of the load. The control for the bridge and trolley travel shall be so located that the operator can readily face the direction of travel.
- For floor-operated cranes, the controller or controllers if rope operated, shall automatically return to the "off" position when released by the operator. Pushbuttons in pendant stations shall return to the "off" position when pressure is released by the crane operator. Automatic cranes shall be so designed that all motions shall fail-safe if any malfunction of operation occurs. Remote-operated cranes shall function so that if the control signal for any crane motion becomes ineffective the crane motion shall stop.
- Enclosures for resistors shall have openings to provide adequate ventilation, and shall be installed to prevent the accumulation of combustible matter too near to hot parts. Resistor units shall be supported so as to be as free as possible from vibration.
- The power supply to the runway conductors shall be controlled by a switch or circuit breaker located on a fixed structure, accessible from the floor, and arranged to be locked in the open position.
- On cab-operated cranes a switch or circuit breaker of the enclosed type, with provision for locking in the open position, shall be provided in the leads from the runway conductors. A means of opening this switch or circuit breaker shall be located within easy reach of the operator. On floor-operated cranes, a switch or circuit breaker of the enclosed type, with provision for locking in the open position, shall be provided in the leads from the runway conductors. This disconnect shall be mounted on the bridge or footwalk near the runway collectors. One of the following types of floor-operated disconnects shall be provided:
    - Nonconductive rope attached to the main disconnect switch.
    - An undervoltage trip for the main circuit breaker operated by an emergency stop button in the pendant pushbutton in the pendant pushbutton station.
    - A main line contactor operated by a switch or pushbutton in the pendant pushbutton station.
- The hoisting motion of all electric traveling cranes shall be provided with an overtravel limit switch in the hoisting direction.
- All cranes using a lifting magnet shall have a magnet circuit switch of the enclosed type with provision for locking in the open position. Means for discharging the inductive load of the magnet shall be provided.

- Conductors of the open type mounted on the crane runway beams or overhead shall be so located or so guarded that persons entering or leaving the cab or crane footwalk normally could not come into contact with them.
- Except for floor-operated cranes a gong or other effective warning signal shall be provided for each crane equipped with a power traveling mechanism.

Inspection procedure for cranes in regular service is divided into two general classifications based upon the intervals at which inspection should be performed. The intervals in turn are dependent upon the nature of the critical components of the crane and the degree of their exposure to wear, deterioration, or malfunction. The following inspections should be performed at the rate indicated:

- All functional operating mechanisms for maladjustment interfering with proper operation (Daily).
- Deterioration or leakage in lines, tanks, valves, drain pumps, and other parts of air or hydraulic systems (Daily).
- Hooks with deformation or cracks. Visual inspection daily; monthly inspection with a certification record which includes the date of inspection, the signature of the person who performed the inspection and the serial number, or other identifier, of the hook inspected.
- Hoist chains, including end connections, for excessive wear, twist, distorted links interfering with proper function, or stretch beyond manufacturer's recommendations. Visual inspection daily; monthly inspection with a certification record which includes the date of inspection, the signature of the person who performed the inspection and an identifier of the chain which was inspected.
- The trip setting of hoist limit switches shall be determined by tests with an empty hook traveling in increasing speeds up to the maximum speed. The actuating mechanism of the limit switch shall be located so that it will trip the switch, under all conditions, in sufficient time to prevent contact of the hook or hook block with any part of the trolley.
- Test loads shall not be more than 125 percent of the rated load unless otherwise recommended by the manufacturer. The test reports shall be placed on file where readily available to appointed personnel.
- A preventive maintenance program based on the crane manufacturer's recommendations shall be established.
- Before adjustments and repairs are started on a crane the following precautions shall be taken:
    - The crane to be repaired shall be run to a location where it will cause the least interference with other cranes and operations in the area.
    - All controllers shall be at the off position.
    - The main or emergency switch shall be open and locked in the open position.
    - Warning or "out of order" signs shall be placed on the crane, also on the floor beneath or on the hook where visible from the floor.
    - Where other cranes are in operation on the same runway, rail stops or other suitable means shall be provided to prevent interference with the idle crane.

  - After adjustments and repairs have been made the crane shall not be operated until all guards have been reinstalled, safety devices reactivated and maintenance equipment removed.
- Any unsafe conditions disclosed by the inspection requirements of paragraph (j) of this section shall be corrected before operation of the crane is resumed. Adjustments and repairs shall be done only by designated personnel.
- Pendant control stations shall be kept clean and function labels kept legible.
- A thorough inspection of all ropes shall be made at least once a month and a certification record which includes the date of inspection, the signature of the person who performed the inspection and an identifier for the ropes which were inspected shall be kept on file where readily available to appointed personnel. Any deterioration, resulting in appreciable loss of original strength, shall be carefully observed and determination made as to whether further use of the rope would constitute a safety hazard. Some of the conditions that could result in an appreciable loss of strength are the following:
  - Reduction of rope diameter below nominal diameter due to loss of core support, internal or external corrosion, or wear of outside wires.
  - A number of broken outside wires and the degree of distribution or concentration of such broken wires.
  - Worn outside wires.
  - Corroded or broken wires at end connections.
  - Corroded, cracked, bent, worn, or improperly applied end connections.
  - Severe kinking, crushing, cutting, or unstranding.
- All rope which has been idle for a period of a month or more due to shutdown or storage of a crane on which it is installed shall be given a thorough inspection before it is used. This inspection shall be for all types of deterioration and shall be performed by an appointed person whose approval shall be required for further use of the rope. A certification record shall be available for inspection which includes the date of inspection, the signature of the person who performed the inspection and an identifier for the rope which was inspected.
- The crane shall not be loaded beyond its rated load except for test purposes.
- Cranes shall not be used for side pulls except when specifically authorized by a responsible person who has determined that the stability of the crane is not thereby endangered and that various parts of the crane will not be overstressed.
- The operator shall test the brakes each time a load approaching the rated load is handled. The brakes shall be tested by raising the load a few inches and applying the brakes.
- The load shall not be lowered below the point where less than two full wraps of rope remain on the hoisting drum.
- When two or more cranes are used to lift a load one qualified responsible person shall be in charge of the operation. He shall analyze the operation and instruct all personnel involved in the proper positioning, rigging of the load, and the movements to be made.
- The operator shall not leave his position at the controls while the load is suspended.
- When starting the bridge and when the load or hook approaches near or over personnel, the warning signal shall be sounded.

- At the beginning of each operator's shift, the upper limit switch of each hoist shall be tried out under no load. Extreme care shall be exercised; the block shall be "inched" into the limit or run in at slow speed. If the switch does not operate properly, the appointed person shall be immediately notified.
- The hoist limit switch which controls the upper limit of travel of the load block shall never be used as an operating control.

3.3.3 Lifting/Rigging

Mobilization/Demobilization activities will likely require some lifting/rigging activities as well as installation of the dewatering and water treatment equipment and the sheet piling. Procedures in 29 CFR 1910.184 will apply whenever slings are used to perform a lift. Personnel will follow the procedures listed below when performing a lift as well as the requirements in TtEC's Construction Procedure CP-13 Critical Lifts.

- The equipment used for lifting should be positioned as near as possible to the load, while maintaining a safe operating distance. The operator shall verify that the load line is vertical and over the load's center of gravity prior to lifting the load to ensure that the load does not drift when lifted.
- The immediate area of the lift should be checked for any electrical wires. A minimum safe distance of 10 feet shall be maintained from power lines rated 50 kV or less. The minimum safe distance may be calculated as follows: minimum safe distance = 10 ft + 0.4 in for each 1 kV of lines rated over 50 kV or twice the length of the line insulator (but never less than 10 feet).
- The swing area of the lifting equipment is barricaded to protect personnel in the immediate area.
- Loads are not lifted over personnel.
- All loose load objects are secured or removed.
- Tag lines are used to control loads except where their use will create a hazard.
- The equipment performing the lift is not subjected to sudden lifting, stopping or impact loading.
- Riding on loads, hooks, buckets, material hoists, or other material hoisting equipment not meant for personnel use is absolutely prohibited.
- Rigging attachment points are as specified by the equipment vendor, if applicable, or as specified in the Critical Lift Plan.
- Softeners are used at contact points between rigging and load as necessary to avoid damage to the load or the rigging.
- Environmental conditions under which lifting operations should not be performed, such as wind, precipitation, reduced visibility, etc., should be established and communicated to project personnel during the Site Specific Briefing and Daily Tailgate Briefings.
- Prior to performing any lift, the Lift Supervisor should give consideration to a contingency plan should conditions prohibit the load from being placed in it's intended position. Contingency plans could include placement back in its original position or an alternate temporary location, and should include ensuring that adequate cribbing, dunnage, or tie downs are provided for the alternate location.

- The Lift Supervisor shall determine that the foundation or supports to receive any load have been reviewed for stability and strength prior to performing the lift.
- Prior to placement of any load in storage or otherwise temporarily staged prior to placement in its final, designed location, consideration shall be given to any access requirements, maintenance activities, ability to perform future lifting or handling, and construction activities to be performed in the vicinity of the stored or staged load.
- Certification of all lift accessories, including the results of proof tests for custom designed accessories, shall be available at the on-site project offices and maintained in a file as part of the project filing system.
- The total weight of the load to be lifted, including all lifting beams, rigging, hooks and attachments, shall be determined before a safe lift can be planned.
- The determination of the exact location of the center of gravity of the load is critical in ensuring that the load is rigged in a stable configuration. The location of the attachments of the rigging to the load should be above the center of gravity where possible. Where the location of attachments is below the center of gravity, extreme care must be taken to ensure stability of the load. Special precautions shall be taken in the selection of sling lengths and attachment configurations to ensure that the load is stable. Rigging of loads in this configuration should only be performed by personnel with extensive experience in rigging.
- Consideration shall be made in any lifting operation for the possibility of a load becoming unstable during lifts intended only to reposition a load, such as uprighting or turning a load over. The center of gravity shall be calculated for the load in all positions anticipated in order to ensure stability.
- The load shall be safely rigged within the rated capacity of all rigging equipment.
- Sling capacities shall be reduced from their full rated capacities based on sling configuration (vertical, choker or basket hitch) and sling leg angle, as well as based on sling condition. Only personnel with extensive experience in rigging should be given the authority to determine the capacity of slings showing signs of wear or other deterioration.
- Custom designed grabs, hooks, clamps, or other lifting accessories shall be marked to indicate the safe working loads and shall be proof-tested prior to use to 125% of their rated load.

3.3.4 Sheet Pile Driving

Site personnel will follow the procedures specified in 29 CFR 1926.603:

- Overhead protection, which will not obscure the vision of the operator shall be provided.
- Stop blocks shall be provided for the leads to prevent the hammer from being raised against the head block.
- A blocking device, capable of safely supporting the weight of the hammer, shall be provided for placement in the leads under the hammer at all times while employees are working under the hammer.
- Guards shall be provided across the top of the head block to prevent the cable from jumping out of the sheaves.
- When the leads must be inclined in the driving of batter piles, provisions shall be made to stabilize the leads.

- Fixed leads shall be provided with ladder, and adequate rings, or similar attachment points, so that the loft worker may engage his safety belt lanyard to the leads. If the leads are provided with loft platforms(s), such platform(s) shall be protected by standard guardrails.
- Steam hose leading to a steam hammer or jet pipe shall be securely attached to the hammer with an adequate length of at least 1/4-inch diameter chain or cable to prevent whipping in the event the joint at the hammer is broken. Air hammer hoses shall be provided with the same protection as required for steam lines.
- Safety chains, or equivalent means, shall be provided for each hose connection to prevent the line from thrashing around in case the coupling becomes disconnected.
- Steam line controls shall consist of two shutoff valves, one of which shall be a quick-acting lever type within easy reach of the hammer operator.
- Guys, outriggers, thrustouts, or counterbalances shall be provided as necessary to maintain stability of pile driver rigs.
- Pile driving from barges and floats. Barges or floats supporting pile driving operations shall meet the applicable requirements of 1926.605.
- Engineers and winchmen shall accept signals only from the designated signalmen.
- All employees shall be kept clear when piling is being hoisted into the leads.
- When piles are being driven in an excavated pit, the walls of the pit shall be sloped to the angle of repose or sheet-piled and braced.
- When steel tube piles are being "blown out", employees shall be kept well beyond the range of falling materials.
- When it is necessary to cut off the tops of driven piles, pile driving operations shall be suspended except where the cutting operations are located at least twice the length of the longest pile from the driver.
- When driving jacked piles, all access pits shall be provided with ladders and bulkheaded curbs to prevent material from falling into the pit.

3.3.5 Fall Protection

Fall protection (i.e., personal fall arrest systems and guard rails) will be need to be considered while performing work on the barges and in the dewatering and water treatment facility. The use of personal protective equipment or alternate, approved methods to prevent falls is required for all personnel working at heights at or greater than, 6 feet above a lower level or surface (including water) and four feet while operating inside the plant. Personnel Flotation Devices (PFDs) are required on all boats, barges, and structures where the edges are unprotected or guard rails are less then 3' above the walking surface. Personal fall arrest systems shall meet the criteria specified in 29 CFR 1926.502(d) and ESH 3-8 Fall Protection.

Personal fall arrest systems shall meet the following criteria when stopping a fall:

- Limit maximum arresting force on an employee to 1800 pounds when using a body harness.
- Bring an employee to a complete stop and limit maximum deceleration distance an employee travels to 3.5 feet. Make sure to consider the elongation of the shock absorber lanyard when calculating the free fall distance.

- Have sufficient strength to withstand twice the maximum fall arrest force of an employee free falling a distance 6 feet or the free fall distance permitted by the system, whichever is less.
- Body belts are prohibited for the protection against free-fall type hazards.
- Anchorage points (tie offs) for fall arrest systems must be approved or fit an approved engineered model. Anchorage points to which personal fall arrest equipment is attached shall be capable of supporting 5000 pounds (static load to failure) per person.
- Only locking snaphooks that require two separate forces to open the gate for disengagement are permitted. Non-locking snaphooks (i.e., single-action snaphooks are prohibited. Locking snaphooks shall be connected to compatible hardware.
- Do not attach two snaphooks together, back onto its own lanyard, directly to a horizontal lifeline, or to a webbing loop/lanyard. Do not attach two or more snaphooks to one D-ring. Do not attach a snaphook to a D-ring, eyebolt, rebar or other attachment point that has improper dimensions in relation to the snaphook dimensions. Snaphooks may be attached to D-bolts, D-rings/brackets, or anchorage connectors.
- Do not use steel cable lanyards unless it is a retracting lanyard. Shock-absorbing lanyards are required for fall arrest and the maximum length of the lanyard is 4 feet. Shock-absorbing lanyards must be replaced after being shock loaded and stressed.
- Connect the lanyard so as to limit the potential free fall to as short a distance as possible. Free fall distances shall not exceed six feet.
- Lifeline capacity shall be 5000 pounds static load or two times the maximum fall arrest force per person applied to the center of the lifeline between two fixed anchorages.
- Rope diameters selected for use with a rope grab type fall protection system must meet the grab manufacturer's specifications. Rope grabs must be automatic operating and have no manual feature to move down the line unless it is fail-safe.
- Self-retracting lifelines that automatically limit free fall distances to two feet or less shall have components capable of withstanding a minimum static load of 3000 pounds.
- Personal fall arrest systems shall not be attached to guardrail systems.
- All fall arrest equipment must be inspected prior to putting it into service.

Guardrail systems and their use shall comply with 29 CFR 1910. Subpart D and 1926.502(b) and the following provisions:

- Top edge height of top rails, or equivalent guardrail system members, shall be 42 inches plus or minus 3 inches above the walking/working level.
- Midrails, screens, mesh, intermediate vertical members, or equivalent intermediate structural members shall be installed between the top edge of the guardrail system and the walking/working surface when there is no wall or parapet wall at least 21 inches high.
- Midrails, when used, shall be installed at a height midway between the top edge of the guardrail system and the walking/working level.
- Screens and mesh, when used, shall extend from the top rail to the walking/working level and along the entire opening between top rail supports.
- Intermediate members (such as balusters), when used between posts, shall be not more than 19 inches apart.

- Other structural members (such as additional midrails and architectural panels) shall be installed such that there are no openings in the guardrail system that are more than 19 inches wide.
- Guardrail systems shall be capable of withstanding, without failure, a force of at least 200 pounds applied within 2 inches of the top edge, in any outward or downward direction, at any point along the top edge.
- Midrails, screens, mesh, intermediate vertical members, solid panels, and equivalent structural members shall be capable of withstanding, without failure, a force of at least 150 pounds applied in any downward or outward direction at any point along the midrail or other member.
- Guardrail systems shall be so surfaced as to prevent injury to an employee from punctures or lacerations, and to prevent snagging of clothing.
- The ends of all top rails and midrails shall not overhang the terminal posts, except where such overhang does not constitute a projection hazard.
- Handrails shall provide an adequate handhold for employees grasping them to avoid falling.
- Steel banding and plastic banding shall not be used as top rails or midrails.
- Top rails and midrails shall be at least one-quarter inch (0.6 cm) nominal diameter or thickness to prevent cuts and lacerations. If wire rope is used for top rails, it shall be flagged at not more than 6-foot intervals with high-visibility material.

3.3.6 Work on or Around Water

A large part of the work will be conducted on or around water. This presents hazards unique to this environment, and will be thoroughly addressed in all AHAs that apply. In preparing the AHAs, consideration will be given to the elements of TtEC Environmental, Health and Safety Program EHS 6-6, Boating and any applicable U.S. Coast Guard regulations. Personnel performing work on water shall receive boating safety training/briefing from the Handbook of Wisconsin Boating Laws and Responsibilities (Appendix E). For more extensive information on working on or around water, refer to the Activity Hazard Analyses (AHAs) in Appendix C of this SHSP.

3.3.7 Underground Utilities

Whenever intrusive activities are conducted during the project, whether land or water based, the threat of contact with underground utilities exists. This would include utilities such as water, electrical, gas, sewage. Before the execution of any intrusive activities (or any type of marine activity), an assessment of the presence of underground utilities will be made. All steps will be taken to locate underground utilities as per TtEC Procedure EHS 3-15 Underground Utilities. This will include white lining the area of intrusive activities, calling the Wisconsin One-Call System-Diggers Hotline (811, (800) 242-8511, (414) 259-1181, emergency only - (877) 500-9592), having utilities located.

3.3.8 Hot Work (torching, welding, cutting)

All welding and hot work creating a spark will be conducted in accordance with TtECs Welding and Hot Work Program, EHS 6-5. This includes, but is not limited to: hot work permit issuance, use of a fire watch, properly rated fire extinguisher will be kept at the work area, all combustible

materials will be kept 50 feet from the hot work area or barriers will be placed between combustibles and the hot work area. Prior to any hot work, notify the ESS and request a Hot Work Permit.

3.3.9 Lockout/Tagout Procedures

Lockout/Tagout procedures will be employed at the Fox River dewatering and water treatment facilities prior to the performance of maintenance or repairs on utilities (e.g.,., air ducts, electrical connections, and hydraulic lines) or equipment. Authorized employees shall complete all permits and tags in accordance with instructions and shall remove their locks and tags and return them at the end of their shift or the end of the procedure. Supervisors shall ensure proper implementation of the lockout/tagout procedure including approval of permits and maintenance of personal locks and a log of lock assignments.

Following are the steps to be followed in preparing for, applying, and releasing the utilities and equipment. These steps shall be completed, in order, using the lockout/tagout permit (see Appendix B). While work is being performed under the lockout, a copy of the completed permit shall be posted at the equipment controls or work area as appropriate.

1. Complete the general information in Section A of the permit

2. Identify Isolation Points (e.g., Breaker Box)

   The first step required to isolate a piece of equipment is to identify the sources of hazardous energy present. To identify the sources, the authorized employee shall complete the following steps:

   a.· Survey the equipment and related schematics, blueprints, or as-builts, if available, for hazardous energy sources.

   b.· Identify the isolation points and device positions for controlling each source of hazardous energy.

   c.· Identify the isolation method to be used on each source.

   The above information shall be documented in Section B of the Lockout/Tagout Permit as each point is identified.

3. Notifications - Prior to applying a lockout, the authorized employee shall notify affected employees of the equipment to be locked out and sign Section C of the Lockout/Tagout Permit on the "Notifier" line.

4. Equipment Shutdown - Shut down the equipment or place into the desired configuration using normal operating procedures. The authorized employee shall sign Section C of the Lockout/Tagout Permit on the "Shutdown by" line.

5. Equipment Isolation - To apply a lockout to a piece of equipment, complete the following steps:

   a.· Place each energy isolation device into a position that will prevent the transmission of hazardous energy; and

   b.· The authorized employee shall lockout devices to each isolation point and control the key for each lock at all times. Only one key is permitted per lock.

Complete Section D of the permit as each device is placed and sig the "Isolator" line in Section C.

In addition, any lockout device not containing an integral locking mechanism must be used in conjunction with a keyed lock. Any energy isolation point not capable of being locked out must be controlled physically through such means as removal of handles and disconnecting.

6. Release of Stored Energy - After the equipment has been locked and tagged as required in Section D all remaining stored energy must be released. Methods for the release of stored energy include, but are not limited to the following:

a. Discharge and grounding of capacitors,

b. Bleeding pressure from vessels and lines, and

c. Releasing mechanical sources of energy to engage blocks.

If stored energy has the potential to re-accumulate; therefore, verification of isolation shall continue until work is complete. After releasing stored energy complete Section E of the permit.

7. Lockout/Tagout Verification - After completing the lockout of the desired piece of equipment the effectiveness of the lockout must be verified by the authorized employee by attempting to operate the machine. After attempting to operate the machine, sign Section C of the permit on the "Verifier" line.

8. Performance of Work - After verifying and receiving the supervisor's approval signature, work may be performed on the equipment which was locked/tagged.

9. Lockout/Tagout Removal - After work has been completed the following steps shall be followed to release equipment from lockout tagout:

a. The area affected by the lockout shall be inspected to ensure that releasing the machine does not present a hazard to people and property,

b. Lockout devices and tags shall be removed,

c. Isolation devices returned to their operating positions,

d. The equipment started, and

e. Affected employees shall be notified of the release.

Section F of the permit shall be completed as the equipment is returned to service.

The use of tags without locks is prohibited, except in those cases where it is physically impossible to attach a locking device to an isolation point. When it is necessary to use tags without locks the following shall be completed.

1. The isolation point shall be placed in the correct position to prevent the flow of energy.

2. The device shall be physically disconnected.

3. A tag shall be placed on the disconnected device.

4. Employees shall be warned not to tamper with the tag or isolation point.

If a person should fail to clear a lockout and their lock remains in place, the supervisor will attempt to contact the person who applied the lock and resolve the issue. If the person cannot be contacted, the supervisor will investigate the situation and determine that removal of the lock will not create a hazard in the work zone. The supervisor will then verify that the work zone is clear, and blocking devices have been removed and the system has been restored to the normal configuration. The supervisor will then cut the lock off and restore energy to the system.

A written incident and investigation report per EHS 1-7, Incident Reporting and Investigating, shall be prepared by the supervisor stating the reason for cutting the lock, why the lock was not removed, and the procedure used to ensure the safety of personnel in the area. The individual whose lock was cut off must be notified ASAP.

3.3.9.1 Subcontractors

The supervisor shall be familiar with the nature of any subcontractor work on-site that may involve hazardous energy and assure that they follow work practices that are at least as strict as this procedure.

For any lockout/tagout requirements, the supervisor shall review and approve all subcontractor work set up, apply his locks to the scheme, and sign the appropriate form.

Authorized Employees shall receive training in the following prior to being allowed to use lockout/tagout procedures:

1. Recognition of hazardous energy sources.
2. Types and magnitudes of energies available at the site.
3. Methods and means needed for energy isolation and control.
4. The requirements of this EHS 6-4 Lockout/Tagout procedures and 29 CFR 1910.147.

Affected Employees shall be instructed in the following:

1. Purpose of the lockout tagout program;
2. Use and requirements of this procedure and 29 CFR 1910.147;
3. Prohibitions of restarting or tampering with equipment that has been locked out.
4. Prohibitions of tampering with locks and tags installed on equipment.

Personnel not employed by TtEC shall be briefed in the requirements of this program during site-specific orientations, when applicable.

3.3.10 Confined Space Entry

Confined Space is an enclosed area which exhibits the following characteristics:

- Is large enough and so configured that an employee can bodily enter;
- Has limited or restricted means for entry or exit; and
- Is not designed for continuous occupancy.

Permit-Required confined space entry will be performed by certified personnel in accordance with 29 CFR 1910.146 and TtEC ESQ Procedure 6-1. Responsibilities for personnel (i.e., authorized entrants, attendants, entry supervisors, and the PM) are defined in TtEC ESQ Procedure 6-1. The following sections provide the requirements for pre-entry activities, pre-entry briefings, confined space operations, and program review requirements. Complete implementation of these requirements is necessary to ensure the health and safety of personnel during confined space operations.

No entries shall be made into confined spaces with:

- IDLH atmospheres;
- LEL readings in excess of 10% or a combustible dust atmosphere in excess of the LEL; or
- An oxygen content of less than 19.5% or greater than 22.0%.

Prior to the initiation of a confined space entry, a hazard evaluation of the space shall be conducted by the entry supervisor to determine what chemical and physical hazards are present. This review shall be documented on the entry permit and include, but not be limited to the following:

- Potential for oxygen deficient or enriched atmosphere;
- Presence of a flammable atmosphere;
- Presence of toxic air contaminants;
- Presence of physical hazards;
- Sources of hazardous energy that must be de-energized to effectively isolate the confined space;
- Other permits, such as hot-work or lockout/tagout, required to control hazards; and
- Acceptable entry conditions.

Various sources of information for hazard identification that may be used include blueprints, as-builts, client employee knowledge, past entry information, air monitoring data, and physical inspection. For each hazard identified, an effective means of control shall be documented on the confined space entry permit.

The atmosphere of the confined space shall be tested to determine the initial concentrations of the following:

- Oxygen content;
- Flammable or combustible gases or vapors; and
- Toxic air contaminants.

Testing for the initial concentrations shall be conducted in the order given and documented on the entry permit. LEL, oxygen, and toxicity readings must be taken at least every 15 minutes. If isolation of the space is unfeasible because the space is large or part of a continuous system, the monitoring shall be continuous. Frequency for periodic monitoring during the confined space entry shall be specified and documented on the permit.

Mechanical ventilation shall be initiated where necessary to prevent exposure of employees to hazardous atmospheres. The ventilation shall meet the following requirements:

- It shall be continuous;
- It shall be directed into the immediate area authorized entrants shall work in;
- The air supply shall be from a clean source and shall not increase the hazards in the area; and
- Employees shall not enter the space until the ventilation clears the hazardous atmosphere.

When ventilation practices cannot be used, a supplied air respirator must be utilized. Exceptions may be made by the Project Environmental and Safety Manager (PESM). Ventilation equipment must be bonded and grounded prior to operation. Ventilator exhausts must be directed down wind from personnel and/or areas that contain buildings, equipment, etc.

All permitted spaces shall be removed from service and completely protected against the release of energy and material into the space. Means used to isolate the space include but are not limited to the following:

- Lockout/tagout in accordance with EHS 6-4;
- Disconnection of mechanical linkages and hazards;
- Blanking, blinding, or misaligning piping; or
- Double blocking and bleeding.

The following equipment shall be available as necessary and inspected prior to use:

- Testing and monitoring equipment;
- Ventilation equipment
- Communications equipment;
- Personal protective equipment;
- Lighting equipment (caged, waterproof, and low voltage);
- Barriers and shields;
- Ingress and egress equipment;
- Rescue and emergency equipment; and
- Any other equipment required to make safe entry into the space.

In spaces where the potential for flammable or combustible atmospheres exists, equipment shall be non-sparking and intrinsically safe. Electrical systems shall be GFCI protected.

Based upon the location, hazards, and configuration of the confined space, the entry supervisor shall ensure that the following items are addressed:

- Rescue and emergency services to be used and means of summoning;
- Means of rescuing entrants;
- Rescue and emergency to be used at the site;
- Duties of personnel during emergencies; and
- Prevention of unauthorized entry during rescues.

To ensure safe and efficient operations when TtEC personnel and client or subcontractor employees will make entry together into the same confined space, the following shall be completed by the entry supervisor:

- Inform TtEC contractors of existing confined spaces;
- Provide TtEC contractors with a copy of this program;
- Inform the contractor of known hazards in the space;
- Provide a list of controls implemented previously;
- Coordinate the entry of the personnel; and
- Debrief the contractor regarding this program and any hazards encountered.

When TtEC personnel are required to perform confined space entry in support of client work, the entry supervisor shall complete the following in addition to the above requirements:

- Obtain any available information on the space from the client;
- Coordinate the entry operations with client personnel; and
- Inform the client of entry hazards encountered.

Prior to initiating a confined space entry, the entry supervisor shall conduct a safety briefing with the authorized entrants, attendants, and other relevant personnel. The briefing shall cover the following at a minimum:

- Hazard Communication (including the signs, symptoms, and modalities of chemical over exposure) in accordance with EHS 4-2, Hazard Communications;
- Physical hazards present;
- All hazard controls;
- Acceptable entry conditions;
- Emergency procedures;
- Rescue procedures;
- Duties of entrants and attendants during routine and emergency operations;
- Frequency and Types of air monitoring;
- Communications system and backup to be used;
- Review of work to be accomplished during entry;
- Decontamination procedures (if necessary);
- PPE disposal; and
- Potential emergencies that may occur outside the confined space.

At the end of the briefing, all personnel shall be given opportunity to ask questions and review the permit. After review, each authorized entrant and attendant shall print and sign his/her name on the permit. The completed permit shall be posted at the entry site and serve as a roster for monitoring entry and exit of personnel from the space.

The following practices shall be adhered to during actual confined space entries:

- All confined spaces will be treated as permit-required confined spaces unless the PESM specifically provides an exemption in the EHS Plan, or by a field change request to the Plan. Prior to entry, a properly executed permit shall be in place and signed by the Entry Supervisor, Attendant, and each Entrant. Attachment B, or an equivalent form that is approved for use by the PESM, shall be used.
- The Entry Supervisor shall certify that all equipment is in place and operable, acceptable entry conditions are present, all personnel have been fully briefed and all personnel have signed the permit prior to initiating entry.
- The work area outside the space shall be barricaded to prevent unauthorized personnel from interrupting the attendants or entering the space. Unauthorized personnel shall be asked to leave the barricaded area. If unauthorized personnel refuse to leave the area, operations shall be terminated.
- Atmospheric monitoring for oxygen, LEL, and toxic air contaminants shall be conducted at the frequency noted on the permit. Results shall be logged on the permit.
- No confined space shall be entered without:
    - A full body harness;
    - A 6' lanyard attached to the harness "D" ring; and
    - A lifeline attached to the lanyard with the opposite end secured outside the confined space. The lanyard and lifeline must have double locking rings.

      Note: Wristlets may be used in lieu of a full body harness if the body harness is infeasible or creates a greater hazard.
- Top entries with a fall potential greater than 5 feet shall be made with fall protection. Fall protection shall meet the criteria specified in 29 CFR 1926.502(d).
- At least one attendant is required for permit-required entries. The attendant shall maintain visual or voice communications with entrants at all times. Attendants shall not leave their post unless formally relieved by another authorized attendant. The replacement shall be fully briefed by the entry supervisor on all information covered in the pre-entry briefing. Entry supervisors may also serve as attendants.
- When any confined space is entered where the noise level or respirator used prevents voice communication, visual contact between the standby and workers must be maintained.
- Metal ladders, hand tools or other instruments which may spark or cause a source of ignition, are not to be used within confined spaces where any detectable amounts of LEL's are present.
- No burning, grinding, chipping, or other operation which produces heat, sparks, or ignition sources are to be performed without a hot work permit.
- One attendant shall be dressed in the same PPE as the authorized entrants, except for respiratory protection. Attendant supplied air shall be from a different source than that of authorized entrants.
- The entry supervisor shall terminate operations when the work is completed, an unacceptable entry condition is detected, or another emergency inside or outside the

space is detected. Authorized entrants shall immediately evacuate upon notification of the termination.

- Attendants may monitor multiple sites only if they are able to maintain continuous visual or voice communications with entrants. If continuous communications cannot be maintained, additional attendants shall be used.
- Attendants shall perform non-entry rescues in emergencies using rescue equipment staged at the site.
- Upon completion of work and exit of the entrants, the permit shall be canceled by the entry supervisor and forwarded to the ESS. Permits shall be maintained as a part of the project file.

Any deviation from this procedure requires the approval of the PESM. Approval for entry into permit-required confined spaces with air purifying respirators will be given if:

- The composition of the hazardous substance(s) in the confined space is well defined;
- The hazardous substance(s) have good warning properties;
- Short-term exposure to the hazardous substance(s) in excess of the recommended exposure limit will not result in serious physical harm;
- The efficiency of the cartridge versus the hazardous substance(s) is known;
- Forced air ventilation is utilized;
- Reliable monitoring methods are available; and
- Monitoring shows airborne concentrations to be less than the recommended exposure level for the contaminants.

A survey of the sites shall be performed prior to the start of work and documented to identify permit-required confined spaces. All permit-required confined spaces shall be identified with a sign. The sign shall contain the following wording of equivalent:

DANGER - PERMIT REQUIRED CONFINED SPACE

DO NOT ENTER

Authorized entrants, attendants, and entry supervisors shall be trained in accordance with 29 CFR 1910.146 (g) including the following topics as appropriate:

- The contents of this procedure;
- Their respective duties;
- CPR /First Aid (attendants and entry supervisors if they are serving as rescue personnel);
- Hazards commonly found in confined spaces;
- Lockout/tagout procedures;
- Isolation practices;
- Ventilation of confined spaces;
- Supplied air respiratory protection and SCBAs;
- Self rescue;

- Methods of communication;
- Atmospheric monitoring; and
- Rescues.

Training shall establish employee proficiency in the skills required for confined space entry and the understanding and knowledge for the safe performance of all duties required by this procedure. Training records shall be maintained in accordance with EHS 1-9, Recordkeeping.

3.3.11 Pipe Line Breaking or Cutting

General rules regarding pipe line breaking or cutting include the following:

- Ensure that the correct energy sources affecting the work have been identified.
- Make sure that the Lockout/Tagout procedure has been implemented to safely isolate the work from energy sources.
- Conduct a verification walk down of all work isolation boundaries.
- Be certain that the correct PPE is being worn.
- Break open the line only by an approved method. Do not change from an already approved method (e.g., from breaking a flange to saw cutting or grinding or torch cutting) without prior approval from your Supervisor and the ESS.
- Know what fluid or gas to expect and be prepared to contain it when the line is opened up. Always initially assume that the line is under full pressure.

3.3.12 Heat/Cold Stress

3.3.12.1 Heat Stress

There is a potential for heat stress and related injuries during work activities. Specific potential hazards include:

- Heat rash.
- Heat cramps.
- Fainting.
- Heat Exhaustion.
- Heat Stroke.

Sweating does not cool the body unless the sweat evaporates. Heat stress related problems include heat rash, fainting, heat cramps, heat exhaustion, and heat stroke. Heat rash occurs because sweat is not evaporating, causing irritation and vesicular inflammation. Standing erect and immobile in the heat allows blood to pool in the lower extremities. As a result, blood does not return to the heart to be pumped back to the brain and fainting may occur. Heat cramps are painful spasms of the muscles due to excessive water and salt loss from profuse sweating. Similarly, heat exhaustion occurs due to the large fluid and salt loss from profuse sweating. Heat exhaustion is characterized by clammy and moist skin, nausea, dizziness, headaches, and low blood pressure.

Heat stroke occurs when the body's temperature regulatory system has failed. Skin is hot, dry, red, and spotted. The affected person may be mentally confused, delirious, and convulsions may occur. A person exhibiting signs of heat stroke should be removed from the work area and

moved to a shaded area immediately. The injured person should be soaked with water and fanned to promote evaporation. Medical attention must be obtained immediately. EARLY RECOGNITION AND TREATMENT OF HEAT STROKE ARE THE ONLY MEANS OF PREVENTING BRAIN DAMAGE OR DEATH.

Early symptoms of heat stress related problems include the following:

- Decline in task performance.
- Lack of coordination.
- Decline in alertness.
- Unsteady walk.
- Excessive fatigue.
- Muscle cramps.
- Dizziness.

Proper training and preventive measures will aid in averting loss of worker productivity and serious illness. Heat stress prevention is particularly important because once a person suffers from heat stroke or heat exhaustion, that person may be predisposed to additional heat related illnesses. To avoid heat stress, the following steps, as necessary, will be implemented at the Lower Fox River site:

- Adjust work schedules.
  - Modify work/rest schedules according to monitoring requirements.
  - Mandate work slowdowns as needed.
  - Perform work during cooler hours of the day, if possible, or at night if adequate lighting can be provided.
- Perform physiological monitoring.
- Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods.
- Maintain worker's body fluids at normal levels. This is necessary to ensure the cardiovascular system functions adequately. Daily fluid intake must approximately equal the amount of water lost in sweat, e.g. 8 fluid ounces (0.23 liters) of water must be ingested for approximately every 8 ounces (0.23 kilograms (kg)) of weight loss. The normal thirst mechanism is not sensitive enough to ensure that enough water will be consumed to replace lost sweat. When heavy sweating occurs, encourage the worker to drink more. The following strategies may be useful:
- Maintain water temperature at 50° to 60°F (10°-16.6°C).
- Provide small disposable cups that hold about 4 ounces (0.1 liter).
  - Have workers drink 16 ounces (0.5 liters) of fluid, preferably water or dilute drinks, before beginning work.
  - Urge workers to drink a cup or two every 15 to 20 minutes, or at each monitoring break. A total of 1 to 1.6 gallons (4 to 6 liters) of fluid per day are recommended, but more may be necessary to maintain body weight.
- Train workers to recognize the symptoms of heat-related illnesses.
- Rotate personnel and alternate job functions.
- Utilize cooling vests when impermeable clothing is worn.

Additional procedures to be followed are provided in EHS Program, Temperature Extremes, EHS 4-6.

3.3.12.2 Cold Stress

Exposure to low temperatures presents a risk to employee safety and health through the direct effect of the low temperature on the body and collateral effects such as slipping on ice, decreased dexterity, and reduced dependability of equipment. Work conducted in the winter months can become a hazard for field personnel due to cold exposure. All personnel must exercise increased care when working in cold environments to prevent accidents that may result from the cold. The effects of cold exposure include frostbite and hypothermia. Wind increases the impact of cold on a person's body. Systemic cold exposure is referred to as hypothermia. Local cold exposure is generally labeled frostbite. Recognition of the symptoms of cold-related illnesses will be discussed during the health and safety briefing conducted prior to the onset of site activities.

Hypothermia is a life-threatening condition in which the core body temperature falls below 95°F. Hypothermia can occur at temperatures above freezing particularly when the skin or clothing becomes wet. During exposure to cold, maximum shivering occurs when the core temperature falls to 95°F. As hypothermia progresses, depression of the central nervous system becomes increasingly more severe (Table 3-2). This accounts for the progressive signs and symptoms ranging from sluggishness and slurred speech to disorientation and eventually unconsciousness.

Site Health and Safety Plan
Phase 2B
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Table 3-2
Progressive Clinical Symptoms of Hypothermia

Core Temperature F°	Clinical Signs
95°	Maximum shivering
87°-89°	Consciousness clouded; blood pressure becomes difficult to obtain; pupils dilated
84°-86°	Progressive loss of consciousness; muscular rigidity; respiratory rate decreases
79°	Victim rarely conscious
70°-72°	Maximum risk of ventricular fibrillation

Frostbite is both the general and medical term given to areas of cold injury. Unlike hypothermia, frostbite rarely occurs unless environmental temperatures are less than freezing and usually less than 20°F. Frostbite injuries occur most commonly on the distal parts of the body (nose, earlobes, hands, and feet) that are subject to intense vasoconstriction. The three general categories of frostbite are:

- *Frostnip* - A whitened area of the skin which is slightly burning or painful.
- *Superficial frostbite* - Waxy, white skin with a firm sensation but with some resiliency. Symptomatically feels "warm" to the victim with a notable cessation of pain.
- *Deep frostbite* - Tissue damage deeper than the skin, at times, down to the bone. The skin is cold, numb and hard.

In preventing cold stress, the ESS must consider factors relating both to the worker and the environment. Training, medical screening, establishment of administrative controls, selecting proper work clothing, and wind-chill monitoring all contribute to the prevention of hypothermia and frostbite.

- Recognizing the early signs and symptoms of cold stress can help prevent serious injury. Thus, workers will be trained to recognize the symptoms of hypothermia and frostbite and have appropriate first-aid instruction. When the air temperature is below 50°F the ESS will inform workers of the proper clothing requirements and any work practices that are in effect to reduce cold exposure.
- Cold injuries and illnesses recognition and prevention measures will be emphasized during daily safety briefings when the potential for cold injuries and illnesses exists.
- Work will cease under unusually hazardous conditions.
- Phenothiazine (a sedative) and beta blocker drug use will be prohibited.
- A heated area will be available on site.
- Temperature will be recorded daily on site.
- Warm beverages will be available on site.
- The ESS will establish a work/rest schedule based upon worker monitoring. At the first sign of uncontrollable shivering the worker will be rested in a heated shelter. Work will be stopped when the air temperature reaches 0°F.
- Workers will be encouraged to layer clothing when air temperature is below 50°F. Clothing that has a high insulation value will be worn under protective garments. Insulated gloves will be worn when the wind chill index is below 32°F. Insulating dry clothes will be available.

Additional procedures to be followed are provided in EHS Program, Temperature Extremes, EHS 4-6.

3.3.13 Noise

Noise is a potential hazard associated with the operation of heavy equipment, operation of the treatment process equipment, motors, pumps, and dredges. Suspected high noise operations will be evaluated and monitored to determine if hearing protective devices should be worn. A general field rule is to wear hearing protection if you cannot hear normal conversation within an arm length of the person talking. Hearing protection must be worn if noise levels are above the following:

85 dBA – 8-hour time weighted average (TWA)
100 dBA – 15 minute short-term exposure limit (STEL)
140 dBA – instantaneous noise.

Additional details on monitoring and hearing protection requirements are in EHS 4-4 Hearing Conservation and HSG1-5 Noise Monitoring. Post 'high noise area' signs within the plant.

3.3.14 Hand and Power Tools

Tools are such a common part of construction and plant work that hazards are often unrecognized. Workers must learn to recognize the hazards associated with the different types of tools and the safety precautions necessary to prevent injuries from those hazards. To prevent

accidents resulting from the use of hand and power operated hand tools, the following safe work practices will be implemented and enforced.

Broken, defective, burned, or mushroomed tools will not be used. They will be reported and turned in for replacement. The proper tool and equipment will be selected and used for each task. For example, a wrench will not be used as a hammer or a screwdriver as a chisel. Leaving tools on scaffolds, ladders, or any overhead working surface is not allowed. Racks, bins, hooks, or other suitable storage space must be provided to permit convenient arrangement of tools. The practice of throwing tools from one location to another, from one employee to another, or dropping them to lower levels will be prohibited. When it is necessary to pass tools or material under the above conditions, suitable containers and/or ropes must be used.

Wooden tool handles must be sound, smooth, and in good condition and securely fastened to the tool. Sharp-edged or pointed tools will never be carried in employee's pockets. Only non-sparking tools will be used in locations where sources of ignition may cause a fire or explosion. Tools requiring heat treating will be tempered, formed, dressed, and sharpened by workmen experienced in these operations.

Tools designed to accommodate guards must be equipped with such guards when in use. All rotating, reciprocating, or moving parts of equipment (belts and conveyors, gears, shafts, flywheels) must be guarded to prevent contact by employees using such equipment. All hand-held power tools (i.e., circular saws, chain saws, and percussion tools) without a positive accessory holding means must be equipped with a constant pressure switch that will shut off the power when pressure is released. A positive "on-off" control must be provided on platen sanders, grinders with wheels 2 inches in diameter or less, routers, planers, laminate trimmers, nibblers, shears, scroll saws, and jigsaws with blade shanks ¼" wide or less. A momentary contact "on-off" control must be provided on all hand-held powered drills, tapers, fasteners, drivers, horizontal, vertical, and angle grinders with wheels greater than 2 inches in diameter. Besides safety hazards, the use of power tools sometimes creates potential health hazards as well. The use of jackhammering and chiseling equipment often results in silica and nuisance dust exposures that can be controlled by wetting the work surfaces.

In addition to dust hazards, the hand vibration inherent in the use of some power tools may result in a restriction of blood flow to the hands and fingers, causing numbness and tingling. If workers consistently experience these symptoms after the use of power tools, they will contact their supervisor so that steps may be taken to prevent further harm to the nerves and blood vessels in their hands. The use of a different tool, changes to the offending tool to reduce vibrations, and/or the use of gloves are recommended to prevent vibration related symptoms.

Electric tools – Electric tools present several dangers to the user; the most serious is the possibility of electrocution. The following safe work procedures for electric tools must be implemented and enforced:

- Have a three-wire cord with ground and be grounded, or
- Be double insulated.

Never remove the third prong from the plug. Electrical tools will not be used in damp or wet locations and will always be used within their design limitations. A ground fault circuit interrupter (GFCI) must be used or the tool must be double insulated to protect the worker from electrical shock hazards.

Powered Abrasive Wheel Tools - Power abrasive wheel tools present a special safety problem because they may release fragments. The following safe work procedures for powered abrasive wheel tools need to be implemented and enforced. Portable and fixed grinding tools must be equipped with safety guards to protect workers from fragments as well as the moving wheel surface. Inspecting and sound or ring testing abrasive wheels prior to mounting is required to ensure that they are free from cracks or defects. Checking to ensure that the abrasive wheel RPM rating is appropriate for the tool will also help prevent wheel failures. The following work rules are appropriate when using a power grinder:

- Always use eye protection and a face shield.
- Turn off the power when not in use.
- Never clamp a hand-held grinder in a vise.
- To prevent the wheel from cracking, the user will ensure that it fits freely on the spindle.
- Grinding wheel users will never stand directly in front of the wheel during start-up because there is always a possibility that the wheel may disintegrate (explode) when accelerating at full speed.

Pneumatic Tools – Pneumatic tools are powered by compressed air and include chippers, drills, jackhammers, and sanders. The following safe work procedures for pneumatic tools must be implemented and enforced. Pneumatic tools that shoot nails, rivets, or staples that operate at pressures more than 100 lb./in2 must be equipped with a special device to keep fasteners from being ejected unless the muzzle is pressed against the work surface. Safety lashing will be installed at connections between tool and hose at all quick makeup type connections. All hoses exceeding ½" inside diameter must have a safety device at the supply source or branch line to reduce pressure in the event of hose failure. Eye protection is required for employees working with pneumatic tools.

Airless spray guns that atomize paints and fluids at high pressures (1,000 lbs./in2 or more) must be equipped with automatic or visual manual safety devices that will prevent pulling the trigger until the safety device is manually released. Workers operating a jackhammer are required to wear safety glasses, safety footwear, and hearing protection. Compressed air guns will never be pointed toward anyone. Hand held air powered cleaning devices must be limited to <30 psi. A safety clip or retainer must be installed to prevent attachments from being unintentionally shot from the barrel of the tool.

Liquid-Fueled Tools – Liquid-filled tools are usually powered by gasoline. Vapors that can burn or explode and give off dangerous exhaust gases are the most serious hazards associated with liquid-filled tools. The following safe work procedures for liquid-filled tools need to be implemented and enforced at the site.

Gas or fuel will be handled, transported, and stored in Underwriters Laboratories (UL) National Fire Protection Association (NFPA) approved, metal flammable liquid storage containers. These containers, also known as safety cans, are no more than five gallons in capacity and have a spring-closing lid and spout cover that will safely relieve internal pressure when subjected to fire exposure. Type 2 cans are preferred. Before refilling the tank for a fuel-powered tool, the user must shut down the engine and allow it to cool to prevent accidental ignition of hazardous vapors. Effective ventilation and/or PPE are necessary when using a fuel-powered tool inside a closed area. Fire extinguishers must be readily available in the work area.

Powder-Actuated Tools – Powder-actuated tools operate like a loaded gun and will be treated with the same respect and precautions. Only assigned, trained, and qualified operators will operate powder actuated tools. The following safe work practices and procedures for powder-actuated tools will be implemented and enforced. All powder-actuated tools must meet American National Standards Institute (ANSI) A10.3 requirements for design, operation, and maintenance. Powder-actuated tools must never be used in an explosive or flammable atmosphere. Before using a powder-actuated tool, the worker will inspect it to determine that it is clean, that all moving parts operate freely, and that the barrel is free from obstructions.

Never point the tool at anyone. Do not load a tool unless it is being used immediately. Never leave a loaded tool unattended, especially where it would be available to unauthorized persons. Suitable eye and face protection is essential when using a powder-actuated tool. In case of misfire, the operator will hold the tool in the operating position for at least 30 seconds, then attempt to operate the tool for a second time. If the tool misfires again, wait another 30 seconds (still holding the tool in the operating position) and then proceed to remove the explosive load from the tool in accordance with the manufacturer's instructions.

If the tool develops a defect during use, it will be tagged and taken out of service immediately until it is properly repaired. Warning signs will be posted within the area of operation of any powder-actuated tool. Powder-actuated tool operators must be certified by the tool supplier.

3.3.15 Slips, Trips, and Falls

Working on wet surfaces in boats as well as uneven terrain presents a walking/working surface that can lead to difficult footing and overall balance. Boat decks will pose slip, trip and fall hazards due to slippery surfaces that may be covered by or wet from rain. Slips, trips and falls are a leading cause of injuries in this work setting, therefore, a concerted effort to identify, control, and eliminate these hazards and the measures needed to reduce or eliminate the possibility of injury will be communicated to all site personnel.

Site personnel will be instructed to look for these potential safety hazards and immediately inform the ESS or the Construction Manager about any new hazards. If the hazard cannot be immediately removed, action must be taken to warn site workers about the hazard. Proper housekeeping (tools, equipment, and material will be picked up and stored) must be maintained on site, particularly in pedestrian traffic routes and adjacent to office and decontamination areas. Voids and transition areas along high foot traffic areas will be covered to prevent injury. The use of personal protective equipment or alternate, approved methods to prevent falls is required for all personnel working at heights at or greater than, 6 feet above a lower level or surface (including water). Personnel Flotation Devices (PFDs) are required on all boats, barges, and structures where the edges are unprotected or guard rails are less then 3' above the walking surface.

Personnel Flotation Devices (PFDs) are required on all boats where the guard rails are less then 3' above the walking surface.

3.3.16 Manual Lifting

Manual lifting may be required. Failure to follow proper lifting technique can result in back injuries and strains. Back injuries are a serious concern as they are the most common workplace injury, often resulting in lost or restricted time, and long treatment and recovery periods. Basic lifting and material handling techniques will be reviewed with all personnel prior to the on-site activities. All tasks will be evaluated on site prior to commencement or during activities in order

to evaluate the potential for injury. Controls may include engineering controls, reducing weight of objects that are carried, distance of carrying, or reducing loss potential by rotating workers.

Tetra Tech's EHS policy states that individual employees are not to lift loads greater than 50 pounds. The following procedure should be used to lift anything, particularly heavier loads, safely:

- Make sure the path of travel is clear.
- Size up the load as to its weight, size and shape.
- Place the feet about a foot apart and close to the object for good balance.
- Bend the knees to a comfortable position and get a good handhold.
- Using both leg and back muscles, lift the load straight up, smoothly and evenly. Pushing with the legs, keep the load close to the body.
- Lift the object into carrying position, avoiding twisting movements until the lift is completed.
- Turn the body with changes of foot position. Do not twist at the waist when lifting.
- Using both leg and back muscles, comfortably lower the load by bending the knees. When the load is securely in place, release the grip. Setting down the load is just as important as picking it up.

The same steps apply to team lifting, with the emphasis on coordination. All should start and finish the lift action at the same time and perform turning movements together.

3.3.17 Radioactive Hazards

The total radiation dose absorbed by a person is dependent upon three factors: distance between the source and a person, time a person is in the vicinity of the source, and the amount of shielding around the source. The subcontractor will be using the LB-444 Density Evaluation Unit manufactured by Berthold Technologies to collect continuous volume measurements during dredging operations. The LB-444 uses a radioactive source as a power supply. The radioactive source is encapsulated in stainless steel which keeps the radioactive isolated from the material being measured. The unit will be inspected prior to each use and will only be operated in accordance with the manufacturer's recommendations. Only personnel who have been properly trained will be authorized to operate this piece of equipment. The following safety procedures and documentation requirements will be implemented:

- The shielding with the radioactive source is not installed in the device at the time of delivery. The package with the radioactive source should be stored in a location that is guarded against unauthorized access. Do not remove the radioactive source until just prior to installation. Installation of the source will be done in accordance with the manufacturer's recommendations.
- Only licensed personnel who have been trained on how to handle radioactive substances are allowed to assemble or disassemble the shielding with the source. This work will be done under the supervision of the Radiation Safety Officer.
- The lock of the shielding shall be closed and secured so that no unshielded radiation can exit. Ensure that the shielding is not tampered with or damaged.
- A Radiation Safety Officer must be appointed and is responsible that the provisions of all radioactive regulations are observed. He will instruct the staff on the proper handling of

radioactive substances and answer any questions related to radiation protection. He will monitor handling of the radiometric measuring system and if necessary, formalize safeguards and any special precautions. Any event in regards to the radioactive source will be reported to the Radiation Safety Officer immediately.

- Radiation protection zones outside the shielding must be – if they are accessible – marked and guarded.
- Ensure all labels affixed to the device at the time of receipt that indicate removal of the label is prohibited are maintained. Site personnel will comply with the instructions and precautions indicated by these labels.
- The device will be tested for leakage of radioactive material and proper operation of the power source (i.e., on-off mechanism and indicator) at a minimum every 6 months.
- Testing, installation, servicing, and removal of the radioactive material, its shielding or containment shall be performed under the instructions provided by the labels or by a licensed person.
- Records of leakage testing and proper operation of the power source as well as installation, servicing, and removal of the radioactive material, its shielding or containment will be maintained for three years or until the sealed source is transferred or disposed of. Information that should be included is: dates of testing and names of persons performing tests, installation, servicing, and removal of the radioactive material, its shielding or containment.
- Upon failure or damage to the shielding or the power source (i.e., on-off mechanism and indicator) or an indication thereof, use of the device shall be suspended until it has been repaired by the manufacturer or other appropriately licensed person. A written report of the event by the person performing the repairs shall be filed with the department within 30 days of the event.
- Do not abandon the device containing the radioactive material.
- Transfer or disposal of the device containing the radioactive material shall only be made to a specific licensee of the department (i.e., State of Wisconsin Department of Health and Family Services, Division of Public Health, Radiation Protection Section), the NRC, an agreement state or a licensing state whose specific license authorizes that person to receive the device. Within 30 calendar days after the transfer of a device to the specific licensee, the licensee shall furnish to the department a written report containing identification of the device by the manufacturer's name, model number, and serial number and the name and address of the person receiving the device (except if the device is transferred to another general licensee only where the device is held in storage in the original shipping container at its intended location of use prior to initial use by a general licensee or if the device remains in use at a particular location). No report is required if the device is transferred to the specific licensee to obtain a replacement device.
- If the device is transferred to another general licensee and it remains in use at a particular location, the transferor shall give the transferee a copy of the general license and any safety documents identified on the label on the device within 30 calendar days of the transfer. The licensee shall report to the department (i.e., State of Wisconsin Department of Health and Family Services, Division of Public Health, Radiation Protection Section) the manufacturer's name and model number of the device transferred, the name and

address of the transferee, and the name and position of an individual who may constituet a point of contact between the department and the transferee.

- Comply with the provisions of s. HFS 15.32(1) and (2) for reporting radiation incidents, theft or loss of licensed material.
- In case of serious operational trouble (i.e., fire or explosion), it cannot be assumed that the function of the shielding lock, the shielding efficiency or the stability of the source capsule have been impared. The Radiation Safety Officer should be notified immediately to investigate the situation and take any necessary provisions to prevent further damage and to avoid exposure of the operating staff to radiation.

4.0 ACTIVITY HAZARD ANALYSES

The Activity Hazard Analysis (AHA) is a systematic way of identifying the potential health and safety hazards associated with major phases of work on the project and the methods to avoid, control and mitigate those hazards. The AHAs follow the guidance of the TtEC Corporate Program EHS 3-5. AHAs are developed for all activities and will be used to train workers in proper safety procedures during phase preparatory meetings.

AHAs for the 2009 and beyond site activities are included in Appendix C of this SHSP. AHAs have been developed for the following phases of work:

- General Site Hazards
- Installation of Remaining Dewatering and Water Treatment Equipment.
- Sheet Pile Installation
- Marine Survey
- Dredging and placement of clean fill and/or dredged sand behind the sheetpile wall
- Layout and Placement of Dredge Lines and Booster Stations
- Dredging TSCA and non-TSCA material
- Sediment Capping and Placement of Cover Material
- Dewatering Operations
- Transportation and Disposal
- Wastewater Treatment Plant Operations
- Sampling (Sediments and Process Operations)
- Laboratory Analysis

5.0 PERSONAL PROTECTIVE EQUIPMENT

The personal protective equipment specified in Table 5-1 represents the initial level of PPE selection for each activity required by 29 CFR 1910.132. Specific information on the selection rationale for each activity can be found in the Activity Hazard Analyses for these plans. Personal protective equipment selection shall be made by the ESS and approved by the PESM. Additional tasks not included in Table 5-1 shall be reviewed by the ESS and PESM. Any additional PPE requirements will be incorporated into the SHSP by completing the field change request form found in Appendix A. All field change request forms and PPE selection will require approval by the PESM. Modifications for initial PPE selection may also be made by the ESS in consultation with the PESM using the same form. A written justification for downgrade will be provided to the PESM for approval on a field change request form.

5.1 UPGRADE CONDITIONS

Due to the nature of the activities it is not anticipated that upgrading to Level C or B will be required during the Lower Fox River site activities. Level D or modified Level D is anticipated for all site work but the ESS has the responsibility for monitoring site and work conditions and deciding the appropriate level of protection based on indications of potential exposure.

5.2 HAZARD ASSESSMENT FOR SELECTION OF PERSONAL PROTECTIVE EQUIPMENT

The initial levels of protection were selected by performing a hazard assessment taking into consideration the following:

- Potential site physical hazards present or suspected.
- Work operations to be performed.
- Potential routes of exposure.
- Characteristics, capabilities and limitations of PPE, and any hazards that the PPE presents or magnifies.

Site Health and Safety Plan
Lower Fox River (OUs 2-5)
Phase 2B
Table 5-1
Personal Protective Equipment Selection

Task	Head	Eye/Face	Feet	Hands	Body	Hearing	Respirator
Installation of Remaining Dewatering and Water Treatment Equipment.	HH	SG	STB	LWG	Work Clothes, high visibility vest, Fall protection as required	EP as needed around power tools and heavy equipment	No Respiratory Protection Required.
Sheetpile installation	HH	SG	STB	LWG	Work Clothes, high visibility vest, PFD if on or near water, Fall protection as required	EP as needed around power tools and heavy equipment	No Respiratory Protection Required.
Dredging TSCA and non-TSCA material	HH	SG	STB	LWG	Work Clothes, high visibility vest, PFD if on or near water	EP as needed around power tools and heavy equipment	No Respiratory Protection Required.
Sediment Capping and Placement of Cover Material	HH	SG	STB	LWG as needed	Work Clothes, high visibility vest, PFD if on or near water	EP as needed around power tools and heavy equipment	No Respiratory Protection Required.
Dewatering Operations	HH	SG	STB	LWG as needed	Work Clothes, high visibility vest	EP as needed around power tools and heavy equipment	No Respiratory Protection Required.
Transportation and Disposal	HH	SG	STB	LWG as needed	Work Clothes, high visibility vest	EP as needed around power tools and heavy equipment	No Respiratory Protection Required.
Wastewater Treatment Plant Operations	HH	SG	STB	LWG as needed	Work Clothes, high visibility vest	EP as needed around power tools and heavy equipment	No Respiratory Protection Required.
Sampling (Sediments and Process Operations)	HH	SG	STB	LWG as needed	Work Clothes, high visibility vest, PFD if on or near water	EP as needed around power tools and heavy equipment	No Respiratory Protection Required.
Laboratory Analysis	HH	SG	STB	LWG as needed	Work Clothes, high visibility vest	EP as needed around power tools and heavy equipment	No Respiratory Protection Required.

Notes: EP – Ear Plugs
HH – Hard Hat
LWG – Leather Work Gloves
PFD – Personal Flotation Device
PFS – Plastic Face Shield
SG – Safety Glasses
STB – Safety Toed Boots

6.0 AIR MONITORING

The following sections contain information describing the types, frequency and location of real time air monitoring to evaluate potential worker exposures. Air monitoring for community protection will be addressed in the Community HASP.

6.1 INSTRUMENTATION

The following monitoring instruments will be available for use during remediation operations as necessary:

- Dust Meter, MiniRAM or equivalent, aerosol dust monitor.

The dust meter will be used to assess the respirable dust concentrations in the worker breathing zone during dewatering activities and T&D activities. There is minimal to no contact using proposed methods to dredge and cap contaminated sediments and therefore inhalation of PCBs is not considered a risk. There is minimal to no inhalation risk during sampling of PCB contaminated material since the sediments will be wet and will not produce a dust. The Site-Specific Health and Safety Plan lists the response measures if action levels are exceeded.

6.2 REAL-TIME AIR MONITORING

Routine Air Monitoring will be performed by the ESS for dust disturbing activities and during activities requiring handling dry PCB containing materials. A calibrated aerosol dust monitor will be used to monitor dust levels in personnel breathing zones. A background reading must be obtained from a clean area prior to taking readings.

6.3 FREQUENCY AND LOCATION OF MONITORING

Table 6-1 presents a breakdown of each main activity and provides the frequency and location of the real time monitoring for the site.

6.4 DATA QUALITY ASSURANCE

6.4.1 Calibration

Dust meter calibration will be documented and included in a dedicated safety and health log book or on separate calibration pages. All dust meters must be calibrated before and after each shift's use of the equipment. Calibration checks may be used during the day to confirm instrument accuracy. Duplicate readings may be taken to confirm individual instrument response.

6.4.2 Operations

All dust meters will be operated in accordance with the manufacturer's specifications. Manufacturer's literature, including an operations manual for each piece of monitoring equipment, will be maintained on-site by the ESS for reference.

Site Health and Safety Plan
Lower Fox River (OUs 2-5)
Phase 2B
Table 6-1
Real Time Air Monitoring Action Levels

Air Monitoring Instrument	Frequency and Location	Action Level	Site Action	Reason
MiniRAM or equivalent	In the breathing zone during activities which may generate dust (i.e., Earthwork), initially at a minimum, every hour. The frequency may decrease to every 2 hours if results are consistent after the first week of operations.	<2.5 mg/m^3	No respiratory protection is necessary. Continue work.	½ TLV for respirable dust.
		>2.5mg/m^3	Take an additional reading and document the measurement. Continue to take readings. Document the measurement every 15 minutes. If readings stay above 2.5 mg/m^3, use dust suppression techniques (i.e., water truck to dampen dry areas). See Section 6.5.	½ TLV for respirable dust.
MiniRAM or equivalent	In the breathing zone during activities which may generate PCB contaminated dust (i.e., dewatering activities and T&D), initially at a minimum, every 30 minutes. The frequency may decrease to every 1 hour if results are consistent after the first few weeks of operations.	<2.0 mg/m^3	No respiratory protection is necessary. Continue work.	Calculated based upon quantitative risk assessment (see Section 4.0 of the *Community HASP*)
		>2.0 mg/m^3	Take an additional reading and document the measurement. Continue to take readings. Document the measurement every 15 minutes. If readings stay above 2.0 mg/m^3, use dust suppression techniques or revaluate work practices to minimize dust generation.	Calculated based upon quantitative risk assessment (see Section 4.0 of the *Community HASP*)

6.4.3 Data Review

The ESS will interpret all monitoring data based on action levels listed in Table 6-1 of this plan and his/her professional judgment. The ESS shall review the data with the PESM to evaluate the potential for worker exposure and upgrades/downgrades in PPE. The previous days monitoring results will be discussed with all site personnel at the tailgate safety meeting prior to commencing work activities for that day.

6.5 DUST CONTROL PLAN

Dust levels for this project should be kept to below the respirable dust action levels. If fugitive dust levels exceed these requirements, the following dust suppression techniques may be employed to reduce the levels:

- Reduce equipment/vehicle speeds.
- Applying water to traffic areas.
- Applying dust suppressants.
- Covering stockpiles with tarps.

Water used for dust suppression will be clean, non-hazardous, and free of salt, oil, and other deleterious materials. Construction water that has been treated to remove contaminants may also be used for dust control. A dedicated water truck will be used to spray water on travel areas. Enough water should be applied to lower fugitive dust levels, but not so much as to create nuisance conditions (e.g., ponding). Dust suppressants may be added if the CM determines it is necessary in order to reduce fugitive dust levels.

7.0 ZONES, PROTECTION, AND COMMUNICATION

7.1 SITE ZONE

Site zones are intended to control the potential spread of contamination throughout the site and to assure that only authorized individuals are permitted into potentially hazardous areas. A three-zone approach will be utilized. It will include an Exclusion zone (EZ), Contamination Reduction zone (CRZ) and a Support Zone (SZ). Specific zones will be established on the work site when operations begin. A map showing these zones will be developed on site and posted in the field office. All maps will be posted at the site and used during initial site-specific training.

The majority of this project is a hazardous waste remediation project, and any person working in an area where the potential for exposure to site contaminants exists, will only be allowed access after providing the ESS with evidence of proper training and medical documentation.

The zones are based upon current knowledge of proposed site activities. It is possible that the zone configurations may be altered due to work plan revisions. Should this occur, the Site Zones will be adjusted accordingly, and documented through use of a change request form.

The following will be used for guidance in revising these preliminary zone designations, if necessary.

Support Zone - The SZ is an uncontaminated area (trailers, offices, etc.) that will be the field support area for most operations. The SZ provides for field team communications and staging for emergency response. Appropriate sanitary facilities and safety equipment will be located in this zone. Potentially contaminated personnel/materials are not allowed in this zone. The only exception will be appropriately packaged/decontaminated and labeled samples.

Contamination Reduction Zone - The CRZ is established between the EZ and the SZ. The CRZ contains the contamination reduction corridor and provides for an area for decontamination of personnel and portable hand-held equipment, tools and heavy equipment. A personnel decontamination area will be prepared at each exclusion zone. The CRZ will be used for Exclusion Zone entry and egress in addition to access for heavy equipment and emergency support services.

Exclusion Zone - All activities that may involve exposure to site contaminants, hazardous materials and/or conditions should be considered an exclusion zone (EZ). For some portions of this project, the Exclusion Zone may be the area where decontamination activities will occur. This zone will be clearly delineated by cones, tapes or other means. The ESS may establish more than one EZ where different levels of protection may be employed or different hazards exist. The size of the EZ will be determined by the site ESS allowing adequate space for the activity to be completed, field members and emergency equipment. Site personnel and visitors shall sign in and out of the EZ and CRZ daily.

7.2 CONTAMINATION CONTROL

Decontamination areas will be established for the following activities.

7.2.1 Personnel Decontamination Station

Personnel hygiene, coupled with diligent decontamination, will significantly reduce the potential for exposure of off-site areas to contaminants from the site. The dewatering operations as well as T&D is the primary activity where the possibility of worker exposure to PCBs exists. A personnel decontamination station will be constructed adjacent to these operations. In addition, a personnel decontamination station will be set up on the barges for personnel involved in dredging and when the potential for contact with PCBs exists.

7.2.2 Minimization of Contact with Contaminants

During completion of all site activities, personnel should attempt to minimize contact with contaminated materials. This involves a conscientious effort to keep "clean" during site activities. This may ultimately minimize the degree of decontamination required and the generation of waste materials from site operations. When the potential for contact with PCB contaminated sediments exists, personnel will wear appropriate PPE described in Section 5.0 to minimize if not prevent exposure.

7.2.3 Personnel Dry Decontamination Sequence

When decontamination of Tyvek or poly protective clothing is needed a dry decon will be used whenever possible.

1. Perform dry decon if contact with contaminants occurred.
2. Employees shall carefully remove all gross contamination and debris from their protective clothing.
3. Remove gloves without touching outside surface of gloves and dispose.
4. Wash hands and face thoroughly.

7.2.4 Heavy Equipment Decontamination

The following procedure will be used by TtEC personnel for the decontamination of equipment that has come in contact with the contaminated sediments:

- Remove gross contamination from equipment by manually scraping working from top to bottom.
- Remove remaining contamination with a pressure washer/steam cleaner. Decon water should be collected for treatment by the water treatment system.
- Inspect equipment to verify that all visible contaminated material has been removed

Heavy equipment that has come in contact with contaminated sediments will not be permitted to leave the EZ unless it has been thoroughly decontaminated, visually inspected by the ESS or his designee. If heavy equipment has been in contact with contaminated sediments having > 50 ppm PCBs, wipe samples will also be required to verify cleanliness.

7.3 COMMUNICATION

The following communications equipment shall be specified as appropriate:

- Two-way radios are used as appropriate by field teams performing work on the water for communication with the Coast Guard.
- Telephones – Site personnel will have cell phones for communication with emergency support services/facilities.
- Hand Signals - Hand signals will be used by field teams along with the buddy system. They will be known by the entire field team before operations commence and their use will be covered during site-specific training. Typical hand signals are the following:

SIGNAL	MEANING
Hand gripping throat	Out of air, can't breathe
Grip on a partner's wrist or placement of both hands around a partner's waist.	Leave the area immediately, no debate.
Hands on top of head	Need general assistance
Hands raised above head	Need immediate assistance
Thumbs up	Okay, I'm all right, I understand.
Thumbs down	No, negative.

8.0 MEDICAL SURVEILLANCE PROCEDURES

All personnel performing field work where potential exposure to contaminants exist are required to have passed a medical surveillance examination in accordance with 29 CFR 1910.120(f).

The TtEC Corporate Medical Surveillance Program is described in detail in EHS 4-5 of the Health and Safety Program. The Corporate Medical Consultant is Work Care in Anaheim, California. Doctor Greeney may be consulted for injury diagnosis and treatment. He may be reached at 800-455-6155.

8.1 MEDICAL SURVEILLANCE REQUIREMENTS

Proof of a current physician's certification for hazardous waste site work must be provided to the ESS before an individual can work in designated exclusion zones at the site. The certification must be based on a physical examination conducted in accordance with 29 CFR 1910.120, and 29 CFR 1910.134, and signed by the physician. The examination will be repeated annually and upon termination of hazardous waste work. Medical surveillance requirements for individuals performing certain limited on-site tasks where the potential for contaminant exposure does not exist may be waived at the discretion of the PESM and ESS.

Alternative medical monitoring frequencies may be approved by the TtEC CMC for employees whose respirator use is less than 30 days per year. This is consistent with applicable OSHA standards and the TtEC Medical Surveillance Program (EHS 4-5). All medical program certification documents must indicate with a specific statement that the employee is certified to work on hazardous waste sites and wear personal protective equipment, and has been evaluated per the requirements of 29 CFR 1910.120 and 29 CFR 1910.134.

Additional medical testing may be required by the PESM in consultation with the CMC and the ESS if an over-exposure or accident occurs, if an employee exhibits symptoms of exposure, or if other site conditions warrant further medical surveillance. Any personnel not involved with direct cleanup activities at the site will not require medical surveillance.

8.2 MEDICAL DATA SHEET

A medical data sheet is provided in Appendix A. This medical data sheet is voluntary and should be completed by all on-site personnel and will be maintained at the site. It is intended to provide basic information that would be useful to professional medical personnel if medical treatment or transport to emergency medical facilities is required. Where possible, this medical data sheet will accompany the personnel needing medical assistance. The medical data sheet will be maintained in a secure location, treated as confidential, and used only on a need-to-know basis.

8.3 SUBCONTRACTOR MEDICAL SURVEILLANCE AND QUALIFICATIONS

All Subcontractor employers participating in hazardous waste operations or emergency response (or if required by Subcontract) will maintain an adequate medical surveillance program in accordance with 29 CFR 1910.120 or 29 CFR 1926.65 and other applicable OSHA standards.

8.3.1 Hazardous Waste Operations and Emergency Response

Subcontractor personnel expected to participate in on-site hazardous waste operations or emergency response (or if required by subcontract) are required to have a current medical qualification for performing this work. Medical qualification shall consist of a qualified physician's written opinion regarding fitness for duty at a hazardous waste site, including any recommended limitations on the employee's assigned work. **The physician's written opinion shall state whether the employee has any detected medical conditions that would place the employee at increased risk of material impairment of the employee's health from work in hazardous waste operations or emergency response**. Documentation of employee medical qualification (e.g., physician's written opinion) will be submitted to TtEC. These records must also be maintained at the site by the Subcontractor and made available for inspection by TtEC, the client, or regulatory agencies such as OSHA.

9.0 SAFETY CONSIDERATIONS

9.1 GENERAL HEALTH AND SAFETY WORK RULES

A list of work rules and general safe work practices has been included in this plan from the TtEC Health and Safety Program, EHS 3-6. At a minimum, the work rules and general site work practices will be reviewed with site personnel during their initial site briefing. A copy of the Program and work rules / general safe work practices will be present and available for reference by all site personnel during the duration of all on-site activities.

9.2 GENERAL CONSTRUCTION HAZARDS

The following are lists of applicable safety considerations for the major tasks. Further information is provided in the specific Activity Hazard Analysis in the Site-Specific Health and Safety Plans and the specific TtEC Health and Safety Program sections.

- Injury from working with, or around heavy equipment.
- Exposure to site contaminants.
- Working on/and around Water.
- Slips/Trips/Falls.

9.3 HIGH LOSS POTENTIAL HAZARDS

The following activities projected to be conducted at this job-site are those deemed to present the greatest "high loss potential" hazards:

- Injury from working with, or around heavy equipment.
- Exposure to site contaminants.
- Working on/and around Water.
- Slips/Trips/Falls.

The basic hazards posed by these operations and the control measures to reduce or eliminate the hazards are described in the Activity Hazard Analyses in Appendix C of the Site-Specific Health and Safety Plans.

10.0 EMERGENCY RESPONSE AND CONTINGENCY PLAN

This section establishes procedures and provides information for use during a project emergency. Emergencies happen unexpectedly and quickly, and require an immediate response; therefore, contingency planning and advanced training of staff is essential. Specific elements of emergency support procedures are addressed and include communications, local emergency support units, preparation for medical emergencies, first aid for injuries incurred on site, accident/incident reporting, and emergency site evacuation procedures.

10.1 RESPONSIBILITIES

10.1.1 Project Environmental and Safety Manager (PESM)

The PESM oversees and approves the Emergency Response/Contingency Plan and performs audits to determine that the plan is in effect and that all pre-emergency requirements are met. The PESM acts as a liaison to applicable regulatory agencies and notifies OSHA of reportable accidents.

10.1.2 Environmental and Safety Supervisor (ESS)/Emergency Coordinator (EC)

The EC shall make contact with Emergency Response personnel prior to beginning work on site. In these contacts the EC will inform them about the nature and duration of work expected on the site and possible health or safety effects of emergencies. EC shall telephone 911 to report any emergency occurrence (personal injury, environmental spill, etc.) and identify hospital routes prior to beginning work on site. The EC shall make necessary arrangements to be prepared for any emergencies that could occur. The EC shall implement the Emergency Response/Contingency Plan whenever conditions at the site warrant such action.

The ESS is required to immediately notify the PESM of any fatalities or catastrophes (three or more workers injured and hospitalized) so that the PESM can notify OSHA within the required time frame. The PESM will be notified of all OSHA recordable injuries/illnesses, worker exposure exceedances > the PEL or TLV,, fires, spills, releases or equipment damage in excess of $500 within 24 hours.

10.1.3 Construction Manager (CM)

The CM is responsible for ensuring that all personnel are evacuated safely and that machinery and processes are shut down or stabilized in the event of a stop work order or evacuation. The CM also serves as the alternate Emergency Coordinator.

10.1.4 Site Personnel

The contents and requirements of the project-specific Emergency Response/Contingency plan will be reviewed, at a minimum, with all on-site personnel during their initial briefing and during daily briefings as necessary. Site personnel are responsible for knowing how to initiate emergency response actions and their respective responsibilities in the event the Emergency Response/Contingency Plan must be implemented. Personnel are expected to notify the EC of situations that could constitute a site emergency or result in the occurrence of a site emergency.

10.2 COMMUNICATION

A variety of communication systems may be utilized during emergency situations. These are discussed in the following sections.

10.2.1 Cell Phone/Radio Communication

Cell phones and radios will be the primary sources of communication in the field. The locations of cell phones will be with supervising personnel. Site radios will also be used by field personnel for communication. VHF radios will be used for communication with the Coast Guard.

10.2.2 Audible Signals

Audible signals will be utilized in the event of an emergency or a need to evacuate the site. Three bursts will be sounded on an air horn or vehicle horn to obtain the attention of site personnel. Site personnel should then follow the procedures listed in Section 10.8, Emergency Site Evacuation Route and Procedures.

10.3 LOCAL EMERGENCY SUPPORT UNITS

In order to be able to deal with any emergency that might occur during activities at the site, an emergency telephone number list (Table 10-1 & 10-2) will be posted in the field office and placed in all on-site vehicles. Since the Lower Fox River site covers a large area, several hospitals and Work Care facilities have been identified for use during site activities. Hospital location maps are provided in Appendix F for non-emergency trips to the hospital. The Work Care facilities that can be used for non-emergency treatment is also listed in Table 10-1 and the location map is provided in Appendix F. Specific directions for each facility could not be developed since the workers will not be working in one TtEC personnel will identify and drive the routes to the hospitals and Work Care facilities to verify the directions are correct and easy to follow. For procedures to follow in event of an injured work refer to ZIP Bulletin No. 108 – Injured Worker Case Management (Appendix F) and Section 10.7. Contact WorkCare as soon as possible.

10.4 PRE-EMERGENCY PLANNING

TtEC will communicate directly with administrative personnel from the emergency room at the hospital in order to determine whether the hospital has the facilities and personnel needed to treat the injured individual(s). TtEC personnel will make a site visit to the clinic and discuss treatment options with the physician. ESS will inquire with the Work Care and other local clinics as to off hours availability and/or .physician on call. Work Care can be called off hours and off days if there is no local clinic available during these times. Instructions for finding the hospital and emergency phone numbers will be posted conspicuously in the site office and in each site vehicle. TtEC will also communicate directly with the local fire departments to determine whether they have the facilities and personnel needed to respond to a fire or hazardous material spill during project activities.

Site Health and Safety Plan
Phase 2B
Lower Fox River (OUs 2-5)
Table 10-1
Emergency (and Non-Emergency) Telephone Numbers

EMERGENCY CONTACT	LOCATION	PHONE NUMBER	OUs	NOTIFIED
HOSPITALS				
Bellin Hospital	744 S. Webster Avenue Green Bay, WI 54301	911 or 920-433-3500	3,4,5	
St. Vincent Hospital	835 S. Van Buren Street Green Bay, WI 54301	911 or 920-433-0111	3,4,5	
St. Elizabeth Hospital	1506 South Oneida Street Appleton, WI 54915	911 or 920-738-2000	2	
Work Care Facilities				
Theda Care at Work Contact: Mary Schrader or Cheryl Marx	2009 Memorial Drive Appleton, WI 54915 Mon-Fri 7:30 AM – 5:00 PM	920-380-4999	2,3	
Prevea Workmed Voyager Contact: Debbie	3021 Voyager Drive Green Bay, WI 54311 Mon-Fri 7:30 AM – 5:30 PM On-Call Available	920-496-4760	3,4,5	
Fire Department/EMS				
Green Bay Fire Department	501 S. Washington Street Green Bay, WI 54301	911 or 920-448-3280	3,4,5	
Ashwaubenon Fire and Rescue	2155 Holmgren Way Green Bay, WI 54304	911 or 920-492-2312	3,4,5	
De Pere Fire/EMS	400 Lewis Street De Pere, WI 54115	911 or 920-339-4087	2,3	
Wrightstown Fire Department	961 Broadway Street Wrightstown, WI 54180	911 or 920-532-4556	2,3	
Kaukanua Fire Department	206 West 3rd Street Kaukauna, WI 54130	911 or 920-766-6320	2	
Kimberly Fire Department	515 W. Kimberly Avenue Kimberly, WI 54136	911 or 920-788-9805	2	
Police				
Fox Valley Metro	200 West McKinley Ave Little Chute, WI 54140	911 or 920-788-1511	2	
Brown County Sheriff's Department	300 East Walnut Street Green Bay, WI 54301	911 or 920-448-4219	2,3,4,5	
Green Bay Police Department	307 South Adams Street Green Bay, WI 54301	911 or 920-448-3200	3,4,5	
U.S. Coast Guard				
Station Green Bay	P.O. Box 8486 Green Bay, WI 54308	920-435-7042 VHF Radio Channel 16 for distress calls	2,3,4,5	
Poison Control Center				
Poison Control Center		800-222-1222		
Hazardous Materials Spill Response Units				
Fire Department/EMS				
Appleton Fire Department	700 N Drew St Appleton, WI 54911	911 or 920-832-5813	2	
Green Bay Fire Department	501 S. Washington Street	911 or	3,4,5	

Site Health and Safety Plan
Phase 2B
Lower Fox River (OUs 2-5)
Table 10-1
Emergency (and Non-Emergency) Telephone Numbers

EMERGENCY CONTACT	LOCATION	PHONE NUMBER	OUs	NOTIFIED
	Green Bay, WI 54301	920-448-3280		
Ashwaubenon Fire and Rescue	2155 Holmgren Way Green Bay, WI 54304	911 or 920-492-2312	3,4,5	
De Pere Fire/EMS	400 Lewis Street De Pere, WI 54115	911 or 920-339-4087	2,3	
Wrightstown Fire Department	961 Broadway Street Wrightstown, WI 54180	911 or 920-532-4556	2,3	
Kaukanua Fire Department	206 West 3rd Street Kaukauna, WI 54130	911 or 920-766-6320	2	
Kimberly Fire Department	515 W. Kimberly Avenue Kimberly, WI 54136	911 or 920-788-9805	2	
CHEMTREC[1] Chemical Transportation Emergency Center	1300 Wilson Boulevard Arlington, VA 22209	800-424-9300 (703-741-5525)		
National Response Center[2]	United States Coast Guard (G-OPF) 2100 2nd Street, Southwest – Room 2611 Washington, DC 20593-0001 USA	800-424-8802 (202-267-2675)		

Notes:

1. CHEMTREC® (Chemical Transportation Emergency Center) is a public service of the Chemical Manufacturers Association. However, CHEMTREC is not intended nor equipped to function as a general information source.
   - CHEMTREC® DEALS ONLY WITH CHEMICAL TRANSPORTATION EMERGENCIES!
   - In the event of chemical transportation emergency, CHEMTREC® provides immediate advice for those at the scene of emergencies, then promptly contacts the shipper of the chemicals for more detailed assistance and appropriate follow-up.
   - OPERATES AROUND THE CLOCK – 24 HOURS A DAY, 7 DAYS A WEEK TO RECEIVE EMERGENCY CALLS. IN CASE OF CHEMICAL TRANSPORTATION EMERGENCIES, CALL ONE OF THE FOLLOWING NUMBERS:
     - Continental United States: (800) 424-9300 direct dial, toll free (WATS) number
     - Outside of Continental USA: (703) 527-3887 (This number may be called collect)
   - CHEMTREC® provides hazard information warnings and guidance when given the NAME OF THE PRODUCT and the NATURE OF THE PROBLEM. For more detailed assistance, provide the following information:
   - Name of caller and call-back number; Location of problem; Shipper or manufacturer; Container type; Rail car or truck number; Carrier name; Consignee; Local conditions.

2. The Notional Response Center (NRC) maintains a 24 hours per day, 7 days a week, 365 days a year Operation Center where all information is received via the toll-free number, entered directly into an on-line data base system, and electronically disseminated as part of the National Response System. Once contacted, the NRC Duty Officer will guide the caller through a detailed series of questions based on the Standard Report Form to gather as much information as possible concerning the spill or release. The information is immediately entered into the Incident Reporting Information System (IRIS) and based on several pre-established criteria including material involved, mode of transportation, injuries, damage, and fatalities, select federal agency notification will take place within 15 minutes of receipt. When any of the following incidents occur, the NRC should immediately be contacted by the responsible party via the toll free number. If you see or discover and oil spill or release of chemicals and are NOT the responsible party, you should contact the NRC with whatever information you have.

Chemical Releases

The Comprehensive Environmental Response, Compensation, and Liability Act requires that all releases of hazardous substances exceeding reportable quantities be reported by the responsible party to the National Response Center. Title 40 of the Code of Federal Regulations Part 302 promulgates reportable quantities and reporting criteria. All the Extremely Hazardous Chemicals (EHC) that overlaps with the CERCLA listed chemicals table (40CFR Part 302.4) should be reported to NRC.

Other Releases

Discharges from a hazardous waste treatment or storage facility must be reported by the emergency coordinator at the facility. Abandoned dump or waste sites should be reported by anyone having knowledge of such a site.

Site Health and Safety Plan
Phase 2B
Lower Fox River (OUs 2-5)
Table 10-2
Site Contact Numbers

CONTACT	PHONE NUMBER
Project Manager– Ray Mangrum	C (713) 876-8528
CM – Mike Estess	C (803) 646-0938
PESM – Grey Coppi	(973) 630-8101 C (215) 327-0751
Phil Bartley (Director, EHS Services, TtEC)	(509) 372-5818 C (509) 521-4898
Medical Consultant (Dr. Greaney)	(800) 455-6155
ESS/EC – Bill Welch	C (330) 208-5630
Regulatory Specialist – Christine Hylemon	(920) 884-5111 Ext: 109 C (303) 547-7831

10.5 EMERGENCY DRILLS

10.5.1 General Site Emergencies

A general site emergency drill will be conducted during the first two weeks of site activities to test the site emergency systems.

The drill(s) will simulate emergency situations and evacuation scenarios that might occur on-site, and may include a mock spill response and cleanup. Local outside emergency responders may participate.

A critique of the drill(s) according to TtEC Procedure EHS 2-1 will be conducted.

10.5.2 Marine Emergencies

In addition or as part of the general site emergency drill, if work is being performed on-water, a fire onboard drill should be performed. A person overboard or rescue drills will be conducted during the first two weeks of site activities. This would involve locations on the water and immediately adjacent to water, such as piers, docks, and bulkheads.

On all vessels which have a regular crew, or on which people are quartered, the following drills will be held at least once (unless the vessel is required, under USCG regulations, to be drilled more frequently): abandon ship/boat drills, fire drills, and person overboard or rescue drills.

Drills will include, where appropriate, how to handle a dewatering pump or pipe rupture, or failure within the hull (proper shutdown procedures, system containment, etc.) and how to handle leaks or failures of the hull or portions of it (what compartments to secure, how to handle power losses, pulling spuds to move to shallow water, etc.).

Emergency lighting and power systems will be operated and inspected weekly to ensure proper operation. Internal combustion engine driven emergency generators will be operated under load for at least a two hour check during this project. Storage batteries for emergency lighting and power systems will be tested at least monthly during this project.

Marine drills will also be critiqued, which will include any deficiencies noted and the associated corrective actions taken.

10.6 EMERGENCY MEDICAL TREATMENT

The procedures and rules in this SHSP are designed to prevent employee injury. However, should an injury occur, no matter how slight, it will be reported to the ESS immediately. The First-aid equipment will be available on site at the following locations:

First Aid Kit with Inventory Sheet:	Support Zone/Field Team Vehicle
ANSI Approved Emergency Eye Wash:	Support Zone/ Field Team Vehicle

At a minimum, two first aid/CPR trained persons will be assigned to each shift. During the site safety briefing, project personnel will be informed of the location of the first aid station(s) that has been set up. Unless they are in immediate danger, severely injured persons will not be moved until paramedics can attend to them. Some injuries, such as severe cuts and lacerations or burns, may require immediate treatment. Any first aid instructions that can be obtained from doctors or paramedics, before an emergency-response squad arrives at the site or before the injured person can be transported to the hospital, will be followed closely.

When personnel are transported to the hospital, the ESS will provide a copy of the Medical Data Sheet to the paramedics and treating physician.

Only in **non-emergency** situations will an injured person be transported to the hospital by means other than an ambulance.

10.7 EMERGENCY AND NON-EMERGENCY RESPONSE

10.7.1 Emergency Response

Some physical signs/symptoms that require emergency medical treatment and a call to 911 include: chest pain, difficulty breathing, uncontrolled bleeding, bone fracture, loss of consciousness, severe head injury, poisoning, shock, loss of limb, and sudden and prolonged dizziness. In an emergency situation:

- Call 911 for initial employee evaluation and transport to the hospital. A designated TtEC employee shall accompany the injured worker to the hospital.
- Administer first aid to minimize the injury effects.
- Call WorkCare at 1-800-455-6155 for a triage call/discussion with an Occupational Health Nurse or physician. Mention ASAP that the call is regarding an emergency injury. The Occupational Health Nurse will assist the supervisor to determine the best treatment plan.
- Provide the following information to WorkCare:
  - Name of Supervisor calling.
  - Phone Number.
  - Location calling from.
  - Name of individual injured and social security number.
  - Date and type of injury.

- During WorkCare off-hours, dial the 800 number and identify yourself. A WorkCare health care representative will call you back shortly. Do not delay treatment while awaiting a return phone call.
- Call the PESM, Project Manager, and Client.

10.7.2 Serious Injury to Personnel on the Water

A significant amount of work at the site is performed on or from watercraft, and it is possible that an employee may become sick or injured while located on a watercraft in the harbor. In the event that an employee becomes disabled while on a vessel, then the following procedures should be followed:

- Call 911 (if cell phones work) other wise contact the Coast Guard (Distress Channel 16 - VHF Radio) for initial employee evaluation and transport to the hospital. A designated TtEC employee shall accompany the injured worker to the hospital.

IMPORTANT: The logistics of the rescue must be communicated to the emergency responders.

- If the watercraft on which the person is located can maneuver to a shoreline rendezvous point, then the location must be provided to the emergency responders. Shoreline meeting point locations to be used in emergencies must be planned in advance by project management personnel, as they may vary depending on the location of work. Each preset location will be visited prior to the beginning or activities to verify the appropriateness of the location.
- If the injured employee cannot be transported on the watercraft where the incident occurred, or in the case of an immobile watercraft, the employee can be transferred (if injuries allow) to another boat, then the employee should be transported to the pre-determined meeting point to rendezvous with the emergency responders.
- If, in the judgment of the First Aid/CPR competent person, the injured individual cannot be moved, the emergency responders will be transported by a site boat to the scene of the incident. If necessary, CPR and First Aid will be administered while awaiting the arrival of the emergency response personnel.
- Supervisory personnel will meet EMS personnel at the rendezvous point and direct them to the injured party. The rendezvous point should be coordinated with EMS during the initial mobilization activities.
- The EMS personnel will evaluate the patient's condition.
- If the condition of the patient is immediately life-threatening and waiting for the arrival of the emergency responders is not possible, then the project personnel will take the injured employee from the watercraft, transfer them to the workboat, and transport to shore. The project personnel will then rendezvous with EMS personnel at the on-shore location.
- The site boat or other watercraft used in a rescue will be secured to the barge or other vessel prior to the removal of and placement of the injured person into the rescue boat.

10.7.3 Person in Water (Overboard)

When working on vessels or near water, the possibility exists that a person could fall from the vessel or other location adjacent to water. Since no work on water is to be conducted by one person alone, there will typically be another person to act in the event of an overboard incident.

If there is occasion where a single person is working on, over, or adjacent to water, then the person must be equipped with a means of communication with another party (buddy system). Regular well-being checks should be made using this communication method. If a person does go overboard from a vessel or otherwise falls into a water body, then the following applies.

10.7.3.1 Small Watercraft (on boats, skiffs, etc.)

- If a person goes overboard yell "Man Overboard" and what side the person fell off, immediately stop the motor and throw the life ring (Type IV PFD) to the person. If the boat has traveled to far from the person, maneuver the boat closer before throwing the ring. Motor must be in neutral when person in the water is alongside the boat.
- Instruct the person to hold the ring, and slowly bring the person to the side of the boat. Depending on the boat size and configuration, the person may be able to climb back into the boat with assistance. For smaller boats like johnboats, it is almost impossible to bring someone on board without capsizing the boat. In this case have person hang onto boat and carefully maneuver boat to nearest shore.
- If the person cannot get into the boat because of the boat limitations, injuries, or unconsciousness, then have the person stay with the boat, or have personnel hold that person alongside the boat until shoreline is reached or assistance arrives.
- Notify other site vessels and emergency responders and the Coast Guard by VHF radio (if appropriate) and await assistance.

10.7.3.2 Large Watercraft (barges, dredges, ships)

- If a person goes overboard yell "Man Overboard" and the side the person fell off and immediately throw them a life ring (Type IV PFD).
- Give the order to stop all engines.
- Notify the captain or crewmember in charge and the land-based EC.
- With assistance, use the rescue or lifesaving skiff to reach the person.
- If the skiff is suitably configured, and assistance is available, the person may be able to be brought onto the skiff.
- If the person cannot get into the boat because of the boat limitations, injuries, or unconsciousness, then have the person stay with the boat, or hold them alongside so they do not drift away.
- On large vessels so equipped, the person may be able to be winched back onto the vessel after a line and sling has been placed around and under their arms.
- Await assistance.

10.7.3.3 Land-Based Areas

- If a person goes into the water yell "Man Overboard" and location where they went overboard and throw them a life ring (Type IV PFD).
- Notify the EC.
- Depending on the configuration of the area, the person may, with the assistance of the life ring and line, be able to come to the shoreline and exit the water.
- If the person cannot exit the water, with assistance, use the lifesaving skiff to reach the person.

- Instruct the person to hold the ring, and slowly bring the person to the side of the skiff. Depending on the skiff size and configuration, the person may be able to climb into the skiff with assistance.
- If the person cannot get into the skiff because of the skiff's limitations, injuries, or unconsciousness, then have the person stay with the boat, or hold them alongside so they do not drift away.
- Await assistance.

10.7.4 Non-Emergency Response

In a non-emergency situation:

- Administer first aid to minimize the injury effects.
- Call WorkCare at 1-800-455-6155 for a triage call/discussion with an Occupational Health Nurse or physician. Mention ASAP that the call is regarding an injury. The Occupational Health Nurse will assist the supervisor to determine the best treatment plan.
- Provide the following information to WorkCare:
  - Name of Supervisor calling.
  - Phone Number.
  - Location calling from.
  - Name of individual injured and social security number.
  - Date and type of injury.
- During WorkCare off-hours, dial the 800 number and identify yourself. A WorkCare health care representative will call you back shortly. Do not delay treatment while awaiting a return phone call.
- Call the PESM, Project Manager, and Client.
- Call the local WorkCare clinic (see Table 10-1) to notify them that you are bringing an injured worker to their clinic for evaluation.
- You may transport the injured employee to the local clinic in a privately owned vehicle. A designated TtEC employee must accompany the injured worker to the local clinic.

10.7.5 After Emergency and Non-emergency Treatment

After emergency and non-emergency treatment:

- Obtain treatment and medical release records for the injured worker and forward to WorkCare.
- Contact TtEC worker's compensation carrier (AIG at 1-800-910-2667) within 24 hours of injury.
- Seek ways to ensure the worker can work, including alternate work.
- Regularly follow-up with WorkCare and ESIS case representatives.

10.8 EMERGENCY SITE EVACUATION ROUTES AND PROCEDURES

In order to mobilize the manpower resources and equipment necessary to cope with a fire or other emergency, a clear chain of authority will be established. The EC will take charge of all

emergency response activities and dictate the procedures that will be followed for the duration of the emergency. The EC will report immediately to the scene of the emergency, assess the seriousness of the situation, and direct whatever efforts are necessary until the emergency response units arrive. At his/her discretion, the EC also may order the closure of the site for an indefinite period.

All project personnel will be instructed on proper emergency response procedures and locations of emergency telephone numbers during the initial site safety meeting. If an emergency occurs, including, but not limited to fire or explosion, an air horn will be sounded on the site. The horn will sound for three blasts, signaling that immediate evacuation of all personnel is necessary due to an immediate or impending danger. All heavy equipment will be shut down and all personnel will evacuate the work areas and assemble at the designated rally point, which shall be determined upon arrival at the site. Emergency procedures of the dewatering and water treatment operations will be determined at a later date and all facility personnel will be trained in these procedures.

The EC will give directions for implementing whatever actions are necessary. Any project team member may be assigned to be in charge of emergency communications during and emergency. He/she will attend the site telephone specified by the EC from the time the alarm sounds until the emergency has ended.

After sounding the alarm and initiating emergency response procedures, the EC will check and verify that access roads are not obstructed. If traffic control is necessary, as in the event of a fire or explosion, a project team member, who has been trained in these procedures and designated at the site safety meeting, will take over these duties until local police and fire fighters arrive.

The EC will remain at the site to provide any assistance requested by emergency-response squads as they arrive to deal with the situation. Evacuation routes, meeting places, and location of emergency equipment and first aid supplies shall be discussed during the site-specific briefing.

10.9 FIRE PREVENTION AND PROTECTION

In the event of a fire or explosion, procedures will include immediately evacuating the site (air horn will sound for a single continuous blast), and notification to the local fire department. No personnel will fight a fire beyond the stage where it can be put out with a portable extinguisher (incipient stage).

Adhering to the following precautions will prevent fires:

- Good housekeeping and storage of materials;
- Storage of flammable liquids and gases away from oxidizers;
- Smoking will be allowed only in designated areas appointed by CM;
- No hot work without a properly executed hot work permit;
- Shutting off engines to refuel;
- Grounding and bonding metal containers during transfer of flammable liquids;
- Use of UL approved flammable storage cans;
- Fire extinguishers rated at least 10 pounds ABC located on all heavy equipment, in all trailers and near all hot work activities; and

- Monthly inspections of all fire extinguishers.
- Daily inspections of vessel fuel tanks and lines, and engines.

10.10 CHEMICAL EXPOSURE

The following are standard procedures to treat chemical exposures. Other, specific procedures detailed on the Material Safety Data Sheet or recommended by the Corporate Medical Consultant will be followed, when necessary. Call 911 if required.

SKIN AND EYE CONTACT:	Use copious amounts of water. Wash/rinse affected areas thoroughly, then provide appropriate medical attention. Eyes should be rinsed for 15 minutes upon chemical contamination. Skin should also be rinsed for 15 minutes if contact with caustics, acids or hydrogen peroxide occurs.
INHALATION:	Move to fresh air. Decontaminate and transport to hospital or local medical provider.
INGESTION:	Decontaminate and transport to emergency medical facility.
PUNCTURE WOUND OR LACERATION:	Decontaminate and transport to emergency medical facility.

10.11 ACCIDENT/INCIDENT REPORTING

As soon as first aid and/or emergency response needs have been met, the following parties are to be contacted by telephone:

1. Ray Mangrum, Project Manager (713) 876-8528.
2. Bill Welch, ESS (330) 208 - 5630
3. Grey Coppi, CIH (973) 630-8101
4. The employer of any injured worker who is not a TtEC employee

Incident reporting needs to occur to TtEC immediately to assure that any injury is properly managed. Written confirmation of verbal reports are to be submitted within 24 hours. The accident/incident report is found in the TtEC Corporate Health and Safety Program Section EHS 1-7. This report will be done by the employee(s) involved in the incident, and the ESS, Construction Manager, or Project Manager. If the employee(s) involved is not a TtEC employee, his employer shall receive a copy of the report. Any major waterborne incident will be reported to the U.S. Coast Guard.

10.12 ADVERSE WEATHER CONDITIONS

In the event of adverse weather conditions, the ESS or designee will determine if work can continue without potentially risking the safety of all field workers. Some of the items to be considered prior to determining if work should continue are:

- Potential for heat stress and heat-related injuries;
- Potential for cold stress and cold-related injuries;
- Treacherous weather-related working conditions (hail, rain, lightning, snow, ice, or high winds);
- Rough seas;
- Limited visibility (fog);

- Potential for electrical storms; and
- Other major incidents.

Site activities will be limited to daylight hours, or when suitable artificial light is provided, and acceptable weather conditions prevail. The ESS will determine the need to cease field operations, if necessary, in case of severe inclement weather conditions.

All Subcontractors must work closely with site management in order to ensure that pre-planning for, and response to, severe weather conditions are adequate.

A detailed weather forecast will be obtained by the ESS for the area for the current and following day's weather forecast to determine the impending weather. The weather forecasts will be discussed at each morning's health and safety briefing.

10.12.1 Thunder Storms, Squalls, and Short Duration Wind Storms

The following actions should be taken to secure the site whenever there is a threatening storm that includes lightning or the chance of winds over 45 miles per hour:

- Secure all loose materials, supplies and equipment.
- Employees working in high wind conditions must be protected from airborne contaminants and flying debris using engineering controls such as wetting of dry soil to prevent particle dispersion and securing all loose objects.
- Stop all work and bring all workers indoors when lightning is within view of the site. Work will not commence until 30 minutes after last sighting of the lightning.
- Reach equipment work will stop and be lowered and secured.
- In the event that lightning is encountered in the area, work will stop and the crew will follow the established procedure for taking shelter. The increased hazard of transporting crew members over water in small boats in these conditions will be addressed by having the crew sheltered on the spudded down, floating barge until the danger has passed. Evacuation of the crew from the floating plant will be at the digression of the ESS and Construction Manager.
- Shut down and disconnect all electrical equipment in an orderly manner. The purpose is to protect the equipment from electrical surges and abrupt power loss.
- Anchor barges and other immovable watercraft with anchor and spuds. Evacuate barge and take shelter from the storm on shore. All other watercraft will return to shoreline locations.

10.12.2 Special Marine Considerations

Pre-planning and response to extreme weather conditions in a marine environment, especially for vessel operations, is very dependent on the specific operations being conducted and the particular equipment involved. Therefore, in addition to the information in the above sections, there are additional severe weather elements, which must be considered for marine operations.

Special extreme weather considerations for marine activities are discussed below.

10.12.2.1 High Winds

Of particular concern during periods of high winds is: 1) the limited communications between persons on vessels to others via the two-way radios; and 2) the potential of strong winds

knocking persons on small craft, rafts and barges over. Sustained wind speeds of 20 knots will initiate the start of the appropriate precautions for suspending operations due to high winds. Should gale force winds (34-47 knots or 39-54 mph) be announced over the marine radio, all operations will cease work a minimum of one hour before the storm arrives, depending upon the work being performed.

Safety procedures for high-risk equipment (i.e., cranes, derricks, or barges) which may need special attention or which may be impacted by lower wind speeds should be established during mobilization activities and communicated to field personnel. All equipment will be lashed to the deck or placed in the storage area and all unnecessary boats and barges will be docked at a marina or removed from the water, and all personnel will be transported to shore. All rafts and johnboats will be removed from the water prior to gale force wind conditions. The watercraft must be equipped with sufficient weight trip anchors, and each anchor must have sufficient chain and line for anchoring. At a minimum, when mooring, one anchor will be put down for windy conditions. Should vessel captains or the ESS determine that additional anchoring/spudding/securing of the boats are needed, additional trip anchors/spuds or lines will be used. Some conditions may require a three point anchoring system or a minimum of three spuds to secure the watercraft. If this requirement cannot be met, then the watercraft must be pulled from the water.

Should it be determined by the onboard personnel and the captain that the weather conditions being encountered on the watercraft are dangerous and are worsening, all operations will cease, all equipment will be lashed to the deck or placed in the storage area, and all personnel will be transported to shore.

Additionally, when operations are conducted to secure watercraft and other vessels for protection against weather events such as high winds, high tides, hurricanes, etc, a meeting will occur with all responsible parties to discuss proper docking and securing procedures. Provisions and assignments for monitoring the integrity of the secured/docked watercraft at regular intervals, including weekends and nights during the event must be specified and approved by TtEC.

10.12.2.2 Heavy Downpours and Snow Squalls

In the event heavy downpours (where visibility is obscured), or snow squalls are forecasted or encountered, all operations will be suspended until the heavy rains or snow squalls end. Personnel may remain on the watercraft during heavy rain or snow squall events only when leaving poses greater danger. The watercraft will be left in place, secured by anchors. Should it be determined by the TtEC personnel and the captain that the weather conditions being encountered on the watercraft are dangerous and are worsening, all operations will cease, all equipment will be lashed to the deck or placed in the storage area, and all personnel will be transported to shore.

10.12.2.3 Snow, Ice, Hail

In the event snow, ice, or hail is forecasted or encountered, work may continue after the watercraft(s) are cleared of ice and accumulated snow as needed. Ample amounts of sand and salt will be available and applied to the deck surfaces as needed. Should it be determined by the TtEC personnel on board, and the captain, that the weather conditions being experienced on the watercraft are dangerous and are worsening, all operations will cease, all equipment will be lashed to the deck or placed in the storage area, and all personnel will be transported to shore.

10.12.2.4 Thunderstorms

In the event a thunderstorm is forecasted, the ESS, or designee, will monitor the activity on the NWS local Doppler Radar. Additionally, all site personnel will keep an "eye to the sky", observing conditions. Operations will cease when it is determined that thunderstorm cells are within five miles of the site, based on NWS Doppler Radar, or if lightning is observed from any location. All equipment will be lashed to the deck or placed in the storage area and all personnel will be transported to shore. Operations will be allowed to continue 30-minutes after the last lightning is observed, unless NWS local Doppler Radar shows other storms approaching.

10.12.2.5 General

- All vessels and personnel will maintain radio and cellular telephone communications/contact with the field office. Radio communication/contact will occur via the site marine radios. The channels to be used must be coordinated in advance.
- NOAA weather forecasts will be monitored daily by TtEC and Subcontractor personnel, for predicted inclement weather. Local weather forecasts will be discussed at the daily health and safety meeting.
- All personnel shall be aware of the forecast and keep an "eye to the sky". Unpredicted storms may also occur without warning. The ESS will also monitor NWS Local Doppler Radar as required and vessel captains will monitor marine forecasts on the NWS radio frequencies.
- Work will be suspended when a sustained wind of 26 knots or 30 mph is encountered or in the event of Gale force winds (34 – 47 knots or 39-54 mph), per the ESS or Construction Manager.
- Use of any 12 to 16-foot Aluminum-hulled tender boat during small craft advisories or greater warnings (18 – 33 knots or 20 – 38 mphs) will not be allowed.

10.13 SPILL CONTROL AND RESPONSE

All small hazardous spills/environmental releases shall be contained as close to the source as possible. Whenever possible, the Material Safety Data Sheets (MSDS) will be consulted to assist in determining the best means of containment and cleanup. For small spills, sorbent materials such as sand, sawdust or commercial sorbents should be placed directly on the substance to contain the spill and aid recovery. Any acid spills should be diluted or neutralized carefully prior to attempting recovery. Berms of earthen or sorbent materials can be used to contain the leading edge of the spills. Drains or drainage areas should be blocked. All spill containment materials will be properly disposed. An exclusion zone of 50-100 feet around the spill area should be established depending on the size of the spill.

The following steps should be taken by the Emergency Coordinator:

- Determine the nature, identity and amounts of major spill components.
- Make sure all unnecessary persons are removed from the spill area.
- Notify the appropriate site response team and the PM and PESM. See Table 10-1 and 10-2.
- Use proper PPE in consultation with the ESS.

- If a flammable liquid, gas or vapor is involved, remove all ignition sources and use non-sparking and/or explosive proof equipment to contain or clean up the spill (diesel only vehicles, air operated pumps, etc.).
- If possible, try to stop the leak with appropriate material.
- Remove all surrounding materials that can react or compound with the spill.
- Protect storm drains and sewer manholes by surrounding them with sorbent materials or berms.
- Attempt to divert spilled liquids from entering streams, surface waters, or drainage ditches using berms or sorbent materials.

Christine Hylemon – Regulatory Specialist (920-884-5111 Ext: 109 or 303-547-7831) may be contacted for spill reporting information and assistance.

10.13.1 Notification Requirements

If an on-site release requires notifications to state and federal regulatory agencies, the TtEC PM in coordination with the PESM will be responsible for making the notification. Table 10-3 presents the regulatory notification requirements and contact information in the event of release. In addition to the agency notification requirements in Table 10-3, if a notification is made there are additional reporting requirements. Coordinate with Christine Hylemon and the PESM to meet these requirements.

Site Health and Safety Plan
Phase 2B
Lower Fox River (OUs 2-5)
Table 10-3
Release Notification Requirements and Contact Information

Contact	Phone Number	Time Frame	Release Notification Requirement
National Response Center	1-800-424-8802	As soon as possible, but no later than 12 hours	Transportation –related (including loading/unloading, and temporary storage) incidents involving hazardous materials (including hazardous wastes) • Hazardous Materials are listed under 49 CFR 172.101 • As a direct result of hazardous material o A person is killed, o A person receives an injury requiring admittance to a hospital. o The general public is evacuated for 1 hour or more; o A major transportation artery or facility is closed or shut down for 1 hour or more o The operational flight pattern or routine of an aircraft is altered. • There has been a release of a marine pollutant in a quantity exceeding 119 gallons for liquids or 882 lbs. for solids • Release of a hazardous substance equal to exceeding the reportable quantity (see 40 CFR 302 – Table 302.4)
National Response Center (or if direct notification to the NRC is not practical, reports can be made to the Coast Guard)	NRC: 1-800-424-8802 Coast Guard District 9: 216-902-6073	As soon as there is knowledge of the spill.	Report oil spills into or upon the navigable waters of the United States or adjoining shorelines. Reportable discharges of oil include quantities that: • Violate applicable water quality standards • Cause a film or sheen upon or discoloration of the surface of the water or adjoining shorelines • Cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines.
EPA Regional Office Region V	77 West Jackson Blvd Chicago, IL 60604 312-353-2000	Immediate reporting	• Spills of 10 pounds or more by weight of PCBs (any concentration greater than 50 ppm) • Spills of 1 pound or more by weight of PCBs (i.e., Total volume spilled times concentration ≥ 1 pound). are also reportable to the National Response Center.
Wisconsin Emergency Management	1-800-943-0003	Immediate reporting	All discharges to the environment of a hazardous substance (including petroleum products such as diesel, gasoline, oil) *except* the following: • A discharge of gasoline or another petroleum product that is completely contained on an impervious surface. • A discharge of gasoline if < 1 gallon is discharged onto a surface that is not impervious or runs off an impervious surface. • A discharge of a petroleum product other than gasoline if < 5 gallons is discharged onto a surface that is not impervious or runs off an impervious surface. • A discharge of hazardous substances (e.g., PCBs) specifically listed in 40 CFR part 117 or 302 if the amount discharged in any 24 hour period is less than the RQ listed in 40 CFR part 117 or 302 (e.g., RQ for PCBs = 1 pound).

10.13.2 Minor Spill Less than RQ

On Vessels:

- Contain the spill on the vessel and clean up with absorbents or absorbent pillows in order to prevent the spill from reaching the water. The EC will follow the notification procedures outlined above.

In the Water:

- Contain and cleanup the spill with an absorbent boom, absorbent pillows, or pads. The EC will follow the notification procedures outlined above.
- Note that an appearance of a "sheen" on the water surface from a release of oil or hazardous material constitutes a RQ (i.e., requires agency notification) in Wisconsin and to the NRC under federal requirements, regardless of the actual quantity of oil or hazardous material released.

On Land:

- Prevent the spill from reaching the water or storm drains using an earthen berm or other barrier in order to prevent the spill from reaching the water. Remediate spill area according to State and Federal regulations. The EC will follow the notification procedures outlined above.

10.13.3 Large Spills Above the RQ

- Contain spill to the smallest area possible using booms, berms, or any other effective barrier. The EC will follow the notification procedures outlined above.
- In the event that additional emergency cleanup help is needed, TtEC will request assistance from off-site response Contractors.
- TtEC will collect all material discharged including contaminated booms and absorbent materials. All residue discharged will be disposed of in accordance with all applicable waste Federal and State regulations.
- All emergency equipment will be decontaminated prior to being placed back into routine service.
- Contaminated decontamination water, waste solutions, or residues generated from decontaminating the equipment will be collected and disposed of in compliance with all applicable State and Federal regulations.
- TtEC will keep all records related to the spill of hazardous waste for a period of at least three years after the spill has been cleaned up or for longer periods of time, if required as part of any unresolved enforcement action.

10.14 UNDERGROUND UTILITIES

Underground Utilities present a variety of hazards whenever intrusive activities are conducted. The possibility of the existence of underground utilities must be evaluated as early as possible in the planning phase of any intrusive activity. The requirements for conducting intrusive activities relative to underground utilities are outlined in TtEC Procedure EHS 3-15, Underground Utilities. This procedure covers means for underground utility identification, location, protection, and avoidance, as well as emergency response procedures.

In the event that encountering or contacting an underground utility occurs, it is imperative that the appropriate actions are taken to minimize damage to the utility, prevent personal injury, and minimize indirect effects. Response measures to be followed in the event of underground utility contact/near contact are outlined below.

10.14.1 Encountering Underground Utilities

It is possible that underground utilities will be encountered in locations that have previously been "cleared" of having underground utilities by the locating service, or are found outside of the area which has been marked as having underground utilities. In either case, if this occurs, the following applies:

- Intrusive activities must be stopped immediately.
- The One-Call agency (i.e., Wisconsin One-Call (811, (800) 242-8511, (414) 259-1181 or emergency only (877) 500-9592) or private location service must be contacted immediately.
- The PM, PESM and client must be notified.
- No further intrusive activities may be conducted until:
  - The One-Call agency/private location service and/or the subject utility owner visit the site;
  - Identification of the utility owner and the type of material/energy being conveyed by the utility has been made; and
  - The orientation and depth of the subject utility has been determined and suitably marked.
- An Incident Report and Investigation form must be completed per EHS 1-7. The report should be accompanied by photographs clearly showing the marking(s) and the actual location with a distance gauge to document how far off the mark the utility was encountered.

Note: Overhead utilities height clearance data will need to be received for transport up/down river.

10.14.2 Contacting Underground Utilities

If excavation or other equipment being used for intrusive activities makes contact with an underground utility, the following guidelines apply:

- Intrusive activities must be stopped immediately.
- Observe the utility from a safe distance and determine if there is damage. Damage would be all breaks, leaks, nicks, dents, gouges, grooves, scratched coatings, cathodic protection compromise, material leakage, obvious electrical energy.
- Move all personnel to the evacuation meeting point as described in the SHSP. EXCEPTION: If an electrical line has been contacted and it is your belief that equipment (such as an excavator) is electrically energized, do not approach the equipment. Order the operator to remain in the equipment until emergency personnel can de-energize the source (unless the equipment is on fire, at which time the operator should jump off of the vehicle and shuffle along the ground to a safe area). Shuffling is required because current flows outward through the soil in a ripple pattern called a power gradient, creating a

pattern of high and low potential, Shuffling decreases the chance that these gradients could be bridged, causing current to flow through the body, resulting in electrocution.

- Secure the area to prevent the public from entering.
- Contact emergency responders as specified in the SSHP.
- The One-Call agency or if known, the utility owner must be contacted immediately.
- The PM, PESM, and client must be notified.
- No further intrusive activities may be conducted until:
  - The utility owner inspects the scene and after repairs, verifies that all danger has passed.
  - The orientation and depth of the subject utility has been determined and suitably marked.
  - Permission from the emergency responders to resume work has been given.
- An Incident Report and Investigation form must be completed per EHS 1-7. The report should be accompanied by photographs clearly showing the marking(s), and the actual location, with a distance gauge to document how far off the mark the utility was encountered.
- State and local regulations must be reviewed to determine if reporting to any additional agencies is required.

10.15 EMERGENCY EQUIPMENT

The following minimum emergency equipment shall be kept and maintained on site:

- First aid kit.
- ANSI approved eye wash with capability of 15-minutes non-stop operation.
- Fire extinguisher (one per trailer/vehicle, and trailer).
- Spill control equipment if hazardous or petroleum-based materials are used to include, but not limited to, absorbent booms, absorbent pads, and absorbent material, scoop or shovel and disposal container.

10.15.1 Marine Emergency Equipment

- All watercraft > 25 feet having gasoline or liquid petroleum gas powerplants or equipment in cabins, compartments, or confined spaces, shall be equipped with a built-in automatic CO_2 or other equally effective type of fire extinguishing system.
- Each watercraft shall carry UL approved fire extinguishers (only needed if they have an engine) for use in gasoline, oil and grease fires. Each fire extinguisher shall be inspected by the owner/operator monthly to ensure that it is sufficiently charged and that the nozzles are free and clear. Discharged fire extinguishers shall be replaced or recharged immediately. Extinguisher requirements are as follows:

Length of Watercraft	Extinguisher Type	Number Required
26 feet or less	1-A:10-B:C	1
26 feet or more	1-A:10-B:C	2

- All watercraft shall carry at least one air horn or similar sound-signaling device.
- All watercraft shall carry a non-pyrotechnic visual distress signals. Non-pyrotechnic visual distress signals include an orange distress flag and a flashlight or other electric distress light. No single signaling device is ideal under all conditions and for all purposes.
- All powered watercraft shall carry a tool kit sufficient for the watercraft operator to troubleshoot common mechanical problems such as fouled spark plugs, flooded carburetor, electrical shorts, etc. Watercraft operated in remote areas shall also carry appropriate spare parts (propellers, shear pins, patch kits, air pumps, etc.). The tool kit shall be maintained by the watercraft operator, and expended supplies shall be replaced immediately.
- Emergency cutting equipment shall be provided in accessible positions on all towing vessels for freeing lines in an emergency.
- All controls requiring operation in cases of emergency - such as boiler stops, safety valves, power switches, fuel valves, alarms, and fire extinguishing systems - shall be located so that they are protected against accidental operation but are readily accessible in an emergency.
- General alarm systems shall be installed and maintained on all vessels where it is possible for either a passenger or crewman to be out of sight or hearing from any other person. Where general alarm systems are used they shall be operated from the primary electrical system with standby batteries on trickle charge that will automatically furnish the required energy during an electrical system failure.
- A sufficient number of signaling devices shall be placed on each deck so that they can be distinctly heard above the normal background noise at any point on the deck.
- Smoke alarms are required for all living quarters of a vessel; smoke alarms, if wired, should use the same electrical system as that of the electrical alarms.
- All doors shall be capable of being opened from either side and provided with positive means to secure them in both the open and closed position.
- Escape hatches and emergency exits shall be marked on both sides with letters, at least 2.5 cm (1 in) high, stating "EMERGENCY EXIT - KEEP CLEAR."
- Each prime mover (engine, turbine, motor) driving a dredge pump shall be capable of being stopped by controls remote from the prime mover locations.
- Where appropriate, vessels should have watertight compartments readily identified and properly maintained in a watertight condition (i.e., sealable doors in place and fully functional) and all penetrations maintained in a watertight condition.
- For watercraft > 25 feet, a shutoff valve shall be installed at the fuel tank connection; arrangements shall be made for operating this valve from outside the compartment in which the tank is located and from outside the engine compartment and outside the house bulkheads at or above the weather deck of the vessel.

- A shutoff valve shall be installed at the engine end of the fuel line unless the length of the supply pipe is 1.8 m (6 feet) or less. Arrangement shall be made for operating this valve from outside the house bulkheads, at or above the weather deck on the vessel.
- Fuel and lubricant containers and tanks shall be diked or curbed to contain the tank contents in case of leakage in accordance with NAVFAC DM-22, Petroleum Fuel Facilities. In lieu of a dike or curb, other means complying with USCG requirements in 46 CFR Parts 64, Marine Portable Tanks, and 98.30, Handling and Storage of Portable Tanks, may be used.
- Fuel oil transfers for barges shall be in accordance with the provisions of USCG regulations, 46 CFR and 33 CFR Parts 155 and/or 156. For uninspected vessels, USCG regulations in 33 CFR 156.120 and 33 CFR 155.320 for fuel coupling devices and fuel oil discharge containment apply. Venting fuel tanks is necessary when using the couplings prescribed by 33 CFR 156.120(1) or (2).
- All vessels need anchors
- If vessels are operating at night need Navigation Lights

10.15.2 Lifesaving Skiffs

1. At least one lifesaving skiff (a powered johnboat or other smaller boat used in emergencies) shall be immediately available at locations where employees are working over or adjacent to water (based on an assessment by the ESS).
2. OSHA has established the following criteria for determining when a lifesaving skiff is to be considered as being immediately available:
   - The skiff must be in the water or capable of being quickly launched by one person.
   - There must be at least one person present and specifically designated to respond to water emergencies and operate the skiff at all times when there are employees above water.
   - When the operator is on break another operator must be designated to provide the requisite coverage while employees are above water.
   - The designated operator must either man the skiff at all times or remain in the immediate area such that the operator can quickly reach the skiff and get underway.
   - The skiff operator may be assigned other tasks provided the tasks do not interfere with the operator's ability to quickly reach the skiff and get underway.
   - The communication system, such as a walkie-talkie, must be used to inform the skiff operator of an emergency and to inform the operator where the skiff is needed.
   - The skiff must be equipped with both a motor and oars as a secondary means of propulsion:
     a. Personnel trained in launching and operating the skiff shall be readily available during working hours. Lifesaving personnel shall perform a lifesaving drill before the initiation of work at the site and periodically

thereafter as specified by the ESS (but at least monthly or whenever new personnel are involved).

b. Skiffs shall be kept afloat or ready for instant launching.

c. Required equipment must be on board and meet or exceed USCG requirements. Skiffs shall be equipped as follows:

- Four oars (two if the skiff is motor powered);
- Oarlocks attached to gunwales or the oars;
- One ball-pointed boat hook; and
- One life ring with at least 70 feet (21 meters) of 3/8 (1 centimeter) solid braid polypropylene line, or equivalent, attached.
- PFDs in number equaling the skiff rating for the maximum number of personnel allowed on board.

- In locations where waters are rough, swift, or where manually operated boats are not practical, a powerboat suitable for the waters shall be provided and equipped for lifesaving.
- Skiffs shall have flotation tanks or buoyant material capable of floating the boat and its equipment and the crew.
- On vessels (e.g., skiffs) without permanently mounted navigation lights, portable battery-operated navigation lights will be available and used for night operations.
- According to OSHA's directive relative to the number of skiffs required and the appropriate maximum response time, the following factors must be evaluated:
  - The number of work locations where there is a danger of falling into water;
  - The distance to each of those locations;
  - Water temperature;
  - Currents; and
  - Other hazards such as, but not limited to, rapids, dams, and water intakes.
- In addition to the proceeding, the employer is required to comply with all other applicable standards including, but not limited to, the requirements that the injured employee is promptly treated by medical personnel or an employee certified in first aid. This could mean that medical treatment might have to begin in the lifesaving skiff.

10.15.3 Flotation Devices

10.15.3.1 Personal

- A USCG approved Type II or Type III Personal Floatation Device (PFD) shall be provided to and properly worn by all persons in the following circumstances:
  - On all watercraft, including barges, floating plants, powered and non-powered vessels and boats, floating work platforms, floating pipelines, pontoons, etc.

- On structures extending over or next to water except where guardrails or safety nets are provided for employees.
- Any work on or within 10 feet of water where falling into the water is a potential hazard.
- Wherever there is a drowning hazard.

- PFDs are required for all marine work.

10.15.3.2 Life Rings - Watercraft

Each watercraft shall be equipped with at least one Type IV PFD, designed to be thrown to a person in the water, and grasped and held by the user until rescued. A life ring or horse-shoe buoy are two common examples of a Type IV PFD. All Type IV PFDs must be approved by the ESS prior to use. Life rings (rope attachment not required) and ring buoys (rope attachment required) shall conform to the requirements of 46 CFR 160 (USCG approval) and shall have at least 70 feet (21 meters) of 3/8 inch (1 centimeter) solid braid polypropylene line, or equivalent, attached. Throw bags may be used in addition to life rings or ring buoys.

Life rings or ring buoys shall be readily available and shall be provided as follows:

- A minimum of one on each vessel.
- A minimum of one on all motor boats up to 40 feet (12 meters) in length and at least two for motor boats 40 feet (12 meters) in length or longer.
- A minimum of two on any other piece or group of floating plant up to 100 feet (30 meters) in length and one additional for each increase in length of 100 feet (30 meters) or fraction thereof.
- Life rings will be required when working on-shore alongside water.

10.16 POSTINGS

The following information shall be posted at the site:

- Emergency telephone numbers.
- Emergency VHF channels.
- Emergency evacuation routes and staging area.
- Route to Hospital/Work Care Clinic.

10.17 RESTORATION AND SALVAGE

After an emergency, prompt restoration of utilities, fire protection equipment, medical supplies and other equipment will reduce the possibility of further losses. Some of the items that may need to be addressed are:

- Refilling fire extinguishers;
- Refilling medical supplies;
- Recharging eyewashes and/or showers;
- Replenishing spill control supplies;
- Replace life rings; and
- Replacing used air horns.

11.0 TRAINING

11.1 GENERAL HEALTH AND SAFETY TRAINING

Project personnel shall receive site training during initial site visit including review of this SHSP. This training will address the duties the employees are expected to perform. In addition site employees will review and sign off on TtEC's Project Rules Handbook for general health and safety procedures.

11.2 HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE TRAINING

Employees engaging in hazardous waste operations or emergency response shall receive appropriate training as required by 29 CFR 1910.120, 29 CFR 1926.65 (or if required by Subcontract). At a minimum, the training shall have consisted of instruction in the topics outlined in 29 CFR 1910.120 and 29 CFR 1926.65. Personnel who have not met these training requirements will not be allowed to engage in hazardous waste operations or emergency response activities.

11.3 INITIAL TRAINING

General site workers engaged in hazardous waste operations shall, at the time of job assignments, have received a minimum of 40 hours of initial health and safety training for hazardous waste site operations, unless otherwise noted in the above-referenced standards.

11.4 THREE-DAY ACTUAL FIELD EXPERIENCE

General site workers for hazardous waste operations shall have received three days of actual experience (on-the-job training) under the direct supervision of a trained, qualified supervisor, and the employer shall provide documentation that this training has be completed. If the field experience has not already been received and documented at a similar site, this supervised experience shall be accomplished and documented at the beginning of the assignment.

11.5 REFRESHER TRAINING

General site workers shall receive 8 hours of refresher training annually (within the previous 12-month period) to maintain qualifications for fieldwork. Employees engaged in emergency response operations shall receive annual refresher training of sufficient content and duration to maintain their competencies or shall demonstrate competency in those areas at least annually.

11.6 SITE-SPECIFIC HEALTH AND SAFETY TRAINING

Prior to beginning any construction activities, TtEC will schedule a site-specific training with all personnel who work on the site. This meeting will be documented and signed by all parties attending the training. As work progresses, additional training may be required for new worker(s) entering the site. Personnel who have not received the site-specific training will not be allowed unescorted into the construction zone.

11.7 ON-SITE SAFETY BRIEFINGS

Project personnel and visitors will be given on-site health and safety briefings by the CM or ESS to assist site personnel in safely conducting their work activities. The briefings will include information on new operations to be conducted, changes in work practices or changes in the site's environmental conditions, as well as periodic reinforcement of previously discussed topics. The briefings will also provide a forum to facilitate conformance with safety requirements and to identify performance deficiencies related to safety during daily activities or as a result of safety inspections. Prior to starting any new activity, a training session using the Activity Hazard Analysis (AHA) will be held for workers involved in the activity. A copy of the attendance sheet for these daily briefings in included in Appendix A.

11.8 FIRST AID AND CPR

The ESS will identify those individuals requiring first aid and CPR training in order to ensure that emergency medical treatment is available during field activities. It is expected that a minimum of two field personnel on-site at any one time will have first aid, CPR training, and bloodborne pathogen training. The training will be consistent with the requirements of the American Red Cross Association; OSHA 29 CFR 1910.1030, Bloodborne Pathogen Standard; and EHS 4-1.

11.9 HAZARD COMMUNICATION

Hazard communication training will be provided and documented in accordance with the requirements contained in the TtEC Health and Safety Program, EHS 4-2, a copy of which will be maintained on site. This training will be included, at a minimum, during the initial site briefing and additionally during daily site safety briefings as necessary or indicated.

11.10 TSCA AND PCB AWARENESS

TSCA and PCB awareness training will be conducted to ensure that all site workers understand and comply with the regulations (i.e., TSCA) for working with PCBs.

12.0 LOGS, REPORTS AND RECORDKEEPING

The following is a summary of required health and safety logs, reports and recordkeeping.

12.1 FIELD CHANGE REQUEST

Field change requests are to be completed for initiating a change to the SHSP. The PESM, Project Manager or designee, approval is required. The original will be kept in the project file. Approved changes will be reviewed with affected field personnel at a safety briefing. A field change request form is provided in Appendix A.

12.2 MEDICAL AND TRAINING RECORDS

Copies or verification of training (40 hour, 8 hour, supervisor, site-specific training and documentation of three day on-the-job training (OJT)) and medical clearance for hazardous waste site work will be maintained on-site by the ESS. Records for all subcontractor employees will also be kept on site. All employee medical records will be maintained by the Corporate Medical Consultant in accordance with TtEC Health and Safety Program, EHS 1-8.

12.3 ON-SITE LOG AND VISITOR LOG

The CM or designee will keep each day a log of personnel on site. Additionally, all visitors will be required to sign in on the daily visitor log. This log shall include the personnel visiting the site, their affiliation, date, arrival and departure time, and purpose of their visit. These logs will be maintained in the contractor's file for the life of the project.

12.4 WEEKLY SAFETY REPORTS

The ESS shall complete and submit weekly/monthly safety reports to the PESM. The report is provided in Appendix A.

12.5 EHS INSPECTIONS

TtEC will perform weekly EHS inspections to assess site conditions and verify they are in compliance with all applicable laws and regulations. The CM or designee will perform the weekly inspections. The Project Manager or designee will perform the monthly inspection. The PESM will perform a quarterly inspection.

12.6 ACCIDENT/INCIDENT REPORTS

Incident reporting needs to occur to TtEC immediately to assure that any injury is properly managed. The incident reporting and investigation during site work will follow TtEC Health and Safety Program, Section EHS 1-7. Written confirmation of verbal reports is to be submitted within 24 hours.

12.7 HAZARD COMMUNICATION PROGRAM/MSDS

The hazard communication program will be maintained on site and training on the program information and requirements will be provided in accordance with 29 CFRs 1910.1200 and 1926.59, *Hazard Communication,* 1910.1201, *Retention of DOT Markings, Placards and Labels,* and TtEC Health and Safety Program, EHS 4-2.

Material Safety Data Sheets (MSDS) will be obtained for applicable substances and included in the site hazard communication file. A copy of the MSDSs will be obtained and maintained in the file for all chemicals to which the requirements apply; this will apply to both TtEC personnel and any subcontractors for which TtEC has responsibility and/or oversight responsibilities. All

chemical containers will be properly labeled in accordance with the requirements of the applicable standards.

13.0 FIELD PERSONNEL REVIEW

These forms serve as documentation that field personnel have read, or have been informed of, and understand the provisions of this SHSP. It is maintained on site by the ESS as a project record.

Each field team member shall sign this section after site-specific training is completed and before being permitted to work on site.

*I have read, or have been informed of, the **Phase 2B of the Site Health and Safety Plan for the remedial action at the Lower Fox River OUs 2 through 5 project** and understand the information presented. I will comply with the provisions contained therein.*

Name (Print and Sign)	***Date***

Name (Print and Sign)	***Date***

Name (Print and Sign)	***Date***

Name (Print and Sign)	***Date***

14.0 REFERENCES

American Conference of Governmental Industrial Hygienists, Inc., 2007, "Threshold limit values for chemical substances and physical agents in the work environment and biological exposure indices;" ACGIH, Cincinnati, Ohio.

TtEC, TtEC Health and Safety Program

U.S. Department of Labor, Occupational Safety & Health Administration, 2007, 29 CFR 1910 - General Industry, and 29 CFR 1926 - Construction Industry Standards.

APPENDIX A

HEALTH AND SAFETY FORMS

TETRA TECH EC
SSHP FIELD CHANGE REQUEST FORM

PROJECT:

TASK OR PHASE: _____

PROJECT LOCATION: _____

DESCRIPTION OF CHANGE: _____

REASON FOR CHANGE: _____

RECOMMENDED DISPOSITION:

PM: _____ Signature _____ Date

Construction Manager: _____ Signature _____ Date

ESS: _____ Signature _____ Date

PESM: _____ Signature _____ Date

DISTRIBUTION:

PESM	_____
ESS	_____
Construction Manager	_____
PM	_____

TETRA TECH EC
SSHP FIELD CHANGE DOCUMENTATION

Field Change Number: _____ Date Effective: _____

Pen and ink changes to be made in the SSHP to alert the reader of this change:

_____

_____

_____

_____

Reason for the change to be incorporated into the SSHP:

_____

_____

_____

_____

_____

_____

TEXT OF CHANGE TO BE INCORPORATED:

SSHP FIELD CHANGE RECORDS

Record of Field Changes:

Initial for attaching any Field Changes to this SSHP. Enter the Field Change Number and Date Issued. File the completed Field Changes to this SSHP at the end as attachments. Make PEN AND INK changes to the text to alert the reader to the changes that are required in the Field Change. As required, distribute revised text pages to holders of controlled copies of the SSHP and document on List of Changes/Additions.

Field Change No.	Date Entered	Synopsis of Change	Initials

TETRA TECH EC, INC.

MEDICAL DATA SHEET

The brief medical data sheet shall be completed on a voluntary basis by on-site personnel and will be kept in the Support Zone by the ESS as a project record during the conduct of site operations. It accompanies any personnel when medical assistance is needed or if transport to a hospital is required.

Project: _____

Name: _____ Home Telephone: _____

Address: _____

Age: _____ Height: _____ Weight: _____ Blood Type: ___

Name and Telephone Number of Emergency Contact: _____

_____

Drug or Other Allergies: _____

Particular Sensitivities: _____

Do You Wear Contacts? _____

Provide A Check List Of Previous Illnesses: _____

_____

_____

What Medications Are You Presently Using? _____

_____

_____

_____

Do You Have Any Medical Restrictions? _____

_____

Name, Address, And Phone Number Of Personal Physician: _____

_____

_____

TETRA TECH EC, INC.

DAILY SAFETY BRIEFING

PROJECT NAME:_____ PROJECT MANAGER:_____

PROJECT NUMBER:_____ H.S.O:_____

DATE: _____ PERSON CONDUCTING MTG.: _____

WEATHER CONDITIONS: _____

_____

TOPIC: _____

_____

_____

TASK: _____

_____

HAZARDS: _____

_____

SAFETY COMMENTS: _____

PRINT NAME	SIGNATURE

TETRA TECH EC, INC.

WEEKLY HEALTH AND SAFETY REPORT

Project Name: _____
Location: _____

SITE INFORMATION
Week Ending _____

Hours Worked:
Craft: _____ PS: _____ Subs: _____

Level of Protection
For the Week: B __ C __ D __

INJURIES AND ILLNESSES
Yes _____ No _____

Describe:
_____
_____
_____
_____

MAJOR ACTIVITIES CONDUCTED THIS WEEK:
(drum handling, sampling, excavation, abatement/T&D, etc.)
_____
_____
_____

SIGNIFICANT EVENTS THIS WEEK:
(regulatory visits, equipment malfunctions, process start-up or shutdown):
_____
_____
_____

FUTURE ISSUES:
(schedule, manpower allocation, monitoring equipment, other resources needed)
_____
_____
_____
_____

SITE AUDIT/INSPECTIONS CONDUCTED Yes _____ No _____
(describe outstanding findings and attach results)
_____
_____
_____
_____

HIPO ACTIVITIES

Hot Work	Yes _____	No _____	Dates: _____
Lockout/Tagout	Yes _____	No _____	Dates: _____
Confined Space Entry	Yes _____	No _____	Dates: _____
Soils Analysis Classification	Yes _____	No _____	Dates: _____
Excavation Daily Check List	Yes _____	No _____	Dates: _____
Crane On-Site	Yes _____	No _____	Dates: _____
Critical Lift Plan Performed	Yes _____	No _____	Dates: _____

AIR MONITORING:
Real Time

Major Activity	Location(s)	Worker Occupation	FID/PID Range	CGI/O2 Range	PDM Range	Other

PERSONAL AIR MONITORING

Analyte	Activity Monitored	Occupation	Location	Result	Type of Sample*

SUBCONTRACTORS ON SITE

Company Name	Task or Function	Return to Site Next Week (Y/N)

Health and Safety Officer - Signature **Date**

TETRA TECH EC, INC.

EHS WEEKLY/MONTHLY CHECKLIST AND ACTION ITEM REPORT

Project: _____ **Area of Inspection:** _____

Inspection Type: ☐ **Weekly** ☐ **Monthly**

Inspector: _____ **Date:** _____

Signature: _____ **Time:** _____

REQUIREMENTS	OBSERVATIONS (N/A if not applicable)	FINDING YES/NO
Work Conditions		
1 Walking /Working Surfaces		
2 Aisles and Passageways		
3 Platforms/ Scaffolding		
4 Ladders		
5 Stairs		
6 Exits/Egress		
7 Roadways		
8 Ventilation		
9 Lighting		
10 Noise Exposure		
11 Ergonomics		
Materials		
1 Stacking and Storage		
2 Chemicals and Fuel		
3 Compressed Gases		
Equipment		
1 Hand / Portable Tools		
2 Machine, Tools, Guarding		
3 Mobile/ Heavy Equipment a. Physical inspection of equipment b. Review of daily inspection reports c. Review of equipment deficiency correction logs/records		

REQUIREMENTS	OBSERVATIONS (N/A if not applicable)	FINDING YES/NO
4 Lifting Gear Equipment		
5 Materials Handling Equipment		
6 Mechanical Power Systems		
7 Hydraulic Power Systems		
8 Pneumatic Power Systems		
9 Electrical Power Systems		
10 Valves and Controls		
Hazard Controls		
1 Other Heavy Equipment		
2 Lock-Out Systems		
3 Signs and Tags		
4 Color Coding		
5 Materials Labeling		
6 Warning Systems		
Emergency Systems		
1 Emergency Instructions		
2 Fire Protection		
3 Eye Wash and Showers		
4 First Aid Kits/ Stations		
5 Emergency Rescue Equipment		
Protective Equipment		
1 Eye Protection		
2 Ear Protection		
3 Respiratory Protection		
4 Head Protection		
5 Hand Protection		
6 Foot Protection		
7 Body Protection		
8 Fall Protection		

REQUIREMENTS	OBSERVATIONS (N/A if not applicable)	FINDING YES/NO
Hazardous Waste Storage Area(s)/Satellite Accumulation Areas1 2		
1 Designated, secured area with "Hazardous Waste" signage. For SAA area is marked "SAA". (SAA)		
2 Containers:		
a. DOT-spec. containers (for wastes to go off-site only)		
b. Intact/in good condition (SAA)		
c. Waste compatible with containers (e.g., no evidence of corrosion, softening, bulging) (SAA)		
d. Marked "Hazardous Waste"/ visible Accumulation Date. *For SAA, marked "Hazardous Waste" or identify container contents and Accumulation date (SAA)*		
e. Securely closed and stored to prevent rupture/leaking, except when add/remove waste. (SAA)		
f. Labeled with EPA Id. No.		
g. For SAA only, Stored "at the point of generation" and meets quantity limits.		
3 Reactive/ignitable wastes stored at least fifty (50) feet from property.		
4 Liquid wastes within secondary containment.		
5 Incompatible wastes separated by a dike, wall, berm or other device.		
6 Stored for less than 90 days. *(CERCLA projects may have storage variance).3*		
7 Container tracking log accurately reflects containers stored. (SAA)		

1 For sites with multiple storage areas or Satellite Accumulation Areas (SAAs), indicate location where deficiencies are noted.

2 For SAAs, evaluate only rows marked with (SAA).

3 If stored on-site 75 or more days, TSDF/transporter has been selected (EHS 1-4), pick-up date scheduled and PM/PESM are aware of 90-day limit.

REQUIREMENTS	OBSERVATIONS (N/A if not applicable)	FINDING YES/NO
8 Area maintained in an orderly fashion and complies with state/EHS plan requirements. (SAA)		
Hazardous Waste Tank Storage Area *(Daily inspection is being conducted and maintained on-site)*		
Waste/Stockpiles - State Regulated Non-Hazardous Wastes ***(Refer to PESM Checklists, if applicable)***		
TSCA PCB Wastes – must be inspected at least every 30 days (GMP - weekly) *(Refer to PESM TSCA Checklist for inspection items)*		
Point Source Discharges/ Air Emissions		
1 Permit conditions are being met.		
2 Monitoring equipment is fully operational.		
3 Equipment calibrations and maintenance is up-to-date.		
4 Discharge sampling performed at required intervals.		
5 Review monitoring results *(Report permit exceedences per EHS 1-7)*		
6 DMR and Plant Logs properly completed, signed, and submitted (if required).		
7 Fugitive Dust – Appropriate BMPs are instituted for fugitive dust emissions.		
Stormwater Discharge Activities		
1 SWPPP /Soil Plan reflects current activities.		
2 Monitoring/sampling performed at required intervals.		
3 Review monitoring results *(Report permit exceedences per EHS 1-7)*		
4 BMPs in SWPPP/Soil Plan implemented.		
5 Visual observations indicate stormwater meets water quality criteria.		

REQUIREMENTS	OBSERVATIONS (N/A if not applicable)	FINDING YES/NO
6 Inspections conducted as required and documented. Corrective actions are implemented and documented.		
Other Conditions or Work Practices		
1		
2		
3		
4		

- End of Checklist-

Monthly Inspections must be sent to PESM and Project Manager.

TETRA TECH EC, INC.

LOCKOUT/TAGOUT PERMIT

Project Name: _____ Location: _____

SECTION A

DATE:_____ SHIFT:_____
EQUIPMENT DESCRIPTION:_____
EQUIPMENT LOCATION:_____
REASON FOR LOCKOUT/TAGOUT:_____
SUPERVISOR ON DUTY:_____
AUTHORIZED EMPLOYEE:_____
LOCKOUT LOCATIONS:_____

SECTION C

REQUESTOR:_____
NOTIFIER:_____
SHUT DOWN BY:_____
ISOLATOR:_____
VERIFIER:_____
APPROVED BY:_____

SECTION B ISOLATION INFORMATION | **SECTION D EQUIPMENT ISOLATION** | **SECTION F LOCKOUT/TAGOUT REMOVAL**

Device Description	Location	Isolation Position	Applied By	Lock #	Date	Time	Removed By	Date	Time

SPECIAL INSTRUCTIONS FOR REMOVAL OR RELEASING STORED ENERGY

Review previous week's/month's Action Item Report. Carry forward action items that have not been implemented. Note outstanding action items with an (F) in the "Action Item" column on this report. Note an (F) in the "Date Completed" column on previous week's/month's Action Item Report.

Project:

Area of Inspection:

Inspection Type: ☐ **Weekly** ☐ **Monthly**

Date of Inspection:

ACTION ITEM	RESPONSIBLE PARTY	SCHEDULE	DATE COMPLETED
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

Reviewed by: _____ _____

Construction Manager Date

cc: ***Project Manager (monthly only)***
PESM (monthly only)

APPENDIX B

BIOLOGICAL HAZARDS

MASSAUGA RATTLESNAKE

APPENDIX C

ACTIVITY HAZARD ANALYSIS

ACTIVITY HAZARD ANALYSIS

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities **Location: Brown, Outagamie, and Winnebago Counties, Wisconsin**
Activity: General Site Hazards

MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
1. General Site Hazards	a. Back Injuries and Strains	a. Back Injuries and Strains • Procedures in Section 3.3.14 will be followed. • Site personnel will be instructed on proper lifting techniques (keep back straight, lift with legs, limit twisting, etc). • Mechanical devices should be used to reduce manual handling of materials. Team lifting should be utilized if mechanical devices are not available. • An individual will not lift loads greater than 50 pounds. **This amount may be lowered by ESS's judgment due to individual's stature & lifting ability.**
	b. Slips/Trips/Falls	b. Slips/Trips/Falls • Visually inspect work areas and mark, barricade, or eliminate slip, trip and fall hazards if feasible. • Maintain work areas safe and orderly. Unloading areas should be on even terrain. • Watch and prepare for uneven terrain, stumps, and vegetation in walk areas. • Replace work boots when worn out or the tread on the sole does not provide traction. • Tools and supplies/equipment will be properly stored.
	c. Dropped Objects	c. Dropped Objects • Steel toe boots meeting ANSI Standard Z41 will be worn as directed. • Secure all radios, cell phones and equipment.
	d. Noise	d. Noise • Evaluate high noise operations to determine if hearing protective devices should be worn. • Hearing protection with a noise reduction rating capable of maintaining personal exposure below 85 dBA (ear muffs or plugs) will be worn during high noise operations. • All equipment will have manufacturer's required mufflers.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: General Site Hazards		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
	e. Heavy Equipment Operation	e. Heavy Equipment Operation • Supervisors and operators will ensure that the procedures in Section 3.3.1 of this document and the equipment manufacturers' instructions and recommendations are followed consistently. • All equipment will be initially inspected to certify safe to use onsite and before each days use. • Equipment will have rollover protective structures and seat belts. Operators shall wear seat belts when operating equipment. • Unsafe equipment will be taken out of service, tagged and will not be used until repaired. • Only operators trained and experienced with the specific equipment will operate that equipment. • Equipment will have guards, canopies or grills to protect from flying objects. • Ground personnel will stay clear of all suspended loads. • All slings chains and ropes will be rated for the load in which it is expected to lift. • Spills and absorbent materials will be readily available. Drip pans, polyethylene sheeting or other means will be used for secondary containment. • Eye contact with operators will be made before approaching equipment. Equipment will not be approached on blind sides. • Avoid equipment swing radius. This area will be delineated with cones. • Know hand signals. • All equipment will be equipped with backup alarms. • The use of headphones for entertainment purposes is prohibited. • A 15 foot minimum safe separation distance will be maintained between equipment and overhead utility lines. • Equipment will be shut down before and during fueling operations. • A spotter will be used for backing up equipment in congested areas.
	f. Temperature Extremes	f. Temperature Extremes • Drink plenty of fluids. • Train personnel of signs/symptoms of heat/cold stress. • Monitor air temperatures when extreme weather conditions are present. • Stay in visual and verbal contact with your buddy.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: General Site Hazards		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		• Controls will be implemented to minimize exposure to temperature extremes including work rest regimens, warm or cool rest areas, protective clothing, and minimize exposure time.
	g. Overhead Hazards	g. Overhead Hazards • Personnel will be required to wear hard hats that meet ANSI Standard Z89.1 when an overhead hazard exists. • All ground personnel will stay clear of suspended loads and equipment swing areas. • All equipment will be provided with guards, canopies or grills to protect the operator from falling or flying objects. • All overhead hazards will be identified prior to commencing work operations.
	h. Eye Injuries	h. Eye Injuries • Safety glasses meeting ANSI Standard Z87 will be worn for all field operations where eye hazards exist. • A portable eye wash station will be located adjacent to work activities.
	i. Sharp Objects/punctures	i. Sharp Objects/punctures • Leather gloves (minimum) or cut resistant work gloves will be worn depending on the material working with. • All hand and power tools will be maintained in a safe condition. When possible, blunt all sharp objects. • First aid kits will be available by the work area.
	j. Fire	j. Fire • Reference Section 10.9. • Only use NFPA-approved fuel cans with a pouring spout or funnel. • Smoking and open flames are not permitted in fueling areas. • A properly rated fire extinguisher will be located in the refueling area and on site trucks. • All gasoline-powered equipment will be grounded and bonded. • Equip all heavy equipment with 20A:B:C-type fire extinguishers. • Area(s) for personnel smoking will be designated.
	k. Spills	k. Spills • Reference Section 10.13. • Secondary Containment will be provided in storage areas. • Spill and absorbent materials will be readily available.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: General Site Hazards		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		• Absorbent materials will be used during transfer of fuel/oil. • Contain, control and clean up the spill and affected area (soil, water). Manage and dispose of spill material appropriately. • All waste materials generated will be contained in a seal-able container appropriate for the size of the spill. • Commercial spill kits are available. • Employees will be instructed on proper fueling techniques. • Fuel nozzles and hose will be secure in holder after use. • Fuel caps will be secured after fueling operations.
	l. Biological Hazards	l. Biological Hazards • Follow and train personnel on the procedures outlined in Section 3.2. • Wear insect repellent and long sleeved shirts as needed. Wear light colored clothing to highlight ticks. • Follow procedures for tick bites. Perform self and buddy checks frequently throughout the day. • Be aware of poisonous plants; poison ivy blocking lotion will be used. See ZIP bulletins 181 and 210. • Approach debris, rock piles, and other snake habitats with caution. • If allergic to bees/wasps, ensure an epinephrine (MSDS needed on site) kit is readily available and make sure the ESS is informed of the condition.
	m. Hand and Power Tools	m. Hand and Power Tools • Reference Section 3.3.12. • The proper tools will be used for each task. • All tools will be inspected before each use. Damaged tools will be removed from service and tagged (splintered wood bases, missing guards, "mushroom" head). • Tools will be used in accordance with manufacturer's instructions. • Modifications to tools are prohibited unless approved by the ESS. • GFCIs will be used with all electrical power tools.
	n. Chemicals brought on site	n. Chemicals brought on site • Reference EHS Program EHS 4-2. • Identify all chemical hazards and receive training (Haz Com-Material Safety Data Sheets/MSDS) regarding safe handling and storage of chemicals. • The ESS maintains copies of all MSDS for chemicals that are on site.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: General Site Hazards		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		• A portable 15 minute eye wash station will be located by the work area.
	o. Struck By/Against	o. Struck By/Against • Personnel will understand and review hand signals. • All machines will be equipped with backup alarms. • Do not allow personnel between a moving object and a stationary object. • Ensure all personnel within unloading and loading areas are accounted for and out of the way.
	p. Adverse Weather	p. Adverse Weather • National weather forecasts will be monitored daily for predicted inclement weather. The field investigations lead will call for the local conditions and forecast each morning. • All personnel shall be aware of the forecast and keep an "eye to the sky". Unforecasted storms may also occur without warning. • Work will be postponed in the event of very strong winds or at times of very poor visibility. • In the event of lightning in the area, work will cease at the direction of the TtEC Supervisor or ESS, and will not proceed further until return to work permit is issued.
EQUIPMENT USED	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
1. Heavy Equipment 2. Appropriate PPE 3. Hand and Power Tools 4. Portable Eyewash 5. First Aid Kits 6. 20A:B:C Fire Extinguisher 7. GFCI	1. Inspect all heavy equipment prior to use. 2. Inspect all hand and power tools prior to use. 3. Inspect all PPE prior to use. 4. Inspect portable eye washes and First Aid Kits weekly. 5. Inspect Fire Extinguishers weekly. 6. Check and Test GFCIs weekly.	1. All site personnel will read and comply with this HASCP. 2. All site personnel will receive site specific training. 3. Qualified operators will be used for heavy equipment and boat operation. 4. At least two individuals on-site will have current CPR, First Aid, and Bloodborne pathogen training. 5. Instruct personnel of proper use of fire extinguishers. 6. Personnel will be trained on the proper use of hand and power tools, including the steam cleaner.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Installation of Dewatering and Water Treatment Equipment		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
1. Installation of Dewatering and Water Treatment Equipment	a. Back Injuries and Strains	1. Back Injuries and Strains • Procedures in Section 3.3.14 will be followed. • Site personnel will be instructed on proper lifting techniques (keep back straight, lift with legs, limit twisting, etc). • Mechanical devices should be used to reduce manual handling of materials. Team lifting should be utilized if mechanical devices are not available. • An individual will not lift loads greater than 50 pounds. **This amount may be lowered by ESS's judgment due to individual's stature & lifting ability.**
	b. Slips/Trips/Falls	2. Slips/Trips/Falls • Reference General Site Hazards. • Maintain work areas safe and orderly; unloading areas should be on even terrain; mark and repair if possible tripping hazards.
	c. Dropped Objects	3. Dropped Objects • Refer to General Site Hazards.
	d. Noise	4. Noise • Refer to General Site Hazards.
	e. Eye Injuries	5. Eye Injuries • Refer to General Site Hazards.
	f. Sharp Objects/punctures	6. Sharp Objects/punctures • Reference General Site Hazards. • Leather gloves (minimum) or cut resistant work gloves will be worn depending on the material working with. • First aid kits will be available by the work area.
	g. Hand and Power Tools	7. Hand and Power Tools • Reference Section 3.3.12. • The proper tools will be used for each task. • All tools will be inspected before each use. Damaged tools will be removed from service and tagged (splintered wood bases, missing guards, "mushroom" head). • Tools will be used in accordance with manufacturer's instructions. • Modifications to tools are prohibited unless approved by the ESS. • GFCIs will be used with all electrical power tools.
	h. Overhead Utilities	8. Overhead Utilities

		• All overhead utilities will be identified prior to equipment operations; equipment will be equipped with GFCI; all equipment will stay a minimum of 15 feet from energized electrical lines (50 kV). This distance will increase .4 inches for each 1 kV above 50 kV..
	i. Lifting/Rigging	9. Lifting/Rigging • The equipment used for lifting should be positioned as near as possible to the load, while maintaining a safe operating distance. The operator shall verify that the load line is vertical and over the load's center of gravity prior to lifting the load to ensure that the load does not drift when lifted. • All overhead hazards will be identified prior to commencing work operations. A minimum safe distance of 15 feet shall be maintained from power lines rated 50 kV or less. • The swing area of the lifting equipment is barricaded to protect personnel in the immediate area. • All rigging will be tagged with its lifting capacity. • All chokers, slings and lifting gear shall be inspected daily (both nylon and steel) and shall be free from defects prior to use. • Loads are not lifted over personnel. • All loose load objects are secured or removed. • Tag lines are used to control loads except where their use will create a hazard. • The equipment performing the lift is not subjected to sudden lifting, stopping or impact loading. • Riding on loads, hooks, buckets, material hoists, or other material hoisting equipment not meant for personnel use is absolutely prohibited. • The total weight of the load to be lifted, including all lifting beams, rigging, hooks and attachments, shall be determined before a safe lift can be planned. • The determination of the exact location of the center of gravity of the load is critical in ensuring that the load is rigged in a stable configuration. The location of the attachments of the rigging to the load should be above the center of gravity where possible. • The load shall be safely rigged within the rated capacity of all rigging equipment. • Custom designed grabs, hooks, clamps, or other lifting accessories shall be marked to indicate the safe working loads and shall be proof-tested prior to use to 125% of their rated load.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Installation of Dewatering and Water Treatment Equipment		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
	a. Struck By/Against	a. Struck By/Against • Reference General Site Hazards. • Do not allow personnel between a moving object and a stationary object. • Ensure all personnel are accounted for and out of the way before performing a lift. • Only operator shall be on crane during operation. • No personnel will be allowed to walk or do any work under any loads being picked. • Personnel will be aware of overhead operations. • On-site personnel working in the loading area will not walk along the blind side of equipment and must not approach heavy equipment with out making eye contact with the operator. • All cranes are to have swing protection demarcated and only authorized personnel will be allowed in this area during a lift. • Operators will be aware of their surroundings at all times. • Operators will honk their horn twice before starting equipment or initiating operations after the equipment has set idle for a long period of time. • Do not work at wind speeds or weight loads above those recommended in the operator's manual. • Tag lines are used to control loads except where their use will create a hazard.
	j. Connecting/Installing Utilities	10. Connecting/Installing Utilities • Lockout/Tagout procedures will be used when installing/connecting utilities. Reference EHS Program EHS 6-4. • Electrical conditions will be made by a licensed electrician.
	k. Electrocution	11. Electrocution • Do not use unit near any power lines or where water can come in contact with electrical power. • Reference TtEC Program EHS 3-10 for electrical considerations. • All electrical wiring and hookups will be completed by a licensed electrician. Lockout/Tagout will be utilized to make sure lines are not hot prior to beginning work on them and making connections. Reference EHS Program EHS 6-4 for Lockout/Tagout procedures. • The ESS is responsible for providing the training required in the procedure EHS-6-4 to supervisors and craft employees, and conducting periodic inspections to ensure this procedure is effectively implemented.

		• The ESS shall also implement lockout/tagout procedures as required.
EQUIPMENT USED	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
1. Heavy Equipment 2. Hand and Power Tools 3. Appropriate PPE 4. Portable Eyewash 5. First Aid Kits 6. 20A:B:C Fire Extinguisher 7. GFCI	1. Hand and power tools will be inspected to ensure they are in good condition prior to each day's use. 2. PPE will be inspected before and after each use. 3. Periodic inspections pursuant to EHS Program EHS 3-3, Inspections, shall be completed during the monthly inspections by the ESS, PESM or other qualified personnel to ensure that the lockout tagout program is being effectively implemented. As a minimum the following shall be done: • Existing lockouts will be reviewed for effectiveness; • Permits for each existing lockouts shall be reviewed for adequacy; • Incident reports and past permits shall be reviewed to determine if deficiencies in the program exist; • Corrections to the system will be made as warranted; and • Results will be logged in the health and safety logbook. 4. Inspect portable eye washes and First Aid Kits weekly. 5. Inspect Fire Extinguishers weekly. 6. Check and Test GFCIs weekly.	1. Authorized Employees shall receive training in the following prior to being allowed to use lockout/tagout procedures: • Recognition of hazardous energy sources; • Types and magnitudes of energies available at the site; • Methods and means needed for energy isolation and control; and • The requirements of this procedure and 29 CFR 1910.147. 2. Affected Employees shall be instructed in the following: • Purpose of the lockout tagout program; • Use and requirements of this procedure and 29 CFR 1910.147; • Prohibitions of restarting or tampering with equipment that has been locked out; and • Prohibitions of tampering with locks and tags installed on equipment. 3. All site personnel will read and comply with this HASCP. 4. All site personnel will receive site specific training. 5. Only qualified electricians will install electrical wiring and hookups. 6. At least two individuals on-site will have current CPR, First Aid, and Bloodborne pathogen training. 7. Instruct personnel of proper use of fire extinguishers. 8. Personnel will be trained on the proper use of hand and power tools, including the pipe welding machine. 9. Training on Lockout/Tagout procedures are listed in EHS Program EHS 6-4.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Marine Surveys		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
1. Setup/install a RTK GPS base station on land.	Struck by motorized, non-motorized and congested pedestrian traffic	• Field personnel will need to pay attention to operations around and adjacent to their work and continually evaluate the need for traffic control measures. • Wear safety vest when traffic is present.
	Failure to inspect equipment properly could cause workers to use defective or unsafe equipment causing injury to workers and possible damage to the equipment or the environment.	• Verify that equipment is inspected per manufactures recommendation each day before use, and there is an owner/operator's manual available.
	Noise exposure	• Hearing protection is required if working around equipment or tools that produce levels at/or above 85db. (As a rule of thumb, if you have to shout within 3' to be herd, hearing protection is required)
	Adverse weather. High winds and rain and/or snow storms, high water flow in river. Struck by lightning	• If adverse weather is affecting crew's safety, work will be halted until conditions improve. (i.e. wind, snow, rain etc.) • Area is prone to windstorms during the spring, when this work is anticipated to occur. • If road conditions are too bad to access the work site, the work will be postponed until conditions improve. • In the case of extreme weather, vessel operations may be delayed. • At no time will personnel and equipment enter the river, if the flow rate exceeds 1,500 cubic feet per second (CFS) • Follow the 10-second rule (time between lightning strike and thunder) for shutdown of operations. Immediately suspend operations when lightning is in the immediate vicinity and seek shelter. Work will not commence until there are no lightning strikes at least 30 minutes after the last lightning strike.
	Temperature Extremes	• Drink plenty of fluids. • Train personnel of signs/symptoms of heat/cold stress. • Monitor air temperatures when extreme weather conditions are present. • Stay in visual and verbal contact with your buddy. • Controls will be implemented to minimize exposure to temperature extremes including work rest regimens, warm or cool rest areas, protective clothing, and minimize exposure time. • If a potential for cold stress exists, workers will bring extra clothing, and food. • Equipment and vehicles will offer protection from wind and rain and have heaters or air conditioning. • If hypothermia symptoms or cold stress symptoms are observed (slurred speech, changes in skin color, shivering,) the victim will be taken to a heated location to warm up.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Marine Surveys		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		• If heat stress symptoms are observed (Lack of coordination, Decline in alertness, Unsteady walk, Excessive fatigue, Muscle cramps) the victim will be taken to a cooled location to cool off.
	Exposure to poisonous plants	• Maintain awareness of presence of poisonous plants. • Use of barrier protection lotions (Ivy Block, etc.) to protect against poison ivy exposure as needed. Wash exposed areas (e.g., Clorax wipes, Dawn dish soap, or Technu) immediately. • Long pants and leather boots should be worn. While working in tall, dense vegetation, long sleeve shirts should be worn to protect against exposure. • When handling plants, leather gloves should be worn.
	Punctures/Cuts from Plants	• Wear leather (minimum) or cut resistant work gloves when handling plants that may cause the possibility of lacerations or other injury. • Wear long pants at all times to avoid lacerations and other injury. Long sleeved shirt should also be worn to protect arms when needed. • Look carefully for injurious vegetation before reaching into any area or before handling any plants. Examples may include yucca and prickly cactus, thistles, and branches.
	Exposure to insects/ticks	• In the event of poisonous bites, contact the emergency response personnel immediately. • Insect repellent must be made available to all workers to prevent exposure to mosquito bites. Insect repellant should be applied according to manufacturer instructions. • Work activities should be avoided during dusk and dawn, when insects carrying virus are most active (i.e. mosquitoes carrying West Niles virus). If work is conducted during this time, long sleeves and pants must be worn, in combination with insect repellent. • Perform tick self-inspection upon exiting wooded or tall grass areas. • Field personnel should look carefully for insects and spiders before stepping into any area or before placing hands near the ground. • Field personnel should be cautious and avoid contact by looking ahead to where they will be walking, standing, sitting, leaning, grabbing, lifting, or reaching.
	Exposure to snakes/animals	• Substantial footwear (boots) and long pants should be worn to protect from bites. • Look carefully for snakes and animals before stepping into any area or before placing hands near the ground. Visual scans should be made periodically during the day.
	Unstable/ Irregular walking surface. Slips/Trips/Falls	• Visually inspect work areas and mark, barricade, or eliminate slip, trip and fall hazards if feasible. Look for depressions and obstructions. • Be conscious of potential footing hazards when walking on slopes or in areas with potential footing hazards.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Marine Surveys		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		• Maintain awareness, especially in areas where topography varies, and prepare for uneven terrain, stumps, and vegetation in walk areas. • Tools and supplies/equipment will be properly stored to maintain safe and orderly work areas.
2. Conducting bathymetric surveys and geophysical surveys (sub-bottom profiling, GPR etc.) from small boat.	Working around water and in small boat. Falling into Water other boat traffic interactions (large wakes)	• Coast Guard approved flotation equipment, PFD's Type I, II, or selected Type III (i.e. Mustang Survival work suits & Jackets, at discretion ESS) will be worn when in boat or on the dock, in areas without adequate safety rails (<3-ft). • Survey vessels will display day-shapes to communicate to boat traffic that there is gear in the water (i.e. towfish or other instrumentation), and that the survey vessel has limited maneuverability. • Survey vessels will monitor VHF Channel 16 • Survey vessels will avoid operating in shipping channels as much as is practicable, and will be aware of the possibility of large ship wakes. • Set of oars and emergency horn shall be available in the boat prior to operation. • No standing or leaning over edge in small boats. • Comply with Coast Guard right-of-way rules. • Use horn to signal or warn other boats as appropriate. • Suspend work during bad weather or poor visibility. • Have experienced boat crews operate vessel • Ensure boat manufactures recommendation for operation and load limits are followed. • At least one US Coast Guard approved lifesling attached to approximately100 feet of rope will be located on the boat. The hydrographic and geophysical crew vehicle will also have a rescue throw rope.
	Insufficient information/inadequate training to perform the marine surveys. High potential for injury to untrained personnel	Training will consist of: • Pre-Activity briefing covering this SHSP. Also daily briefing. • Ensure that all operators are trained prior to using equipment. This training will include operator's manual review and actual operation. • Crew familiarization with tasks and H&S controls addressed in this SHSP. • Personnel shall receive boating safety training/briefing from the Handbook of Wisconsin Boating Laws and Responsibilities. (See Appendix E) • Emergency response requirements in this SHSP. • At least two members of each field crew (survey boat) shall be CPR/First Aid Trained. • An AED shall be kept on the boats, will be operating and close by should it be needed.
	Failure to inspect equipment properly could cause workers to use defective or	• Verify that equipment is inspected per manufactures recommendation each day before use, and there is an owner/operator's manual available.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Marine Surveys		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
	unsafe equipment causing injury to workers and possible damage to the equipment or the environment.	
	Adverse weather. High winds and rain and/or snow storms, high water flow in river. Struck by lightning	• If adverse weather is affecting crew's safety, work will be halted until conditions improve. (i.e. wind, snow, rain etc.) • Area is prone to windstorms during the spring, when this work is anticipated to occur. • If road conditions are too bad to access the work site, the work will be postponed until conditions improve. • In the case of extreme weather, vessel operations may be delayed. • At no time will personnel and equipment enter the river, if the flow rate exceeds 1,500 cubic feet per second (CFS) • Follow the 10-second rule (time between lightning strike and thunder) for shutdown of operations. Immediately suspend operations when lightning is in the immediate vicinity and seek shelter.
	Fueling boat	• Check the entire fuel system for leaks. Tighten connections frequently. Engine vibration can loosen them. • Turn off all engines and electrical equipment; shut off all fuel valves; and close all windows, doors and openings. • Try to fuel in daylight. If light is required, use a flashlight or a light that is spark-proof. • Never smoke or strike a match while fueling or when near a fueling dock. • When filling a tank or gas can, follow these guidelines: • Remove portable tanks from the vessel. • Touch the fuel pipe or tank with the spout to prevent buildup of static electricity. • Never fill a tank to the brim. Leave room for gas to expand. • After fueling, put the fill cap on tightly to prevent vapors from escaping. • Immediately wipe up any spilled gas. • Air out the rag after using it. Never throw it in the vessel or the water. • Store gas onboard in a safety-approved storage tank, away from the engine in an area of good ventilation. • Refueling should be performed on land as often as possible (i.e. @ auto gas station, not via gas cans). • Funnels will be used when filling gas tanks from portable gas cans. • Sorbent pads will be placed under and/or around item being fueled to capture any spills. • To the extent possible fuel all systems before launching the boat so that on water refueling is kept to a minimum.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Marine Surveys		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
	Chemicals brought on site	• Reference EHS Program EHS 4-2. • Identify all chemical hazards and receive training (Haz Com-Material Safety Data Sheets/MSDS) regarding safe handling and storage of chemicals. • The ESS maintains copies of all MSDS for chemicals that are on site. • A portable 15 minute eye wash station will be located by the work area.
	Boating activities	• Boat Captains shall be USCG licensed • Prior to placing boats, survey equipment and personnel on the river, the river's flow rate will be assessed. At no time will personnel and equipment enter the river, if the flow rate exceeds 1,500 cubic feet per second (as measured by the nearly USGS flow monitoring station). • Debris may present a significant hazard to personnel during survey activities. During cold weather (<40° F) blanket shall be on the survey vessel and the vessel will be kept warm, in the event that personnel get wet. • Due to the potential for limited rescue capability and other emergency impedances, activities on the river will be limited to one half hour before sunrise to one half hour after sunset. Personnel should allow sufficient time to shutdown operations at the end of each day to ensure personnel are off of the river by the specified time. • Survey Boats shall have adequate lights (navigation and "head lights" / spot lights for safe operation during dawn/dusk and after dark if necessary. • Boat launches with adequate lighting will be used to the greatest extent possible • If working in the vicinity of the De Pere Dam additional precautions will be taken to insure safe boat operations are conducted. This will include use of one or several of the following safety precautions; inclusion of an auxiliary motor (i.e. "kicker" motor) on the survey vessel, use of a tagline(s) to the river back, use of one or several points of anchor, installation of a cable which would prevent the survey boat and/or crew from passing over the dam.
	Failure to have proper medical supplies, emergency supplies, and PFDs during emergency could result in inadequate treatment of personnel or potentially increase injuries.	• Ensure that PFD's are available for each person and in good usable condition. • First-aid kit and supplies are available. • Oars, emergency horn, life ring, fire extinguisher are available. (Fire extinguisher shall be at least a 10lb. ABC type) • Cell phone is available and working for emergency notifications.
	Back Injuries and Strains	• Site personnel will be instructed on proper lifting techniques (keep back straight, lift with legs, limit twisting, etc). • Mechanical devices should be used to reduce manual handling of materials. Team lifting should be utilized if mechanical devices are not available. • An individual will not lift loads greater than 50 pounds. **This amount may be lowered by ESS's judgment due to individual's stature & lifting ability.**
	Communication	• Field personnel will use cellular telephones with adequate coverage to

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Marine Surveys		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		communicate with individuals off site. • Field personnel will use two-way radios with adequate coverage to communicate with the Coast Guard off site
EQUIPMENT USED		
1. Boats 2. Appropriate PPE 3. Hand and Power Tools 4. Portable Eyewash 5. First Aid Kits 6. 20A:B:C Fire Extinguisher 7. GFCI	1. Inspect all boats daily. 2. Inspect all hand and power tools prior to use. 3. Inspect all PPE prior to use. 4. Inspect portable eye washes and First Aid Kits weekly. 5. Inspect Fire Extinguishers weekly. 6. Check and Test GFCI's weekly.	1. All site personnel will read and comply with this SHSP. 2. All site personnel will receive site specific training. 3. Qualified operators will be used for heavy equipment and boat operation. 4. At least two individuals on-site will have current CPR, First Aid, and Bloodborne pathogen training. 5. Instruct personnel of proper use of fire extinguishers. 6. Personnel will be trained on the proper use of hand and power tools, including the steam cleaner.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Sheet Pile Wall Installation		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
1. False Work and Temporary Bracing Installation	b. Noise	b. Noise • Reference General Site Hazards.
	c. Dropped Objects	c. Dropped Objects • Reference General Site Hazards. • A security zone will be established around the crane. No personnel will enter this area when the crane is in operation • No person will stand under an unsecured load.
	d. Crane Operations	d. Crane Operations • Only qualified persons will operate equipment. • Eye contact with operators will be made before approaching equipment. Equipment will not be approached on blind sides. • Hi Visibility safety vests will be worn in all work areas. • All heavy equipment will be equipped with backup alarms. • Equipment will have guards, canopies or grills to protect from flying objects. • All vehicles will be equipped with rear-view mirrors on both sides of cab. • Only one spotter will be used to communicate with the crane operator. • All cranes are to have swing protection demarcated and only authorized personnel will be allowed in this area during a lift. • Operators will be aware of their surroundings at all times. • Perform vehicle walk around before operating. • Operators will honk their horn twice before starting equipment or initiating operations after the equipment has set idle for a long period of time. • Do not work at wind speeds or weight loads above those recommended in the operator's manual. • All cranes to be outfitted with anti-two-block protection. • All cranes must have annual inspection reviewed before use; daily inspections and competent person named for conducting inspections; load chart available, operator must know how to read a load chart and be deemed competent by TtEC. • All bolts are to be fully hand torqued and 100% installed before crane (rigging) is released.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Sheet Pile Wall Installation		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		• Ensure outriggers are fully extended and ground surface is able to support the crane during lift operations. Use equipment mats to provide additional stability if necessary. • List should be taken into account when cranes are mounted to barges.
	e. Lifting/Rigging	e. Lifting/Rigging • The equipment used for lifting should be positioned as near as possible to the load, while maintaining a safe operating distance. The operator shall verify that the load line is vertical and over the load's center of gravity prior to lifting the load to ensure that the load does not drift when lifted. • All overhead hazards will be identified prior to commencing work operations. A minimum safe distance of 15 feet shall be maintained from power lines rated 50 kV or less. • The swing area of the lifting equipment is barricaded to protect personnel in the immediate area. • All rigging will be tagged with its lifting capacity. • All chokers, slings and lifting gear shall be inspected daily (both nylon and steel) and shall be free from defects prior to use. • Loads are not lifted over personnel. • All loose load objects are secured or removed. • Tag lines are used to control loads except where their use will create a hazard. • The equipment performing the lift is not subjected to sudden lifting, stopping or impact loading. • Riding on loads, hooks, buckets, material hoists, or other material hoisting equipment not meant for personnel use is absolutely prohibited. • The total weight of the load to be lifted, including all lifting beams, rigging, hooks and attachments, shall be determined before a safe lift can be planned. • The determination of the exact location of the center of gravity of the load is critical in ensuring that the load is rigged in a stable configuration. The location of the attachments of the rigging to the load should be above the center of gravity where possible. • The load shall be safely rigged within the rated capacity of all rigging equipment. • Custom designed grabs, hooks, clamps, or other lifting accessories shall

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Sheet Pile Wall Installation		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		be marked to indicate the safe working loads and shall be proof-tested prior to use to 125% of their rated load.
	f. Overhead Hazards	f. Overhead Hazards • Personnel will be required to wear hard hats that meet ANSI Standard Z89.1 when an overhead hazard exists. • All ground personnel will stay clear of suspended loads and equipment swing areas. • All equipment will be provided with guards, canopies or grills to protect the operator from falling or flying objects. • All overhead hazards will be identified prior to commencing work operations. • A 15 foot clearance will be maintained at all times.
	g. Eye Injuries	g. Eye Injuries • Reference General Site Hazards..
	h. Slips/Trips/Falls	h. Slips/Trips/Falls • Reference General Site Hazards • Personnel will immediately communicate slip/trip/fall hazards to employees and supervisors. • Tripping and poor footing hazards will be repaired as they are discovered or will be clearly identified. • Fall protection (e.g., guardrails or personal fall protection system) is required when working 6' above the ground. • Personnel will be trained to use and inspect fall protection systems. • All lifelines / harnesses / and lanyards shall be inspected and in acceptable working condition prior to use. • Personal fall arrest systems shall meet the criteria specified in 29 CFR 1926.502(d) and guardrail systems and their use shall comply with 29 CFR 1926.502(b). Refer to Section 3.3.5. • Ensure that loads are properly distributed in all small boats. • All personnel shall wear United States Coast Guard (USCG) Approved Type I, III or V Life Preservers at all times while on the water. • Personnel will use care when exiting entering the craft from the water and ensure they have solid footing before climbing in/out • Personnel will ensure that they are in no more than one foot of water when entering/exiting the craft, unless the personnel are in waders. • The following procedure will be used when Launching/docking any

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Sheet Pile Wall Installation		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		water craft ❖ Personnel shall know the weight of the water craft and motor prior to launching docking ❖ Boat motor will be pulled up before it contacts the river bottom ❖ Personnel will take note of wind speed and direction, current and tidal height before shutting off/turning on the boat motor ❖ All personnel will carefully exit the water craft ❖ No personnel shall lift in excess of 50 Pounds ❖ Personnel will remove/put in any small boat to the edge of the water with minimal dragging of the boat across the dry land. ❖ Mechanical devices will be used in lieu of manual labor to remove from/put into the water, - water craft in excess of 300 Pounds weight for boat and motor. ❖ A light duty trailer can be used in lieu of manual lifting, if a light duty trailer is used personnel must lift up the front of the boat, manually with a minimum of two people • Any hoisting device used to pull up/let down the boat will be: properly maintained and serviced according to manufacturer's specifications; capable of lifting the weight of the load being hoisted; checked before each hoist and operated by qualified knowledgeable personnel.
	i. Working Over Water	i. Working Over Water • Personnel working over water will be required to wear PFDs when not in equipment.
	j. Struck By/Against	j. Struck By/Against • Reference General Site Hazards. • Caution will be used offloading the boat from the trailer-clear the area of all non-essential personnel. • All boats will be securely anchored or docked-docked boats will be positioned with minimum 2 lines. • Ensure the boat is properly secured to the boat trailer before transporting. • Ensure there is sufficient room to drive through when trailering the boat on narrow streets. • Watch for (know their locations or mark with buoys) objects hidden under water at higher tides i.e. pilings, islands, anchor lines. • Caution will be used offloading the boat-personnel will ensure the boat is securely docked before embarking. All supply transfer work will be done

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Sheet Pile Wall Installation		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		only when boats are docked fore and aft. • All boats will be securely anchored or docked-docked boats will be positioned with minimum 2 lines. • Never pitchpole or broach any waves. • Ensure the air horn on each boat used is in proper working order. • Ladders will be free of ice and snow before climbing. • Personnel will understand and review hand signals. • Only one spotter will be used with each piece of equipment. • Do not allow personnel between a moving object and a stationary object. • Ensure all personnel on the barge are accounted for and out of the way. • All cranes are to have swing protection demarcated. • Only operator shall be on crane during operation. • No personnel will be allowed to walk or do any work under any loads being picked. • Personnel will be aware of overhead operations. • On-site personnel working in the loading area will not walk along the blind side of equipment and must not approach heavy equipment with out making eye contact with the operator. • All cranes are to have swing protection demarcated and only authorized personnel will be allowed in this area during a lift. • Operators will be aware of their surroundings at all times. • Operators will honk their horn twice before starting equipment or initiating operations after the equipment has set idle for a long period of time. • Do not work at wind speeds or weight loads above those recommended in the operator's manual. • Tag lines will be used during the picking and setting of the anchors. Use tag lines to minimize swinging of objects being moved. Tag lines are used to control loads except where their use will create a hazard. • Barge will be spudded in place. All personnel not associated with the spud operation will stay a minimum of 20 feet out of the spud dropping area. • Only qualified personnel will drop the spud/operate the winch. The operator will be seated in the winch operators chair and will not operate the winch until given the all clear that personnel are out of the spud drop areas.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Sheet Pile Wall Installation		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		• The wheels of the spuds are located below deck and therefore do not pose a struck by/caught in hazard • All winch cables will be clearly marked and/or cordoned off- 90% of the cables are covered by Metal plating, the +/- 10 % that are exposed are demarcated by yellow paint on the barge deck. Personnel will not be allowed in this demarcated area when the spuds are being dropped. • The spud winch is located in the barge house on deck. When this winch is in operation the water tight door to this house will be closed and a sign posted –DO NO ENTER.
	k. Man Overboard/Drowning	k. Man Overboard/Drowning • All personnel shall wear United States Coast Guard (USCG) Approved Type III Life Preservers at all times while on the water. • As per OSHA requirements (29 CFR 1926.501(b)(1)) and EM 385-1-1 Section 19.A.07, guardrails are required on working platforms for barges that are 6 feet or more above the water. • All means of barge access shall be properly secured, guarded, and maintained free of slipping and tripping hazards. • A Coast Guard approved Type IV flotation device (life ring) will be maintained on each barge. • Water craft will not be used without shore support personnel with rescue skiff available onshore. • All persons on board will remain seated/standing securely whenever a water craft is moving, • Maximum weight capacity for water craft will not be exceeded. • Barges will be equipped with perimeter guardrails. • Water craft will be operated with a minimum of two personnel on board. • Water craft will not be used without shore support personnel. • A line extended from the water craft to the shore will always be available, so that shore personnel are able to retrieve water craft remotely in the event of an emergency. • Personnel on board water craft must be in constant radio contact with shore personnel. • Non slip surfaces shall be provided on all working decks, stair treads, ship ladders, platforms, catwalks, and walkways. • All barge deck obstructions will be removed if possible, if not possible to

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Sheet Pile Wall Installation		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		remove them they shall be clearly marked with yellow paint.
	l. Sinking Boat/Barge Damage	l. Sinking Boat/Barge Damage • All water craft not subject to USCG inspection and certification or not having a current American Bureau of Shipping (ABS) classification shall be inspected by a marine surveyor accredited by the National Association of Marine Surveyors (NAMS) or the Society of Accredited Marine Surveyors (SAMS). • A pre-use inspection of any rented vessel shall be completed, including a video documentation of pre-use conditions. • The load ratings of barges and tenderboats will be strictly adhered to; overloading of vessels is prohibited. • Tide tables will be consulted and times of high tide, when it is most safe to move barges, will be identified. • In the event a barge or boat becomes grounded at times of low tide, no attempt will be made to move the barge until enough water returns to refloat it. • The 35 ton Crane will be set on mats with outriggers fully extended on Mats for stability. • The Crane will be anchored to the deck by means of four chain binders of sufficient size and strength to stabilize the crane. These will be secured to anchor points on the barge deck. • The Marine Survey will be done in floating plant mode and will include the Crane matting and binder system. • The Marine Survey will be done by competent/qualified person and shall include stability calculations for crane lifts. • The Crane operator and Project engineer will fully understand the stability calculations and adhere to them. • Load test will be performed prior to cranes initial use and a lift plan will be developed prior to the pile driving. • The provisions of EM 385-1-1 Section 16 Marine Floating Plants and CFR 29 1926 and 1910 Subparts N as well as 29 CFR 1926.603 shall be followed.
	m. Water Craft Taking On Water	m. Water Craft Taking On Water • All personnel will ensure the water craft has a working plug firmly in place prior to launch • The load ratings of barges and tenderboats will be strictly adhered to;

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Sheet Pile Wall Installation		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		overloading of vessels is prohibited. • Tide tables will be consulted and times of high tide, when it is most safe to launch/dock, will be identified. • All water craft will have a bailing device on board in case of leaks • If the water craft begins to take on water for any reason it shall be brought in to the nearest safe docking facility as soon as possible and the ESS immediately called • Any water craft which is damaged in any way or has taken on water will be inspected by the ESS or designee prior to the craft being launched
	n. Water Craft Operation Risks	n. Water Craft Operation Risks • All barge and boat pilots shall be familiar with the "Rules of the Road" that regulate movement of boat traffic within the harbor. • Barge will be equipped with day markers and proper lighting-if moored at night. • Charts of the study areas, with depths for mean low water, will be obtained and water craft pilots will be familiar with their use. • Locations of rocks, ledges and manmade subsurface obstructions will be noted within the work area. These will be given a wide berth. • All Harbor boating regulations will be strictly observed; prudent speed limits will be followed at all times. • All water craft must have required Coast Guard approved lighting and signaling devices. • Reference the Offshore work AHA for boating applications.
	o. Equipment Lost Overboard/Crushed	o. Equipment Lost Overboard/Crushed • Instruments shall not be placed near the moon pool or edge of the barge/boat when not in use/not secured. • Equipment will be secured to the deck or to personnel when appropriate. Secure all radios and cell phones. • Instruments will be kept clear of all tooling lay down areas. Good housekeeping will be critical on the barge/boat. • All small equipment will have a backup tie line attached to the vessel if they are used at or over the edge of the vessel.
	p. Emergencies: Fire, Weather, and Medical/Spills/Releases	p. Emergencies: Fire, Weather, and Medical/Spills/Releases • Fire extinguishers will be carried on all launches, barges, and motorboats. Minimum number and rating are as follows:

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Sheet Pile Wall Installation		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		Length / Extinguisher 26 feet or less — one 1-A: 10-B:C 26 feet or more — two 1-A: 10-B:C • Barge/open boat workers shall be evacuated to shore or secure location by tenderboat when lightning is spotted or threatens the area. • Medical emergencies will be handled as they are onshore except when low or no water renders a boat evacuation impossible. • Booms shall be placed in the water around the perimeter of the barge to prevent any fuel or hydraulic spills from spreading. • Personnel shall evacuate the boat/barge if a fire can not be contained with one 10 LB fire extinguisher • Spill kits shall be maintained onboard barges to keep any hydrocarbon spill from reaching the water.
2. Sheet Pile Installation	a. Slips/Trips/Falls	a. Slips/Trips/Falls • Reference General Site Hazards • Personnel will immediately communicate slip/trip/fall hazards to employees and supervisors. • Tripping and poor footing hazards will be repaired as they are discovered or will be clearly identified. • Fall protection (e.g., guardrails or personal fall protection system) is required when working 6' above the ground. • Personnel will be trained to use and inspect fall protection systems. • All lifelines / harnesses / and lanyards shall be inspected and in acceptable working condition prior to use. • Personal fall arrest systems shall meet the criteria specified in 29 CFR 1926.502(d) and guardrail systems and their use shall comply with 29 CFR 1926.502(b). Refer to Section 3.3.5.
	b. Dropped Objects	b. Dropped Objects • Steel toe boots meeting ANSI Standard Z41 will be worn. • A security zone will be established around the crane. No personnel will enter this area when the crane is in operation • No person will stand under an unsecured load.
	c. Struck By/Against	c. Struck By/Against • Personnel will understand and review hand signals. • Only one spotter will be used with each piece of equipment. Spotter will ensure he has eye contact with the crane operator and the power pak

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Sheet Pile Wall Installation		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		operator. • Do not allow personnel between a moving object and a stationary object. • Ensure all personnel on the barge are accounted for and out of the way. • Only operator shall be on crane during operation. • No personnel will be allowed to walk or do any work under any loads being picked. • Personnel will be aware of overhead operations. • On-site personnel working in the loading area will not walk along the blind side of equipment and must not approach heavy equipment with out making eye contact with the operator. • Operators will be aware of their surroundings at all times. • Operators will honk their horn twice before starting equipment or initiating operations after the equipment has set idle for a long period of time. • Do not work at wind speeds or weight loads above those recommended in the operator's manual. • Tag lines will be used during the picking and setting of the anchors. Use tag lines to minimize swinging of objects being moved. Tag lines are used to control loads except where their use will create a hazard. • Swing radius of the Crane will be demarcated with caution tape or cones. Extreme caution shall be exercised when working in the proximity to the crane aboard the barge. No one shall enter the swing radius while the crane is working. All personnel shall contact the crane operator before entering the swing area when the machine is not working in order to guarantee a safe passage. • Hand signals will be reviewed prior to the start of work. • The power pak operator and crane operator will have a clear visual field of the pile. • Piles will be initially lifted using the crane and a chain choke. The chain will be properly rated and designed especially for Pile picks. Proper rigging of the choke will be done a minimum of 10 feet from the top of the pile. • The crane will lift the pile with the aid of a spotter and the piles will be lifted to upright position and placed in the location where it is to be driven-operator will ensure the piles are securely in the soil before releasing tension on the choker.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Sheet Pile Wall Installation		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		• Personnel who remove the choker will not stand under any load nor the block of the crane. • Crane will be equipped with a vibratory hammer, with wood boot, which holds the piles in place (using the wood boot grappler attachment)-operator will ensure the piles are securely gripped before proceeding. The piles may then be pushed or vibrated into the sediment based on the type of sediment encountered. • No visitors will be allowed on the Barge. • No personnel are permitted up on/or near the Crane when pile driving operations are occurring. • Overhead protection, which will not obscure the vision of the operator, shall be provided. • Personnel will be aware of pinch points-no personnel will put their hands or any body part between any moving object and a stationary object. • Barge will be spudded in place. All personnel not associated with the spud operation will stay a minimum of 20 feet out of the spud dropping area. • Only qualified personnel will drop the spud/operate the winch. The operator will be seated in the winch operators chair and will not operate the winch until given the all clear that personnel are out of the spud drop areas. • The wheels of the spuds are located below deck and therefore do not pose a struck by/caught in hazard • All winch cables will be clearly marked and/or cordoned off- 90% of the cables are covered by Metal plating, the +/- 10 % that are exposed are demarcated by yellow paint on the barge deck. Personnel will not be allowed in this demarcated area when the spuds are being dropped. • The spud winch is located in the barge house on deck. When this winch is in operation the water tight door to this house will be closed and a sign posted –DO NO ENTER. • Guards shall be provided on all sheaves to prevent cables from jumping out of sheaves. • Guys, outriggers, thrustouts, or counterbalances shall be provided as necessary to maintain stability of pile driver rigs. • Keep access steps and ladders free from oil. • Work taking place above 6 feet requires fall protection.
	d. Man Overboard/Drowning	d. Man Overboard/Drowning

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Sheet Pile Wall Installation		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		• All personnel shall wear United States Coast Guard (USCG) Approved Type III Life Preservers at all times while on the water. • As per OSHA requirements (29 CFR 1926.501(b)(1)) and EM 385-1-1 Section 19.A.07, guardrails are required on working platforms for barges that are 6 feet or more above the water. • All means of barge access shall be properly secured, guarded, and maintained free of slipping and tripping hazards. • A Coast Guard approved Type IV flotation device (life ring) will be maintained on each barge. • Water craft will not be used without shore support personnel with rescue skiff available onshore. • All persons on board will remain seated/standing securely whenever a water craft is moving, • Maximum weight capacity for water craft will not be exceeded. • Barges will be equipped with perimeter guardrails. • Water craft will be operated with a minimum of two personnel on board. • Water craft will not be used without shore support personnel. • A line extended from the water craft to the shore will always be available, so that shore personnel are able to retrieve water craft remotely in the event of an emergency. • Personnel on board water craft must be in constant radio contact with shore personnel. • Non slip surfaces shall be provided on all working decks, stair treads, ship ladders, platforms, catwalks, and walkways. • All barge deck obstructions will be removed if possible, if not possible to remove them they shall be clearly marked with yellow paint.
	e. Sinking Boat/Barge Damage	e. Sinking Boat/Barge Damage • All water craft not subject to USCG inspection and certification or not having a current American Bureau of Shipping (ABS) classification shall be inspected by a marine surveyor accredited by the National Association of Marine Surveyors (NAMS) or the Society of Accredited Marine Surveyors (SAMS). • A pre-use inspection of any rented vessel shall be completed, including a video documentation of pre-use conditions. • The load ratings of barges and tenderboats will be strictly adhered to;

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Sheet Pile Wall Installation		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		overloading of vessels is prohibited. • Tide tables will be consulted and times of high tide, when it is most safe to move barges, will be identified. • In the event a barge or boat becomes grounded at times of low tide, no attempt will be made to move the barge until enough water returns to refloat it. • The Crane will be set on mats with outriggers fully extended on Mats for stability. • The Crane will be anchored to the deck by means of four chain binders of sufficient size and strength to stabilize the crane. These will be secured to anchor points on the barge deck. • The Crane operator and Project engineer will fully understand the stability calculations and adhere to them. • Load test will be performed prior to cranes initial use and a lift plan will be developed prior to the pile driving. • The provisions of EM 385-1-1 Section 16 Marine Floating Plants and CFR 29 1926 and 1910 Subparts N as well as 29 CFR 1926.603 shall be followed.
	f. Water Craft Taking On Water	f. Water Craft Taking On Water • All personnel will ensure the water craft has a working plug firmly in place prior to launch • The load ratings of barges and tenderboats will be strictly adhered to; overloading of vessels is prohibited. • Tide tables will be consulted and times of high tide, when it is most safe to launch/dock, will be identified. • All water craft will have a bailing device on board in case of leaks • If the water craft begins to take on water for any reason it shall be brought in to the nearest safe docking facility as soon as possible and the ESS immediately called • Any water craft which is damaged in any way or has taken on water will be inspected by the ESS or designee prior to the craft being launched
	g. Hot Work	g. Hot Work • A Hot Work Permit will be issued prior to all chop saw cutting, burning, grinding or any other activities that will cause sparks while working. • A 20 lb. ABC type fire extinguisher will readily available within 50' of

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Sheet Pile Wall Installation		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		all Hot Work Permit Operations. • Workers performing hot work will wear appropriate PPE as specified in the Hot Work Permit. • Oxygen and acetylene cylinders and hoses will be stored properly (i.e., secured and separated appropriately) and maintained in good condition. • Only qualified workers will perform hot work. Workers will inspect their PPE and equipment prior to performing hot work.
	h. Water Craft Operation Risks	h. Water Craft Operation Risks • All barge and boat pilots shall be familiar with the "Rules of the Road" that regulate movement of boat traffic within the harbor. • Barge will be equipped with day markers and proper lighting-if moored at night. • Charts of the study areas, with depths for mean low water, will be obtained and water craft pilots will be familiar with their use. • Locations of rocks, ledges and manmade subsurface obstructions will be noted within the work area. These will be given a wide berth. • All boating regulations will be strictly observed; prudent speed limits will be followed at all times. • All water craft must have required Coast Guard approved lighting and signaling devices.
	i. Flying Objects and Debris	i. Flying Objects and Debris • ANSI approved Safety glasses will be worn at all times while on the water. • All objects pulled up from the water will be brought aboard slowly to check for contamination or entanglement.
	j. Equipment Lost Overboard/Crushed	j. Equipment Lost Overboard/Crushed • Instruments shall not be placed near the moon pool or edge of the barge/boat when not in use/not secured. • Equipment will be secured to the deck or to personnel when appropriate. Secure all radios and cell phones. • Instruments will be kept clear of all tooling lay down areas. Good housekeeping will be critical on the barge/boat. • All small equipment will have a backup tie line attached to the vessel if they are used at or over the edge of the vessel.
	k. Emergencies: Fire, Weather, and	k. Emergencies: Fire, Weather, and Medical/Spills/Releases

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Sheet Pile Wall Installation		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
	Medical/Spills/Releases	• Fire extinguishers will be carried on all launches, barges, and motorboats. Minimum number and rating are as follows: Length — Extinguisher 26 feet or less — one 1-A: 10-B:C 26 feet or more — two 1-A: 10-B:C • Barge/open boat workers shall be evacuated to shore or secure location by tenderboat when lightning is spotted or threatens the area. • Medical emergencies will be handled as they are onshore except when low or no water renders a boat evacuation impossible. • Booms shall be placed in the water around the perimeter of the barge to prevent any fuel or hydraulic spills from spreading. • Personnel shall evacuate the boat/barge if a fire can not be contained with one 10 LB fire extinguisher • Spill kits shall be maintained onboard barges to keep any hydrocarbon spill from reaching the water.
	l. Water Jetting	l. Water Jetting • Stop jetting at the specified distance (typically 3 feet) above the final pile tip elevation. • Drive piles the specified remaining distance (typically at least 3 feet) to the required resistance. • Water jetting may affect nearby structures by undermining and should normally not be performed in clay or silt soil. • Check resistance of nearby piles.
	m. Back Injuries	m. Back Injuries • Refer to General Site Hazards.
	n. Hand and Power Tools	n. Hand and Power Tools • Refer to General Site Hazards.
	o. Working Over Water	o. Working Over Water • Personnel working over water will be required to wear PFDs when not in equipment.
	p. Overhead Hazards	p. Overhead Hazards • Personnel will be required to wear hard hats that meet ANSI Standard Z-89-1. • Personnel will not stand under any suspended load. • Personnel will be aware of other personnel working on crane in area.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Sheet Pile Wall Installation		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
	q. Eye Injury	q. Eye Injury • Refer to General Site Hazards.
3. Tieback System Installation	a. Hot Work	a. Hot Work • A Hot Work Permit will be issued prior to all chop saw cutting, burning, grinding or any other activities that will cause sparks while working. • A 20 lb. ABC type fire extinguisher will readily available within 50' of all Hot Work Permit Operations. • Workers performing hot work will wear appropriate PPE as specified in the Hot Work Permit. • Oxygen and acetylene cylinders and hoses will be stored properly (i.e., secured and separated appropriately) and maintained in good condition. • Only qualified workers will perform hot work. Workers will inspect their PPE and equipment prior to performing hot work.
	b. Fall into Excavation	b. Fall into Excavation • Do not leave excavations open overnight whenever possible fill them. • Install open trench warning devices/barricades. • If deemed necessary, use the benching and sloping methods to prevent cave-ins (29 CFR 1926.652, Appendix B). • If necessary, stairways, ladders, or ramps shall be provided as means of egress in all trenches 4 feet or more in depth. Travel distance shall be no more than 25 feet between means of exit. • Protective systems are required on all excavations over 5 feet in depth or in excavations less than 5 feet when examination of the ground by a competent person reveals conditions that may result in cave-ins (29 CFR 1926.652, Appendices C & D).
	c. Heavy Equipment Operation	c. Heavy Equipment Operation • Reference General Site Hazards. • Only operators trained and experienced with the specific equipment will operate that equipment. • Equipment will have guards, canopies or grills to protect from flying objects. • Ground personnel will stay clear of all suspended loads. • Eye contact with operators will be made before approaching equipment. Equipment will not be approached on blind sides. • Avoid equipment swing radius. This area will be delineated with cones.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Sheet Pile Wall Installation		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		• Know hand signals. • All equipment will be equipped with backup alarms. • The use of headphones for entertainment purposes is prohibited. • A 15 foot minimum safe separation distance will be maintained between equipment and overhead utility lines. • Equipment will be shut down before and during fueling operations.
	d. Noise	d. Noise • Refer to General Site Hazards.
	e. Overhead Hazards	e. Overhead Hazards • Personnel will be required to wear hard hats that meet ANSI Standard Z-89-1. • Personnel will not stand under any suspended load. • Personnel will be aware of other personnel working on crane in area.
	f. Working Over Water	f. Working Over Water • Personnel working over water will be required to wear PFDs when not in equipment.
	g. Eye Injury	g. Eye Injury • Refer to General Site Hazards.
	h. Back Injuries	h. Back Injuries • Refer to General Site Hazards.
	i. Hand and Power Tools	i. Hand and Power Tools • Refer to General Site Hazards.
EQUIPMENT USED	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
1. Crane/Vibratory Hammer 2. Excavator 3. Fire Extinguishers 4. Spill Control Materials 5. Appropriate PPE 6. Portable Eyewash 7. First Aid Kits 8. GFCI	1. Daily inspections of all equipment will be conducted and documented before use. 2. Daily inspection of all mechanical equipment on deck. 3. Monthly inspections will be performed. 4. Daily safety inspection of spill control materials will be conducted. 5. Daily maintenance (fueling, oil, grease) will be conducted. 6. Daily inspections for oil/grease	1. All site personnel will read and comply with this HASP. 2. All site personnel will receive site specific training. 3. Only a qualified operator will be allowed to run the crane and drive the piles. 4. Personnel will be trained in inspection checklist use. 5. Personnel will be given instructions on proper use of fire extinguishers. 6. Personnel will be given training on how to respond to spilled materials. 7. Operators/pilots will be trained in engine maintenance. 8. Requirements for housekeeping will be reviewed. 9. Operators will be trained in proper use of these safety systems. 10. At least two individuals on-site will have current CPR, First Aid, and Bloodborne pathogen training. 11. Instruct personnel of proper use of fire extinguishers.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Sheet Pile Wall Installation		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
	buildup will be conducted. 7. Daily inspections will be made. 8. Daily inspections will be required before operation 9. Initial review/training prior to commencement of field activities. 10. Inspect all PPE prior to use. 11. Inspect portable eye washes and First Aid Kits weekly. 12. Inspect Fire Extinguishers weekly. 13. Check and Test GFCIs weekly.	

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Dredging and placement of clean fill and/or dredged sand behind the sheetpile wall		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
1. **Dredging and placement of clean fill and/or dredged sand behind the sheetpile wall**	a. Noise	a. Noise • Refer to General Site Hazards
	b. Heavy Equipment Operation	b. Heavy Equipment Operation • Reference General Site Hazards. • Only operators trained and experienced with the specific equipment will operate that equipment. • Equipment will have guards, canopies or grills to protect from flying objects. • Ground personnel will stay clear of all suspended loads. • Eye contact with operators will be made before approaching equipment. Equipment will not be approached on blind sides. • Avoid equipment swing radius. • Know hand signals. • All equipment will be equipped with backup alarms. • The use of headphones for entertainment purposes is prohibited. • A 15 foot minimum safe separation distance will be maintained between equipment and overhead utility lines. • Equipment will be shut down before and during fueling operations.
	c. Equipment Rollover	c. Equipment Rollover • Equipment will have rollover protective structures and seat belts. • Operators will wear seat belts when operating equipment. • Do not operate equipment on grades which exceed the manufacturer's recommendations. • Be aware of weather and road conditions. • A spotter will be used when loading equipment in high traffic areas. • Do not load equipment on unstable ground. • Run articulated equipment up and down slopes – not at an angle.
	d. Caught In/Between	d. Caught In/Between • Do not allow personnel between a moving object and a stationary object. • Ensure all personnel within loading areas are accounted for and out of the way.
	e. Vehicular Traffic	e. Vehicular Traffic • Employees will need to pay attention to operations around and adjacent to their work and continually evaluate the need for traffic control measures.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Dredging and placement of clean fill and/or dredged sand behind the sheetpile wall		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		• Establish one-way (if possible) traffic routes for loaded trucks, so that they can keep the same path while moving dirt. • Traffic control patterns may be modified based on changed conditions (as observed) due to weather or due to modified operations at the site.
	f. Struck by Heavy Equipment/ Vehicles	f. Struck by Heavy Equipment/Vehicles • Speed limit for traffic is 15 mph for all areas of the site. • Trucks shall slow down before approaching loading/unloading area. • Operators will remain in truck when being loaded. • On-site personnel working in the loading area will not walk along the blind side of equipment and must not approach heavy equipment without making eye contact with the operator. • Do not approach heavy equipment unless eye contact with appropriate hand signals has been made with the operator to cease activity. Equipment operators will confirm that eye contact had been made by stopping operation and clearly showing their hands are off of the controls. • Be aware of heavy equipment operations. • Keep out of the swing radius of heavy equipment. • Ground personnel in the vicinity of heavy equipment operations will be within the view of the operator at all times. • Ground personnel will be aware of the counterweight swing and maintain an adequate buffer zone. • Ground personnel will not stand directly behind heavy equipment when it is in operation. • Loaded trucks have right of way. • Leave ½ truck length between the truck being loaded and the next truck in line.
	g. Overhead Hazards	g. Overhead Hazards • Reference General Site Hazards.
	h. Eye Injury	h. Eye Injury • Reference General Site Hazards.
	i. Slips/Trips/Falls	i. Slips/Trips/Falls • Reference General Site Hazards. • Maintain work areas in a safe and orderly condition. • Watch for uneven terrain or rocks in walk areas. • Identify any other tripping hazards and remove them if at all possible.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Dredging and placement of clean fill and/or dredged sand behind the sheetpile wall		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
	j. Working Over Water	j. Working Over Water • Personnel working over water will be required to wear PFDs when not in equipment.
	k. Man Overboard/Drowning	k. Man Overboard/Drowning • All personnel shall wear United States Coast Guard (USCG) Approved Type III Life Preservers at all times while on the water. • As per OSHA requirements (29 CFR 1926.501(b)(1)) and EM 385-1-1 Section 19.A.07, guardrails are required on working platforms for barges that are 6 feet or more above the water. • All means of barge access shall be properly secured, guarded, and maintained free of slipping and tripping hazards. • A Coast Guard approved Type IV flotation device (life ring) will be maintained on each barge. • Water craft will not be used without shore support personnel with rescue skiff available onshore. • All persons on board will remain seated/standing securely whenever a water craft is moving, • Maximum weight capacity for water craft will not be exceeded. • Barges will be equipped with perimeter guardrails. • Water craft will be operated with a minimum of two personnel on board. • Water craft will not be used without shore support personnel. • A line extended from the water craft to the shore will always be available, so that shore personnel are able to retrieve water craft remotely in the event of an emergency. • Personnel on board water craft must be in constant radio contact with shore personnel. • Non slip surfaces shall be provided on all working decks, stair treads, ship ladders, platforms, catwalks, and walkways. • All barge deck obstructions will be removed if possible, if not possible to remove them they shall be clearly marked with yellow paint.
	l. Sinking Boat/Barge Damage	l. Sinking Boat/Barge Damage • All water craft not subject to USCG inspection and certification or not having a current American Bureau of Shipping (ABS) classification shall be inspected by a marine surveyor accredited by the National Association of Marine Surveyors (NAMS) or the Society of Accredited Marine

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Dredging and placement of clean fill and/or dredged sand behind the sheetpile wall		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		Surveyors (SAMS). • A pre-use inspection of any rented vessel shall be completed, including a video documentation of pre-use conditions. • The load ratings of barges and tenderboats will be strictly adhered to; overloading of vessels is prohibited. • Tide tables will be consulted and times of high tide, when it is most safe to move barges, will be identified. • In the event a barge or boat becomes grounded at times of low tide, no attempt will be made to move the barge until enough water returns to refloat it. • The 35 ton Crane will be set on mats with outriggers fully extended on Mats for stability. • The Crane will be anchored to the deck by means of four chain binders of sufficient size and strength to stabilize the crane. These will be secured to anchor points on the barge deck. • The Marine Survey will be done in floating plant mode and will include the Crane matting and binder system. • The Marine Survey will be done by competent/qualified person and shall include stability calculations for crane lifts. • The Crane operator and Project engineer will fully understand the stability calculations and adhere to them. • Load test will be performed prior to cranes initial use and a lift plan will be developed prior to the pile driving. • The provisions of EM 385-1-1 Section 16 Marine Floating Plants and CFR 29 1926 and 1910 Subparts N as well as 29 CFR 1926.603 shall be followed.
	m. Water Craft Taking On Water	m. Water Craft Taking On Water • All personnel will ensure the water craft has a working plug firmly in place prior to launch • The load ratings of barges and tenderboats will be strictly adhered to; overloading of vessels is prohibited. • Tide tables will be consulted and times of high tide, when it is most safe to launch/dock, will be identified. • All water craft will have a bailing device on board in case of leaks • If the water craft begins to take on water for any reason it shall be

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Dredging and placement of clean fill and/or dredged sand behind the sheetpile wall		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		brought in to the nearest safe docking facility as soon as possible and the ESS immediately called • Any water craft which is damaged in any way or has taken on water will be inspected by the ESS or designee prior to the craft being launched
	n. Water Craft Operation Risks	n. Water Craft Operation Risks • All barge and boat pilots shall be familiar with the "Rules of the Road" that regulate movement of boat traffic within the harbor. • Barge will be equipped with day markers and proper lighting-if moored at night. • Charts of the study areas, with depths for mean low water, will be obtained and water craft pilots will be familiar with their use. • Locations of rocks, ledges and manmade subsurface obstructions will be noted within the work area. These will be given a wide berth. • All Harbor boating regulations will be strictly observed; prudent speed limits will be followed at all times. • All water craft must have required Coast Guard approved lighting and signaling devices. • Reference the Offshore work AHA for boating applications.
	o. Equipment Lost Overboard/Crushed	o. Equipment Lost Overboard/Crushed • Instruments shall not be placed near the moon pool or edge of the barge/boat when not in use/not secured. • Equipment will be secured to the deck or to personnel when appropriate. Secure all radios and cell phones. • Instruments will be kept clear of all tooling lay down areas. Good housekeeping will be critical on the barge/boat. • All small equipment will have a backup tie line attached to the vessel if they are used at or over the edge of the vessel.
	p. Emergencies: Fire, Weather, and Medical/Spills/Releases	p. Emergencies: Fire, Weather, and Medical/Spills/Releases • Fire extinguishers will be carried on all launches, barges, and motorboats. Minimum number and rating are as follows: Length — Extinguisher 26 feet or less — one 1-A: 10-B:C 26 feet or more — two 1-A: 10-B:C • Barge/open boat workers shall be evacuated to shore or secure location by tenderboat when lightning is spotted or threatens the area.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Dredging and placement of clean fill and/or dredged sand behind the sheetpile wall		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		• Medical emergencies will be handled as they are onshore except when low or no water renders a boat evacuation impossible. • Booms shall be placed in the water around the perimeter of the barge to prevent any fuel or hydraulic spills from spreading. • Personnel shall evacuate the boat/barge if a fire can not be contained with one 10 LB fire extinguisher • Spill kits shall be maintained onboard barges to keep any hydrocarbon spill from reaching the water.
	q. Unstable Soils	q. Unstable Soils • Prior to beginning construction in an area, evaluate and locate areas with unstable soils. • Notify all personnel of areas with unstable soils. Do not run high pressure equipment (i.e., articulating trucks) in these areas until soils have been stabilized. • Build roads suitable to handle equipment traffic prior to beginning dirt/stone hauling. • During hauling operations, keep soft areas/ruts filled and compacted. Do not allow off–road trucks to continually run over ruts. • Off-road trucks should vary their path on the haul roads.
	r. Struck By/Against	r. Struck By/Against • Reference General Site Hazards. • Personnel will understand and review hand signals. • All machines will be equipped with backup alarms. • Personnel will not stand under any suspended loads. • Only qualified dredge personnel will be used. • Personnel will avoid placing themselves between heavy equipment/dredge bucket/dredge and stationary objects and on the blind sides of heavy equipment. • Operations will be suspended and the Dredge secured during all severe weather. • Ensure correct position/distance relative to other operations of other activities.
	s. Exposure to Radioactive Source while using LB-444 Density Unit	s. Exposure to Radioactive Source while using LB-444 Density Unit • Procedures in Section 3.3.17. • Only licensed personnel who have been trained on how to handle

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Dredging and placement of clean fill and/or dredged sand behind the sheetpile wall		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		radioactive substances are allowed to assemble or disassemble the shielding with the source. This work will be done under the supervision of the Radiation Safety Officer. • The lock of the shielding shall be closed and secured so that no unshielded radiation can exit. Ensure that the shielding is not tampered with or damaged. • A Radiation Safety Officer must be appointed and is responsible that the provisions of all radioactive regulations are observed. • Radiation protection zones outside the shielding must be – if they are accessible – marked and guarded. • Ensure all labels affixed to the device at the time of receipt that indicate removal of the label is prohibited are maintained. Site personnel will comply with the instructions and precautions indicated by these labels. • The device will be tested for leakage of radioactive material and proper operation of the power source (i.e., on-off mechanism and indicator) at a minimum every 6 months. • Testing, installation, servicing, and removal of the radioactive material, its shielding or containment shall be performed under the instructions provided by the labels or by a licensed person. • Upon failure or damage to the shielding or the power source (i.e., on-off mechanism and indicator) or an indication thereof, use of the device shall be suspended until it has been repaired by the manufacturer or other appropriately licensed person. • Do not abandon the device containing the radioactive material. • In case of serious operational trouble (i.e., fire or explosion), it cannot be assumed that the function of the shielding lock, the shielding efficiency or the stability of the source capsule have been impared. The Radiation Safety Officer should be notified immediately to investigate the situation and take any necessary provisions to prevent further damage and to avoid exposure of the operating staff to radiation.
2. Placement of clean fill and/or dredged sand behind the sheetpile wall	a. Slips/Trips/Falls	a. Slips/Trips/Falls • Reference General Site Hazards. • Maintain work areas in a safe and orderly condition. • Unloading area of the clamshell will be demarcated and all personnel are strictly forbidden from entering this area during dredging • Extreme caution will be used when disconnecting straps, tie-downs or

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Dredging and placement of clean fill and/or dredged sand behind the sheetpile wall		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		other hold down devices. • Identify any other tripping hazards and remove them if at all possible.
	b. Noise	b. Noise • Reference General Site Hazards.
	c. Heavy Equipment Operation	c. Heavy Equipment Operation • Reference General Site Hazards. • Only operators trained and experienced with the specific equipment will operate that equipment. • Equipment will have guards, canopies or grills to protect from flying objects. • Ground personnel will stay clear of all suspended loads. • Eye contact with operators will be made before approaching equipment. Equipment will not be approached on blind sides. • Avoid equipment swing radius. • Know hand signals. • All equipment will be equipped with backup alarms. • The use of headphones for entertainment purposes is prohibited. • A 15 foot minimum safe separation distance will be maintained between equipment and overhead utility lines. • Equipment will be shut down before and during fueling operations.
	d. Overhead Hazards	d. Overhead Hazards • Reference General Site Hazards.
	e. Eye Injury	e. Eye Injury • Reference General Site Hazards. • Safety glasses that meet ANSI Standard Z-87 will be worn.
	f. Unstable Soils	f. Unstable Soils • Prior to beginning construction in an area, evaluate and locate areas with unstable soils. • Notify all personnel of areas with unstable soils. Do not run high pressure equipment (i.e., articulating trucks) in these areas until soils have been stabilized. • Build roads suitable to handle equipment traffic prior to beginning dirt/stone hauling. • During hauling operations, keep soft areas/ruts filled and compacted. Do not allow off–road trucks to continually run over ruts.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Dredging and placement of clean fill and/or dredged sand behind the sheetpile wall		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		• Off-road trucks should vary their path on the haul roads.
	g. Struck By/Against	g. Struck By/Against • Reference General Site Hazards. • Personnel will understand and review hand signals. • All machines will be equipped with backup alarms. • Personnel will not stand under any suspended loads. • All power tools used will have appropriated guards. • Operations will be suspended during all severe weather. • Ensure correct position/distance relative to other operations of other activities.
	h. Man Overboard/Drowning	h. Man Overboard/Drowning • All personnel shall wear United States Coast Guard (USCG) Approved Type III Life Preservers at all times while on the water. • As per OSHA requirements (29 CFR 1926.501(b)(1)) and EM 385-1-1 Section 19.A.07, guardrails are required on working platforms for barges that are 6 feet or more above the water. • All means of barge access shall be properly secured, guarded, and maintained free of slipping and tripping hazards. • A Coast Guard approved Type IV flotation device (life ring) will be maintained on each barge. • Water craft will not be used without shore support personnel with rescue skiff available onshore. • All persons on board will remain seated/standing securely whenever a water craft is moving, • Maximum weight capacity for water craft will not be exceeded. • Barges will be equipped with perimeter guardrails. • Water craft will be operated with a minimum of two personnel on board. • Water craft will not be used without shore support personnel. • A line extended from the water craft to the shore will always be available, so that shore personnel are able to retrieve water craft remotely in the event of an emergency. • Personnel on board water craft must be in constant radio contact with shore personnel. • Non slip surfaces shall be provided on all working decks, stair treads, ship ladders, platforms, catwalks, and walkways.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Dredging and placement of clean fill and/or dredged sand behind the sheetpile wall		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		• All barge deck obstructions will be removed if possible, if not possible to remove them they shall be clearly marked with yellow paint.
	i. Sinking Boat/Barge Damage	i. Sinking Boat/Barge Damage • All water craft not subject to USCG inspection and certification or not having a current American Bureau of Shipping (ABS) classification shall be inspected by a marine surveyor accredited by the National Association of Marine Surveyors (NAMS) or the Society of Accredited Marine Surveyors (SAMS). • A pre-use inspection of any rented vessel shall be completed, including a video documentation of pre-use conditions. • The load ratings of barges and tenderboats will be strictly adhered to; overloading of vessels is prohibited. • Tide tables will be consulted and times of high tide, when it is most safe to move barges, will be identified. • In the event a barge or boat becomes grounded at times of low tide, no attempt will be made to move the barge until enough water returns to refloat it. • The 35 ton Crane will be set on mats with outriggers fully extended on Mats for stability. • The Crane will be anchored to the deck by means of four chain binders of sufficient size and strength to stabilize the crane. These will be secured to anchor points on the barge deck. • The Marine Survey will be done in floating plant mode and will include the Crane matting and binder system. • The Marine Survey will be done by competent/qualified person and shall include stability calculations for crane lifts. • The Crane operator and Project engineer will fully understand the stability calculations and adhere to them. • Load test will be performed prior to cranes initial use and a lift plan will be developed prior to the pile driving. • The provisions of EM 385-1-1 Section 16 Marine Floating Plants and CFR 29 1926 and 1910 Subparts N as well as 29 CFR 1926.603 shall be followed.
	j. Water Craft Taking On Water	j. Water Craft Taking On Water • All personnel will ensure the water craft has a working plug firmly in place prior to launch

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Dredging and placement of clean fill and/or dredged sand behind the sheetpile wall		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		• The load ratings of barges and tenderboats will be strictly adhered to; overloading of vessels is prohibited. • Tide tables will be consulted and times of high tide, when it is most safe to launch/dock, will be identified. • All water craft will have a bailing device on board in case of leaks • If the water craft begins to take on water for any reason it shall be brought in to the nearest safe docking facility as soon as possible and the ESS immediately called • Any water craft which is damaged in any way or has taken on water will be inspected by the ESS or designee prior to the craft being launched
	k. Water Craft Operation Risks	k. Water Craft Operation Risks • All barge and boat pilots shall be familiar with the "Rules of the Road" that regulate movement of boat traffic within the harbor. • Barge will be equipped with day markers and proper lighting-if moored at night. • Charts of the study areas, with depths for mean low water, will be obtained and water craft pilots will be familiar with their use. • Locations of rocks, ledges and manmade subsurface obstructions will be noted within the work area. These will be given a wide berth. • All Harbor boating regulations will be strictly observed; prudent speed limits will be followed at all times. • All water craft must have required Coast Guard approved lighting and signaling devices. • Reference the Offshore work AHA for boating applications.
	l. Equipment Lost Overboard/Crushed	l. Equipment Lost Overboard/Crushed • Instruments shall not be placed near the moon pool or edge of the barge/boat when not in use/not secured. • Equipment will be secured to the deck or to personnel when appropriate. Secure all radios and cell phones. • Instruments will be kept clear of all tooling lay down areas. Good housekeeping will be critical on the barge/boat. • All small equipment will have a backup tie line attached to the vessel if they are used at or over the edge of the vessel.
	m. Emergencies: Fire, Weather, and Medical/Spills/Releases	m. Emergencies: Fire, Weather, and Medical/Spills/Releases • Fire extinguishers will be carried on all launches, barges, and

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities **Location: Brown, Outagamie, and Winnebago Counties, Wisconsin**
Activity: Dredging and placement of clean fill and/or dredged sand behind the sheetpile wall

MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
		motorboats. Minimum number and rating are as follows: Length — Extinguisher 26 feet or less — one 1-A: 10-B:C 26 feet or more — two 1-A: 10-B:C • Barge/open boat workers shall be evacuated to shore or secure location by tenderboat when lightning is spotted or threatens the area. • Medical emergencies will be handled as they are onshore except when low or no water renders a boat evacuation impossible. • Booms shall be placed in the water around the perimeter of the barge to prevent any fuel or hydraulic spills from spreading. • Personnel shall evacuate the boat/barge if a fire can not be contained with one 10 LB fire extinguisher • Spill kits shall be maintained onboard barges to keep any hydrocarbon spill from reaching the water.
	n. Working Over Water	n. Working Over Water • Personnel working over water will be required to wear PFDs when not in equipment.

EQUIPMENT USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
1. Heavy Equipment/Trucks 2. Dredge/Excavator 3. Spill Control Measures 4. Appropriate PPE 5. Portable Eyewash 6. First Aid Kits 7. 20A:B:C Fire Extinguisher	a. Inspect all vehicles/equipment daily. b. Daily inspections will be conducted unless damage is suspected. c. Monthly inspections will be performed. d. Daily safety inspection of spill control materials will be conducted. e. Daily maintenance (fueling, oil, grease) will be conducted. f. Daily inspections for oil/grease buildup will be conducted. g. Pre and Post Calibrations h. Initial review/training prior to commencement of field activities. i. Inspect all PPE prior to use. j. Inspect portable eye washes and First Aid Kits weekly. k. Inspect Fire Extinguishers weekly.	1. All site personnel will read and comply with this HASP. 2. All site personnel will receive site specific training. 3. Personnel will be trained in inspection checklist use. 4. Personnel will be given instructions on proper use of fire extinguishers. 5. Personnel will be given training on how to respond to spilled materials. 6. Operators/pilots will be trained in engine maintenance. 7. Requirements for housekeeping will be reviewed. 8. Only Qualified, trained individuals will use the equipment. 9. At least two individuals on-site will have current CPR, First Aid, and Bloodborne pathogen training.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities **Location: Brown, Outagamie, and Winnebago Counties, Wisconsin** **Activity: Layout and Placement of Dredge Lines and Booster Stations**		
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
1. Boat Launching/Docking and Boarding Boat/Float	a. Slips/Trips/Falls	a. Slips/Trips/Falls • Ensure that loads are properly distributed in all small boats. • Boats must be secured to bank or dock before loading. • Keep boats will organized, to eliminate trip hazards. • Personnel will ascertain the stability of the deck surfaces of the derelict vessels on a vessel by vessel basis before going on board. The use of planks/plywood/ladders and deck stabilization devices will be available and used on a vessel by vessel basis. • Any vessel deemed unsafe by the attendant, inspector, ESS, or pilot of the tender boat will not be boarded. • All means of boat access shall be properly secured, guarded, and maintained free of slipping and tripping hazards. • Never exceed boats rated capacity for weight and number of persons. • Do not disembark until boat is secured.
	b. Boat Operations	b. Boat Operations • Spotters will be used when backing up trucks and moving equipment. • When off loading a boat, never back the vehicle so far into the water that the back tail pipe is under water • Ensure you have sufficient power to pull the boat out of the water once it is trailered • Provide radio for communication. • Assure fuel tank has sufficient gas before departure.
	c. Dropped Objects	c. Dropped Objects • Ensure the drain plug is tightly secured in the boat • Secure all radios, cell phones and equipment
	d. Struck By/Against	d. Struck By/Against • Personnel will understand and review hand signals. • Keep hands inside boat when approaching dock • Caution will be used offloading the boat from the trailer-clear the area of all non-essential personnel. • All boats will be securely anchored or docked-docked boats will be positioned with minimum 2 lines. • Ensure the boat is properly secured to the boat trailer before transporting. • Ensure there is sufficient room to drive through when trailering the boat

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Layout and Placement of Dredge Lines and Booster Stations		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		on narrow streets.
1. Crane Assisted Barge Launching	a. Crane Inspection	a. Crane Inspection • All cranes must have annual inspection reviewed before use; daily inspections and competent person named for conducting inspections; load chart available, operator must know how to read a load chart and be deemed competent by TtEC. • All cranes to be outfitted with anti-two-block protection.
	b. Contact with objects in boom radius – overhead utilities	b. Contact with objects in boom radius – overhead utilities. • Set crane up in an area free of overhead obstacles including overhead utilities. Minimum distance between crane and 50 kV power lines is 15 feet. This distance increases if the lines are over 50 kV.
	c. Traffic control	c. Traffic Control • If possible, establish one-way traffic routes for trucks bringing in barges. • Traffic cones and orange traffic vests will be used when working in areas of traffic, construction vehicles and near roadways. Implement traffic controls such as flag persons, warning devices, etc., as necessary. • Employees will need to pay attention to operations around and adjacent to their work and continually evaluate the need for traffic control measures. • Spotters will be used when backing up trucks and heavy equipment.
	d. Pinched, caught between, struck by	d. Pinched, Caught Between, Struck By • Do not allow personnel between a moving object and a stationary object. • Ensure all personnel within unloading and loading areas are accounted for and out of the way. • All cranes are to have swing protection demarcated. • Only operator shall be on crane during operation.
	e. Overhead Hazards	e. Overhead Hazards • No personnel will be allowed to walk or do any work under any loads being picked. • Personnel will be aware of overhead operations. Unauthorized personnel will not be in the swing radius.
	f. Unstable Ground	f. Unstable Ground • Set crane up on even terrain. Ground should be stable enough to support the weight of the crane and loads during lifting. • If necessary, use crane mats to provide additional ground stability.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Layout and Placement of Dredge Lines and Booster Stations		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
	g. Rigging/Lifting	g. Rigging/Lifting • All rigging hardware will be selected and placed in to use by a competant person. • All rigging hardware shall be of sufficient capacity in the configuration of use, suitable for the lift. • All rigging will be tagged with its lifting capacity. • All chokers, slings and lifting gear shall be inspected daily (both nylon and steel) and shall be free from defects prior to use.
	h. Struck by/Overhead Hazards	h. Struck By/Overhead Hazards • Do not allow personnel between a moving object and a stationary object. • Ensure all personnel within unloading and loading areas are accounted for and out of the way. • All cranes are to have swing protection demarcated. • Only operator shall be on crane during operation. • No personnel will be allowed to walk or do any work under any loads being picked. • Personnel will be aware of overhead operations. Unauthorized personnel will not be in the swing radius. • Tag lines will be used during the picking and setting of the barges. Use tag lines to minimize swinging of objects being moved. • Crane will honk horn prior to starting any lift to warn ground personnel.
	i. Water Craft Operations	i. Water Craft Operations • All barge and tenderboat pilots shall be familiar with the "Rules of the Road" that regulate movement of boat traffic within the harbor. • All persons on board will remain seated/standing securely whenever a watercraft is moving, • Maximum weight capacity for watercraft will not be exceeded. • Watch for other boats in area, avoid close calls or collisions • Watch for wake from other boats • Ensure that loads are properly distributed in all small boats.
	j. Man Overboard/Drowning	j. Man Overboard/Drowning • All personnel shall wear United States Coast Guard (USCG) Approved Type III Life Preservers at all times while on the water. • Watercraft will not be used without shore support personnel. • Personnel on board watercraft must be in constant radio contact with

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Layout and Placement of Dredge Lines and Booster Stations		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		shore personnel. • Personnel will ascertain the stability of the deck surfaces of the derelict vessels on a vessel by vessel basis before going on board. The use of planks/plywood/ladders/picks and deck stabilization devices will be available and used on a vessel by vessel basis. • Any vessel deemed unsafe by the attendant, inspector, ESS, or pilot of the tender boat will not be boarded. • All means of barge access shall be properly secured, guarded, and maintained free of slipping and tripping hazards. • Maximum weight capacity for barge will not be exceeded.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Layout and Placement of Dredge Lines and Booster Stations		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
	k. Falling Overboard and/or Standing	k. Falling Overboard and/or Standing • All personnel shall wear USCG Approved Type III Live Preservers at all times while on water. • All PFDs will be properly worn, snug, and fully zippered/buttoned. • A USCG Approved Type IV flotation device (life ring) with 70 feet of line will be maintained on each tender boat. • Personnel will ascertain the stability of the deck surfaces of the derelict vessels on a vessel by vessel basis before going on board. The use of planks/plywood/ladders/picks and deck stabilization devices will be available and used on a vessel by vessel basis. • Any vessel deemed unsafe by the attendant, inspector, ESS, or pilot of the tender boat will not be boarded. • All means of barge access shall be properly secured, guarded, and maintained free of slipping and tripping hazards. • Maximum weight capacity for barge will not be exceeded. • Personnel on barges must be in constant radio contact with shore personnel.
	l. Hand Tools	l. Hand Tools • The proper tools will be used for each task. • All tools will be inspected before each use. Damaged tools will be removed from service and tagged (splintered wood bases, missing guards, "mushroom" head). • Tools will be used in accordance with manufacturer's instructions. • Modifications to tools are prohibited unless approved by the ESS.
	m. Equipment Lost Overboard/crushed	a. Equipment Lost Overboard/crushed • Instruments shall not be placed near edge of the barge when not in use/not secured. • Equipment will be secured to the deck or to personnel when appropriate. Secure all radios and cell phones. • Instruments will be kept clear of all tooling lay down areas. Good housekeeping will be critical on the boat.
2. Layout and Placement of Dredge Lines and Booster Stations	a. Falling Overboard and/or Standing	a. Falling Overboard and/or Standing • Watch personnel position while lifting sounding pole • All persons on board will remain seated/standing securely whenever a watercraft is moving,

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Layout and Placement of Dredge Lines and Booster Stations		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		• Maximum weight capacity for watercraft will not be exceeded. • Watercraft will not be used without shore support personnel with rescue skiff available onshore. • Personnel on board watercraft must be in constant radio contact with shore personnel.
	b. Man Overboard/Drowning	b. Man Overboard/ Drowning • All personnel shall wear United States Coast Guard (USCG) Approved Type III Life Preservers at all times while on the water. • All barges shall be equipped with a guardrail of wood, pipe, or steel around the entire perimeter of the barge. • All means of barge access shall be properly secured, guarded, and maintained free of slipping and tripping hazards. • A Coast Guard approved Type IV flotation device (life ring) will be maintained on each barge. • Watercraft will not be used without shore support personnel with rescue skiff available onshore.
	c. Struck By/Against	c. Struck By/Against • Personnel will understand and review hand signals. • Watch for other boats in area, avoid close calls or collisions • Watch for wake from other boats • Watch for (know their locations or mark with buoys) objects hidden under water at higher tides i.e. pilings, islands, anchor lines. • Caution will be used offloading the boat-personnel will ensure the boat is securely docked before embarking. All supply transfer work will be done only when boats are docked fore and aft. • All boats will be securely anchored or docked-docked boats will be positioned with minimum 2 lines. • Never pitchpole or broach any waves. • Ensure the air horn on each boat used is in proper working order. • Ladders will be free of ice and snow before climbing.
	d. Hand Tools	d. Hand Tools • Reference Section 3.3.12. • The proper tools will be used for each task. • All tools will be inspected before each use. Damaged tools will be removed from service and tagged (splintered wood bases, missing guards,

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Layout and Placement of Dredge Lines and Booster Stations		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		"mushroom" head). • Tools will be used in accordance with manufacturer's instructions. • Modifications to tools are prohibited unless approved by the ESS. • GFCIs will be used with all electrical power tools. • Personnel welding HDPE pipe will wear leather gloves or heat resistant gloves. Care will be taken when handling the heating iron.
	e. Back Injuries and Strains	e. Back Injuries and Strains • Procedures in Section 3.3.14 will be followed. • Site personnel will be instructed on proper lifting techniques (keep back straight, lift with legs, limit twisting, etc). • Mechanical devices should be used to reduce manual handling of materials. Team lifting should be utilized if mechanical devices are not available. • An individual will not lift loads greater than 50 pounds. **This amount may be lowered by ESS's judgment due to individual's stature & lifting ability.**
	f. Severe Weather	f. Severe Weather • National weather forecasts will be monitored daily for predicted inclement weather, such as thunderstorms. Each Supervisor will check on the local conditions and forecast each morning. • Personnel working in an exposed marine location shall monitor the NOAA marine weather broadcasts. • All personnel shall be aware of the forecast and keep an "eye to the sky". Unforecasted storms may also occur without warning. • Work will be postponed in the event of very strong winds, high seas or at times of very poor visibility. • In the event of lightning in the area, work will cease at the direction of the TtEC Supervisor or ESS, and will not proceed further until return to work permit is issued.
	g. Sinking Boat/Barge Damage	g. Sinking Boat/Barge Damage • All watercraft not subject to USCG inspection and certification or not having a current American Bureau of Shipping (ABS) classification shall be inspected by a marine surveyor accredited by the National Association of Marine Surveyors (NAMS) or the Society of Accredited Marine Surveyors (SAMS).

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Layout and Placement of Dredge Lines and Booster Stations		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		• A pre-use inspection of any rented vessel shall be completed, including picture documentation of pre-use conditions. • The load ratings of barges and tenderboats will be strictly adhered to; overloading of vessels is prohibited. • In the event a barge or boat becomes grounded at times of low tide, no attempt will be made to move the barge or boat until enough water returns to refloat it.
	h. Watercraft Operation	h. Watercraft Operations • All tenderboat pilots shall be familiar with the "Rules of the Road" that regulate movement of boat traffic within the harbor. • Boat Operators must hold Boater Safety certification. • Kill switch tether must be used. • Charts of the work areas, with depths for mean low water, will be obtained and watercraft pilots will be familiar with their use. • Locations of rocks, ledges and manmade subsurface obstructions will be noted within the study area. These will be given a wide berth. • All offshore boating regulations will be strictly observed; prudent speed limits observed. • All watercraft (including pipelines, barges, moored boats, etc.) must have required Coast Guard approved lighting and/or signaling devices.
	i. Flying objects and debris	i. Flying objects and debris • ANSI approved Safety glasses will be worn at all times while on the water. • All objects pulled up from the water will be brought aboard slowly to check for contamination or entanglement.
	j. Equipment Lost Overboard/crushed	j. Equipment Lost Overboard/crushed • Instruments shall not be placed near the edge of the boat when not in use/not secured. • Equipment will be secured to the deck or to personnel when appropriate. Secure all radios and cell phones. • Instruments will be kept clear of all tooling lay down areas. Good housekeeping will be critical on the boat.
	k. Emergencies: Fire, Weather and Medical /Spills/Releases	k. Emergencies: Fire, Weather and Medical /Spills/Releases • Fire extinguishers will be carried on all launches, barges, and motorboats. Minimum number and rating are as follows:

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Layout and Placement of Dredge Lines and Booster Stations		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		Length — Extinguisher 26 feet or less — one 1-A: 10-B:C 26 feet or more — two 1-A: 10-B:C • Open boat workers shall be evacuated to shore or secure location by tenderboat when lightning is spotted or threatens the area. • Medical emergencies will be handled as they are onshore except when low or no water renders a boat evacuation impossible. • Booms shall be available to prevent any fuel or hydraulic spills from spreading. • Personnel shall evacuate the boat/barge if a fire can not be contained with one 10 LB fire extinguisher
EQUIPMENT USED	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
1. Boats 2. Appropriate PPE 3. Hand and Power Tools 4. Portable Eyewash 5. First Aid Kits 6. 20A:B:C Fire Extinguisher 7. GFCI	1. Inspect all boats daily. 2. Inspect all hand and power tools prior to use. 3. Inspect all PPE prior to use. 4. Inspect portable eye washes and First Aid Kits weekly. 5. Inspect Fire Extinguishers weekly. 6. Check and Test GFCI's weekly.	1. All site personnel will read and comply with this SHSP. 2. All site personnel will receive site specific training. 3. Qualified operators will be used for heavy equipment and boat operation. 4. At least two individuals on-site will have current CPR, First Aid, and Bloodborne pathogen training. 5. Instruct personnel of proper use of fire extinguishers. 6. Personnel will be trained on the proper use of hand and power tools, including the steam cleaner.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Dredging TSCA and non-TSCA sediments		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
1. Dredge Operations	a. Noise	a. Noise • Refer to General Site Hazards
	b. Heavy Equipment Operation	b. Heavy Equipment Operation • Reference General Site Hazards. • Only operators trained and experienced with the specific equipment will operate that equipment. • Equipment will have guards, canopies or grills to protect from flying objects. • Ground personnel will stay clear of all suspended loads. • Eye contact with operators will be made before approaching equipment. Equipment will not be approached on blind sides. • Avoid equipment swing radius. • Know hand signals. • All equipment will be equipped with backup alarms. • The use of headphones for entertainment purposes is prohibited. • A 15 foot minimum safe separation distance will be maintained between equipment and overhead utility lines. • Equipment will be shut down before and during fueling operations.
	c. Falling Overboard and/or Standing	c. Falling Overboard and/or Standing • Watch personnel position while lifting sounding pole • All persons on board will remain seated/standing securely whenever a watercraft is moving, • Maximum weight capacity for watercraft will not be exceeded. • Watercraft will not be used without shore support personnel with rescue skiff available onshore. • Personnel on board watercraft must be in constant radio contact with shore personnel.
	d. Man Overboard/Drowning	d. Man Overboard/ Drowning • As per OSHA requirements (29 CFR 1926.501(b)(1)) and EM 385-1-1 Section 19.A.07, guardrails are required on working platforms for barges that are 6 feet or more above the water. • Water craft will not be used without shore support personnel with rescue skiff available onshore. • All personnel shall wear United States Coast Guard (USCG) Approved Type I, III or V Life Preservers at all times while on the water.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Dredging TSCA and non-TSCA sediments		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		• Non slip surfaces shall be provided on all working decks, stair treads, ship ladders, platforms, catwalks, and walkways. • All means of barge access shall be properly secured, guarded, and maintained free of slipping and tripping hazards. • All barge deck obstructions will be removed if possible, if not possible to remove them they shall be clearly marked with yellow paint. • A Coast Guard approved Type IV flotation device (life ring) will be maintained on each barge. • All persons on board will remain seated/standing securely whenever a water craft is moving, • All PFDs will be properly worn, snug, and fully zippered/buttoned. • Maximum weight capacity for water craft will not be exceeded. • Personnel on board water craft must be in constant radio contact with shore personnel. • All heavy, over-the-side work shall be done with the aid of a winch or crane. • Barges will be equipped with perimeter guardrails. • Water craft will be operated with a minimum of two personnel on board. • Water craft will not be used without shore support personnel. • A line extended from the water craft to the shore will always be available, so that shore personnel are able to retrieve water craft remotely in the event of an emergency.
	e. Struck By/Against	e. Struck By/Against • Swing radius of the excavator will be demarcated with caution tape or cones. Extreme caution shall be exercised when working in the proximity to the crane aboard the barge. No one shall enter the swing radius while the excavator is working. All personnel shall contact the operator before entering the swing area when the machine is not working in order to guarantee a safe passage. • Hand signals will be reviewed prior to the start of work. • All machines will be equipped with backup alarms. • The excavator operator will have a clear visual field of the excavation area. • Spotter will ensure he has eye contact with the operator. • No visitors will be allowed on the Barge.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Dredging TSCA and non-TSCA sediments		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		• Overhead protection, which will not obscure the vision of the operator, shall be provided. • Personnel will be aware of pinch points-no personnel will put their hands or any body part between any moving object and a stationary object. • Barge will be spudded in place. All personnel not associated with the spud operation will stay a minimum of 20 feet out of the spud dropping area. • Only qualified personnel will drop the spud/operate the winch. The operator will be seated in the winch operators chair and will not operate the winch until given the all clear that personnel are out of the spud drop areas. • The wheels of the spuds are located below deck and therefore do not pose a struck by/caught in hazard • All winch cables will be clearly marked and/or cordoned off- 90% of the cables are covered by Metal plating, the +/- 10 % that are exposed are demarcated by yellow paint on the barge deck. Personnel will not be allowed in this demarcated area when the spuds are being dropped. • The spud winch is located in the barge house on deck. When this winch is in operation the water tight door to this house will be closed and a sign posted –DO NO ENTER. • Guards shall be provided on all sheaves to prevent cables from jumping out of sheaves. • Keep access steps and ladders free from oil. • Work taking place above 6 feet requires fall protection. • Ensure all personnel on the barge are accounted for and out of the way. • Personnel will not stand under any suspended loads • All power tools used will have appropriated guards • Ensure correct position/distance relative to other operations of other activities. • Caution will be used offloading the boat from the trailer-clear the area of all non-essential personnel. • All boats will be securely anchored or docked-docked boats will be positioned with minimum 2 lines. • Ensure the boat is properly secured to the boat trailer before transporting. • Ensure there is sufficient room to drive through when trailering the boat

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Dredging TSCA and non-TSCA sediments		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		on narrow streets. • Watch for (know their locations or mark with buoys) objects hidden under water at higher tides i.e. pilings, islands, anchor lines. • Caution will be used offloading the boat-personnel will ensure the boat is securely docked before embarking. All supply transfer work will be done only when boats are docked fore and aft. • All boats will be securely anchored or docked-docked boats will be positioned with minimum 2 lines. • Never pitchpole or broach any waves. • Ensure the air horn on each boat used is in proper working order. • Ladders will be free of ice and snow before climbing.
	f. Sinking Boat/Barge Damage	f. Sinking Boat/Barge Damage • All watercraft not subject to USCG inspection and certification or not having a current American Bureau of Shipping (ABS) classification shall be inspected by a marine surveyor accredited by the National Association of Marine Surveyors (NAMS) or the Society of Accredited Marine Surveyors (SAMS). • The provisions of EM 385-1-1 Section 16 Marine Floating Plants and CFR 29 1926 and 1910 Subparts N as well as 29 CFR 1926.603 shall be followed. • A pre-use inspection of any rented vessel shall be completed, including picture documentation of pre-use conditions. • The load ratings of barges and tenderboats will be strictly adhered to; overloading of vessels is prohibited. • In the event a barge or boat becomes grounded at times of low tide, no attempt will be made to move the barge or boat until enough water returns to refloat it.
	g. Watercraft Operation	g. Watercraft Operations • All barge and boat pilots shall be familiar with the "Rules of the Road" that regulate movement of boat traffic within the harbor. • Boat Operators must hold Boater Safety certification. • Kill switch tether must be used. • Charts of the work areas, with depths for mean low water, will be obtained and watercraft pilots will be familiar with their use. • Locations of rocks, ledges and manmade subsurface obstructions will be

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Dredging TSCA and non-TSCA sediments		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		noted within the study area. These will be given a wide berth. • All offshore boating regulations will be strictly observed; prudent speed limits observed. • All watercraft (including pipelines, barges, moored boats, etc.) must have required Coast Guard approved lighting and/or signaling devices. • All barges will be equipped with day markers and proper lighting-if moored at night.
	h. Equipment Lost Overboard/crushed	h. Equipment Lost Overboard/crushed • Instruments/equipment shall not be placed near the edge of the barge when not in use. • All small equipment will have a backup tie line attached to the vessel if they are used at or over the edge of the vessel. • Instruments will be kept clear of all tooling lay down areas. Good housekeeping will be critical on the barge. • Equipment will be secured to the deck or to personnel when appropriate. Secure all radios and cell phones. • All sensitive instruments will be placed in a plastic cooler/or other appropriate container for transport on and off the tender boat. • Equipment will be secured to the deck or to personnel when appropriate. Secure all radios and cell phones.
	i. Emergencies: Fire, Weather and Medical /Spills/Releases	i. Emergencies: Fire, Weather and Medical /Spills/Releases • Fire extinguishers will be carried on all launches, barges, and motorboats. Minimum number and rating are as follows: Length — Extinguisher 26 feet or less — one 1-A: 10-B:C 26 feet or more — two 1-A: 10-B:C • Open boat workers shall be evacuated to shore or secure location by tenderboat when lightning is spotted or threatens the area. • Medical emergencies will be handled as they are onshore except when low or no water renders a boat evacuation impossible. • Booms shall be available to prevent any fuel or hydraulic spills from spreading. • Personnel shall evacuate the boat/barge if a fire can not be contained with one 10 LB fire extinguisher
	j. Overhead Hazards	j. Overhead Hazards

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Dredging TSCA and non-TSCA sediments		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		• Reference General Site Hazards.
	k. Eye Injury	k. Eye Injury • Reference General Site Hazards.
	l. Slips/Trips/Falls	l. Slips/Trips/Falls • Reference General Site Hazards. • Ensure that loads are properly distributed in all small boats. • All personnel shall wear United States Coast Guard (USCG) Approved Type I, III or V Life Preservers at all times while on the water. • Personnel will use care when exiting entering the craft from the water and ensure they have solid footing before climbing in/out • Personnel will ensure that they are in no more than one foot of water when entering/exiting the craft, unless the personnel are in waders. • The following procedure will be used when Launching/docking any water craft ❖ Personnel shall know the weight of the water craft and motor prior to launching docking ❖ Boat motor will be pulled up before it contacts the river bottom ❖ Personnel will take note of wind speed and direction, current and tidal height before shutting off/turning on the boat motor ❖ All personnel will carefully exit the water craft ❖ No personnel shall lift in excess of 50 Pounds ❖ Personnel will remove/put in any small boat to the edge of the water with minimal dragging of the boat across the dry land. ❖ Mechanical devices will be used in lieu of manual labor to remove from/put into the water, - water craft in excess of 300 Pounds weight for boat and motor. ❖ A light duty trailer can be used in lieu of manual lifting, if a light duty trailer is used personnel must lift up the front of the boat, manually with a minimum of two people • Any hoisting device used to pull up/let down the boat will be: properly maintained and serviced according to manufacturer's specifications; capable of lifting the weight of the load being hoisted; checked before each hoist and operated by qualified knowledgeable personnel.
2. Shut Down Dredge Operations	a. Slips/Trips/Falls	a. Slips/Trips/Falls • Reference General Site Hazards. • Ensure that loads are properly distributed in all small boats.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Dredging TSCA and non-TSCA sediments		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		• All personnel shall wear United States Coast Guard (USCG) Approved Type I, III or V Life Preservers at all times while on the water. • Personnel will use care when exiting entering the craft from the water and ensure they have solid footing before climbing in/out • Personnel will ensure that they are in no more than one foot of water when entering/exiting the craft, unless the personnel are in waders. • The following procedure will be used when Launching/docking any water craft ❖ Personnel shall know the weight of the water craft and motor prior to launching docking ❖ Boat motor will be pulled up before it contacts the river bottom ❖ Personnel will take note of wind speed and direction, current and tidal height before shutting off/turning on the boat motor ❖ All personnel will carefully exit the water craft ❖ No personnel shall lift in excess of 50 Pounds ❖ Personnel will remove/put in any small boat to the edge of the water with minimal dragging of the boat across the dry land. ❖ Mechanical devices will be used in lieu of manual labor to remove from/put into the water, - water craft in excess of 300 Pounds weight for boat and motor. ❖ A light duty trailer can be used in lieu of manual lifting, if a light duty trailer is used personnel must lift up the front of the boat, manually with a minimum of two people • Any hoisting device used to pull up/let down the boat will be: properly maintained and serviced according to manufacturer's specifications; capable of lifting the weight of the load being hoisted; checked before each hoist and operated by qualified knowledgeable personnel.
	b. Dropped Objects	b. Dropped Objects • Reference General Site Hazards.
	c. Noise	c. Noise • Reference General Site Hazards.
	d. Heavy Equipment Operation	d. Heavy Equipment Operation • Reference General Site Hazards. • Only operators trained and experienced with the specific equipment will operate that equipment. • Equipment will have guards, canopies or grills to protect from flying

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Dredging TSCA and non-TSCA sediments		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		objects. • Ground personnel will stay clear of all suspended loads. • Eye contact with operators will be made before approaching equipment. Equipment will not be approached on blind sides. • Avoid equipment swing radius. • Know hand signals. • All equipment will be equipped with backup alarms. • Equipment will be shut down before and during fueling operations.
	e. Overhead Hazards	e. Overhead Hazards • Reference General Site Hazards.
	f. Eye Injury	f. Eye Injury • Reference General Site Hazards.
	g. Exposure to Site Contaminants (PCBs)	g. Exposure to Site Contaminants (PCBs) • Reference General Site Hazards. • When dredging production stops for a longer period, the sediment residues on the dredge will be hosed down by using a hose with medium water pressure on it.
	h. Struck By/Against	h. Struck By/Against • Reference General Site Hazards. • Personnel will understand and review hand signals. • All machines will be equipped with backup alarms. • Only essential people will be allowed in the unloading area. • Personnel will not stand under any suspended loads. • Only qualified dredge personnel will be used. • All power tools used will have appropriated guards. • Personnel will avoid placing themselves between heavy equipment/dredge bucket and stationary objects. • Operations will be suspended and the Dredge secured during all severe weather. • Ensure correct position relative to other operations of other activities. • Ensure all body parts are kept from between the templates when they are being set.
	i. Security issues	i. Security issues • Cabin of dredge must be locked at the end of each shift • Dredge will be securely positioned prior to the end of each days activities

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Dredging TSCA and non-TSCA sediments		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
	j. Miscellaneous	j. Miscellaneous • All heavy, over-the-side work shall be done with the aid of a winch. • Oil, mud, and grease will be prevented from building up on walking surfaces
EQUIPMENT USED	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
1. Heavy Equipment/Trucks 2. Dredge/Excavator 3. Spill Control Measures 4. Appropriate PPE 5. Portable Eyewash 6. First Aid Kits 7. 20A:B:C Fire Extinguisher	1. Inspect all vehicles/equipment daily. 2. Daily inspections will be conducted unless damage is suspected. 3. Monthly inspections will be performed. 4. Daily safety inspection of spill control materials will be conducted. 5. Daily maintenance (fueling, oil, grease) will be conducted. 6. Daily inspections for oil/grease buildup will be conducted. 7. Pre and Post Calibrations 8. Initial review/training prior to commencement of field activities. 9. Inspect all PPE prior to use. 10. Inspect portable eye washes and First Aid Kits weekly. 11. Inspect Fire Extinguishers weekly.	1. All site personnel will read and comply with this HASCP. 2. All site personnel will receive site specific training. 3. Personnel will be trained in inspection checklist use. 4. Personnel will be given instructions on proper use of fire extinguishers. 5. Personnel will be given training on how to respond to spilled materials. 6. Operators/pilots will be trained in engine maintenance. 7. Requirements for housekeeping will be reviewed. 8. Only Qualified, trained individuals will use the equipment. 9. At least two individuals on-site will have current CPR, First Aid, and Bloodborne pathogen training.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Sediment Capping and Placement of Cover Material		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
1. Obtaining Depth Measurements	a. Back Injuries and Strains	a. Back Injuries and Strains • Reference General Site Hazards. • An individual will not lift loads greater than 50 pounds. **This amount may be lowered by ESS's judgment due to individual's stature & lifting ability.**
	b. Slips/Trips/Falls	b. Slips/Trips/Falls • Ensure that loads are properly distributed in all small boats. • All personnel shall wear United States Coast Guard (USCG) Approved Type I, III or V Life Preservers at all times while on the water. • Personnel will use care when exiting entering the craft from the water and ensure they have solid footing before climbing in/out • Personnel will ensure that they are in no more than one foot of water when entering/exiting the craft, unless the personnel are in waders. • The following procedure will be used when Launching/docking any water craft ❖ Personnel shall know the weight of the water craft and motor prior to launching docking ❖ Boat motor will be pulled up before it contacts the river bottom ❖ Personnel will take note of wind speed and direction, current and tidal height before shutting off/turning on the boat motor ❖ All personnel will carefully exit the water craft ❖ No personnel shall lift in excess of 50 Pounds ❖ Personnel will remove/put in any small boat to the edge of the water with minimal dragging of the boat across the dry land. ❖ Mechanical devices will be used in lieu of manual labor to remove from/put into the water, - water craft in excess of 300 Pounds weight for boat and motor. ❖ A light duty trailer can be used in lieu of manual lifting, if a light duty trailer is used personnel must lift up the front of the boat, manually with a minimum of two people • Any hoisting device used to pull up/let down the boat will be: properly maintained and serviced according to manufacturer's specifications; capable of lifting the weight of the load being hoisted; checked before each hoist and operated by qualified knowledgeable personnel.
	c. Dropped Objects	c. Dropped Objects • Reference General Site Hazards.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Sediment Capping and Placement of Cover Material		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		• Ensure the drain plug is tightly secured in the boat.
	d. Eye Injuries	d. Eye Injuries • Safety glasses meeting ANSI Standard Z87 will be worn for all field operations where eye hazards exist. • A portable eye wash station will be located adjacent to work activities.
	e. Vehicular Traffic/Problems	e. Vehicular Traffic/Problems • When off loading a boat, never back the vehicle so far into the water that the back tail pipe is under water. • Ensure you have sufficient power to pull the boat out of the water once it is trailered.
	f. Struck By/Against	f. Struck By/Against • Caution will be used offloading the boat from the trailer-clear the area of all non-essential personnel. • All boats will be securely anchored or docked-docked boats will be positioned with minimum 2 lines. • Ensure the boat is properly secured to the boat trailer before transporting. • Ensure there is sufficient room to drive through when trailering the boat on narrow streets. • Watch for (know their locations or mark with buoys) objects hidden under water at higher tides i.e. pilings, islands, anchor lines. • Caution will be used offloading the boat-personnel will ensure the boat is securely docked before embarking. All supply transfer work will be done only when boats are docked fore and aft. • All boats will be securely anchored or docked-docked boats will be positioned with minimum 2 lines. • Never pitchpole or broach any waves. • Ensure the air horn on each boat used is in proper working order. • Ladders will be free of ice and snow before climbing.
	g. Man Overboard/Drowning	g. Man Overboard/Drowning • All personnel shall wear United States Coast Guard (USCG) Approved Type III Life Preservers at all times while on the water. • As per OSHA requirements (29 CFR 1926.501(b)(1)) and EM 385-1-1 Section 19.A.07, guardrails are required on working platforms for barges that are 6 feet or more above the water. • All means of barge access shall be properly secured, guarded, and

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Sediment Capping and Placement of Cover Material		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		maintained free of slipping and tripping hazards. • A Coast Guard approved Type IV flotation device (life ring) will be maintained on each barge. • Water craft will not be used without shore support personnel with rescue skiff available onshore. • All persons on board will remain seated/standing securely whenever a water craft is moving, • Maximum weight capacity for water craft will not be exceeded. • Barges will be equipped with perimeter guardrails. • Water craft will be operated with a minimum of two personnel on board. • Water craft will not be used without shore support personnel. • A line extended from the water craft to the shore will always be available, so that shore personnel are able to retrieve water craft remotely in the event of an emergency. • Personnel on board water craft must be in constant radio contact with shore personnel.
	h. Sinking Boat/Barge Damage	h. Sinking Boat/Barge Damage • All water craft not subject to USCG inspection and certification or not having a current American Bureau of Shipping (ABS) classification shall be inspected by a marine surveyor accredited by the National Association of Marine Surveyors (NAMS) or the Society of Accredited Marine Surveyors (SAMS). • A pre-use inspection of any rented vessel shall be completed, including a video documentation of pre-use conditions. • The load ratings of barges and tenderboats will be strictly adhered to; overloading of vessels is prohibited. • Tide tables will be consulted and times of high tide, when it is most safe to move barges, will be identified. • In the event a barge or boat becomes grounded at times of low tide, no attempt will be made to move the barge until enough water returns to refloat it.
	i. Water Craft Taking On Water	i. Water Craft Taking On Water • All personnel will ensure the water craft has a working plug firmly in place prior to launch • The load ratings of barges and tenderboats will be strictly adhered to;

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Sediment Capping and Placement of Cover Material		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		overloading of vessels is prohibited. • Tide tables will be consulted and times of high tide, when it is most safe to launch/dock, will be identified. • All water craft will have a bailing device on board in case of leaks • If the water craft begins to take on water for any reason it shall be brought in to the nearest safe docking facility as soon as possible and the ESS immediately called • Any water craft which is damaged in any way or has taken on water will be inspected by the ESS or designee prior to the craft being launched
	j. Water Craft Operation Risks	j. Water Craft Operation Risks • All barge and boat pilots shall be familiar with the "Rules of the Road" that regulate movement of boat traffic within the harbor. • All barges will be equipped with day markers. • Barge will be equipped with day markers and proper lighting-if moored at night. • Charts of the study areas, with depths for mean low water, will be obtained and water craft pilots will be familiar with their use. • Locations of rocks, ledges and manmade subsurface obstructions will be noted within the work area. These will be given a wide berth. • All boating regulations will be strictly observed; prudent speed limits will be followed at all times. • All water craft must have required Coast Guard approved lighting and signaling devices.
	k. Flying Objects and Debris	k. Flying Objects and Debris • ANSI approved Safety glasses will be worn at all times while on the water. • All objects pulled up from the water will be brought aboard slowly to check for contamination or entanglement.
	l. Equipment Lost Overboard/Crushed	l. Equipment Lost Overboard/Crushed • Instruments shall not be placed near the moon pool or edge of the barge/boat when not in use/not secured. • Equipment will be secured to the deck or to personnel when appropriate. Secure all radios and cell phones. • Instruments will be kept clear of all tooling lay down areas. Good housekeeping will be critical on the barge/boat.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Sediment Capping and Placement of Cover Material		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
	m. Emergencies: Fire, Weather, and Medical/Spills/Releases	m. Emergencies: Fire, Weather, and Medical/Spills/Releases • Fire extinguishers will be carried on all launches, barges, and motorboats. Minimum number and rating are as follows: Length — Extinguisher 26 feet or less — one 1-A: 10-B:C 26 feet or more — two 1-A: 10-B:C • Barge/open boat workers shall be evacuated to shore or secure location by tenderboat when lightning is spotted or threatens the area. • Medical emergencies will be handled as they are onshore except when low or no water renders a boat evacuation impossible. • Booms shall be placed in the water around the perimeter of the barge to prevent any fuel or hydraulic spills from spreading. • Personnel shall evacuate the boat/barge if a fire can not be contained with one 10 LB fire extinguisher • Spill kits shall be maintained onboard barges to keep any hydrocarbon spill from reaching the water.
2. Placing Sub-Aqueous Caps	a. Slips/Trips/Falls	a. Slips/Trips/Falls • All personnel shall wear United States Coast Guard (USCG) Approved Type I, III or V Life Preservers at all times while on the water. • Maintain work areas clean and orderly.
	b. Man Overboard/Drowning	b. Man Overboard/Drowning • As per OSHA requirements (29 CFR 1926.501(b)(1)) and EM 385-1-1 Section 19.A.07, guardrails are required on working platforms for barges that are 6 feet or more above the water. • Water craft will not be used without shore support personnel with rescue skiff available onshore. • All personnel shall wear United States Coast Guard (USCG) Approved Type I, III or V Life Preservers at all times while on the water. • Non slip surfaces shall be provided on all working decks, stair treads, ship ladders, platforms, catwalks, and walkways. • All means of barge access shall be properly secured, guarded, and maintained free of slipping and tripping hazards. • All barge deck obstructions will be removed if possible, if not possible to remove them they shall be clearly marked with yellow paint. • A Coast Guard approved Type IV flotation device (life ring) will be

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Sediment Capping and Placement of Cover Material		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		maintained on each barge. • All persons on board will remain seated/standing securely whenever a water craft is moving, • All PFDs will be properly worn, snug, and fully zippered/buttoned. • Maximum weight capacity for water craft will not be exceeded. • Personnel on board water craft must be in constant radio contact with shore personnel. • All heavy, over-the-side work shall be done with the aid of a winch or crane. • Barges will be equipped with perimeter guardrails. • Water craft will be operated with a minimum of two personnel on board. • Water craft will not be used without shore support personnel. • A line extended from the water craft to the shore will always be available, so that shore personnel are able to retrieve water craft remotely in the event of an emergency.
	c. Water Craft Operation Risks	c. Water Craft Operation Risks • All barge and boat pilots shall be familiar with the "Rules of the Road" that regulate movement of boat traffic within the harbor. • Charts of the study areas, with depths for mean low water, will be obtained and water craft pilots will be familiar with their use. • Locations of rocks, ledges and manmade subsurface obstructions will be noted within the work area. These will be given a wide berth. • All Harbor boating regulations will be strictly observed; prudent speed limits will be followed at all times. • All water craft must have required Coast Guard approved lighting and signaling devices. • Boat Operators must hold Boater Safety certification. • Kill switch tether must be used. • All offshore boating regulations will be strictly observed; prudent speed limits observed. • All water craft (including pipelines, barges, moored boats, etc.) must have required Coast Guard approved lighting and/or signaling devices. • All barges will be equipped with day markers. • Barge will be equipped with day markers and proper lighting-if moored at night.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Sediment Capping and Placement of Cover Material		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
	d. Sinking Boat/Barge Damage	d. Sinking Boat/Barge Damage • A pre-use inspection of any rented vessel shall be completed, including a video documentation of pre-use conditions. • The load ratings of barges and tenderboats will be strictly adhered to; overloading of vessels is prohibited. Marine Surveys on the barges will be done prior to start of work. • Tide tables will be consulted and times of high tide, times when it is safe to move barges, will be identified. • In the event the barge becomes grounded at times of low tide, no attempt will be made to move the barge until enough water returns to refloat it. • The provisions of EM 385-1-1 Section 16 Marine Floating Plants and CFR 29 1926 and 1910 Subparts N as well as 29 CFR 1926.603 shall be followed. • All water craft not subject to USCG inspection and certification or not having a current American Bureau of Shipping (ABS) classification shall be inspected by a marine surveyor accredited by the National Association of Marine Surveyors (NAMS) or the Society of Accredited Marine Surveyors (SAMS).
	e. Equipment Lost Overboard/Crushed	e. Equipment Lost Overboard/Crushed • Instruments/equipment shall not be placed near the edge of the barge when not in use. • All small equipment will have a backup tie line attached to the vessel if they are used at or over the edge of the vessel. • Instruments will be kept clear of all tooling lay down areas. Good housekeeping will be critical on the barge. • Equipment will be secured to the deck or to personnel when appropriate. Secure all radios and cell phones. • All sensitive instruments will be placed in a plastic cooler/or other appropriate container for transport on and off the tender boat. • Equipment will be secured to the deck or to personnel when appropriate. Secure all radios and cell phones.
	f. Water Craft Taking On Water	f. Water Craft Taking On Water • All personnel will ensure the water craft has a working plug firmly in place prior to launch • The load ratings of barges and tenderboats will be strictly adhered to; overloading of vessels is prohibited.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Sediment Capping and Placement of Cover Material		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		• Tide tables will be consulted and times of high tide, when it is most safe to launch/dock, will be identified. • All water craft will have a bailing device on board in case of leaks • If the water craft begins to take on water for any reason it shall be brought in to the nearest safe docking facility as soon as possible and the ESS immediately called • Any water craft which is damaged in any way or has taken on water will be inspected by the ESS or designee prior to the craft being launched
	g. Flying Objects and Debris	g. Flying Objects and Debris • ANSI approved Safety glasses will be worn at all times while on the water. • All objects pulled up from the water will be brought aboard slowly to check for contamination or entanglement.
	h. Dropped Objects	h. Dropped Objects • Steel toe boots meeting ANSI Standard Z41 will be worn as directed. • Secure all radios, cell phones and equipment. • Ensure the drain plug is tightly secured in the boat.
	i. Noise	i. Noise • Reference General Site Hazards. • All equipment will have manufacturer's required mufflers.
	j. Overhead Hazards	j. Overhead Hazards • Reference General Site Hazards.
	k. Eye Injuries	k. Eye Injuries • Safety glasses meeting ANSI Standard Z87 will be worn for all field operations where eye hazards exist. • A portable eye wash station will be located adjacent to work activities.
	l. Emergencies: Fire, Weather and Medical /Spills/Releases	l. Emergencies: Fire, Weather and Medical /Spills/Releases • Fire extinguishers will be carried on all launches, barges, and motorboats. Minimum number and rating are as follows: Length — Extinguisher 26 feet or less — one 1-A: 10-B:C 26 feet or more — two 1-A: 10-B:C • Barge/open boat workers shall be evacuated to shore or secure location by tenderboat when lightning is spotted or threatens the area. • Medical emergencies will be handled as they are onshore except when

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Sediment Capping and Placement of Cover Material		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		low or no water renders a boat evacuation impossible. • Booms shall be placed in the water around the perimeter of the barge to prevent any fuel or hydraulic spills from spreading. • Personnel shall evacuate the boat/barge if a fire can not be contained with one 10 LB fire extinguisher • Spill kits shall be maintained onboard barges to keep any hydrocarbon spill from reaching the water.
	m. Exposure to Site Contaminants (PCBs)	m. Exposure to Site Contaminants (PCBs) • Personnel will take care to minimize contact with contaminated media. This involves a conscientious effort to keep "clean" during site activities. • When the potential for contact with contaminated media exists, personnel will wear appropriate PPE described in Table 5-1 to minimize if not prevent exposure. • Air monitoring will be performed as specified is Section 6.0. Personnel will follow those response procedures detailed in Section 6.0 as appropriate to the results of the air monitoring. • Personnel will wash hands and face after leaving the contamination reduction zone with soap and water or waterless hand cleaner. • Care will be taken to avoid splashing of water and sediments to prevent body contact. • Materials which have contacted the sediment or other contaminated materials will not be touched without proper personal. protective equipment. • Exclusion zone, contamination reduction zone and clean zones will be identified on the barge/boat if full Hazmat work will be part of the work task. • Bootwash, handwash and emergency eyewash facilities will be available onboard for full Hazmat operations/as space permits. Skin will be rinsed with water if contact with hazardous materials occurs. • Gross Decon and encapsulation of PPE will be performed on the boat if full decon is accomplished at the site decon facilities, prior to the end of the days work. All boat/barge surfaces will be cleaned after sediment contact • First Aid Kit with eyewash will be available on all boats-15 minute free flow eyewashes will be in use on all barges. • All boat barge surfaces will be properly deconned per 40 CFR 761 prior

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Sediment Capping and Placement of Cover Material		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		to demobilization/non Hazmat operations.
	n. Struck By/Against	n. Struck By/Against • Swing radius of the excavator will be demarcated with caution tape or cones. Extreme caution shall be exercised when working in the proximity to the crane aboard the barge. No one shall enter the swing radius while the excavator is working. All personnel shall contact the operator before entering the swing area when the machine is not working in order to guarantee a safe passage. • Hand signals will be reviewed prior to the start of work. • All machines will be equipped with backup alarms. • The excavator operator will have a clear visual field of the excavation area. • Spotter will ensure he has eye contact with the operator. • No visitors will be allowed on the Barge. • Overhead protection, which will not obscure the vision of the operator, shall be provided. • Personnel will be aware of pinch points-no personnel will put their hands or any body part between any moving object and a stationary object. • Barge will be spudded in place. All personnel not associated with the spud operation will stay a minimum of 20 feet out of the spud dropping area. • Only qualified personnel will drop the spud/operate the winch. The operator will be seated in the winch operators chair and will not operate the winch until given the all clear that personnel are out of the spud drop areas. • The wheels of the spuds are located below deck and therefore do not pose a struck by/caught in hazard • All winch cables will be clearly marked and/or cordoned off- 90% of the cables are covered by Metal plating, the +/- 10 % that are exposed are demarcated by yellow paint on the barge deck. Personnel will not be allowed in this demarcated area when the spuds are being dropped. • The spud winch is located in the barge house on deck. When this winch is in operation the water tight door to this house will be closed and a sign posted –DO NO ENTER. • Guards shall be provided on all sheaves to prevent cables from jumping out of sheaves.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Sediment Capping and Placement of Cover Material		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		• Keep access steps and ladders free from oil. • Work taking place above 6 feet requires fall protection. • Ensure all personnel on the barge are accounted for and out of the way. • Personnel will not stand under any suspended loads • All power tools used will have appropriated guards • Ensure correct position/distance relative to other operations of other activities. • Caution will be used offloading the boat from the trailer-clear the area of all non-essential personnel. • All boats will be securely anchored or docked-docked boats will be positioned with minimum 2 lines. • Ensure the boat is properly secured to the boat trailer before transporting. • Ensure there is sufficient room to drive through when trailering the boat on narrow streets. • Watch for (know their locations or mark with buoys) objects hidden under water at higher tides i.e. pilings, islands, anchor lines. • Caution will be used offloading the boat-personnel will ensure the boat is securely docked before embarking. All supply transfer work will be done only when boats are docked fore and aft. • All boats will be securely anchored or docked-docked boats will be positioned with minimum 2 lines. • Never pitchpole or broach any waves. • Ensure the air horn on each boat used is in proper working order. • Ladders will be free of ice and snow before climbing.
	o. Miscellaneous	o. Miscellaneous • All heavy, over-the-side work shall be done with the aid of a winch. • When practical, all drilling, well installation and sediment sampling shall be done through a "moon pool" in the deck of the vessel. • Drilling barges shall be anchored by employing a minimum of two spud pipes. • Oil and grease will be prevented form building up on walking surfaces.
	p. Vehicular Traffic/Problems	p. Vehicular Traffic/Problems • When off loading a boat, never back the vehicle so far into the water that the back tail pipe is under water. • Ensure you have sufficient power to pull the boat out of the water once it

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Sediment Capping and Placement of Cover Material		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		is trailered.
EQUIPMENT USED	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
1. Heavy Equipment 2. Barge Railing Systems 3. Barge Deck/Working Surfaces 4. Lighting/Signaling/Boat Safety Systems 5. Appropriate PPE 6. Hand and Power Tools 7. Portable Eyewash 8. First Aid Kits 9. 20A:B:C Fire Extinguisher 10. GFCI	1. Inspect all heavy equipment prior to use. 2. Daily inspections will be conducted on the barge railing systems unless damage is suspected. 3. Inspect all hand and power tools prior to use. 4. Inspect all PPE prior to use. 5. Inspect portable eye washes and First Aid Kits weekly. 6. Inspect Fire Extinguishers weekly. 7. Check and Test GFCI's weekly.	1. All site personnel will read and comply with this HASCP. 2. All site personnel will receive site specific training. 3. Qualified operators will be used for heavy equipment and barge operation. 4. Personnel will be informed of the rail system requirements. 5. Operators will be familiar with Coast Guard regulations for intercoastal water craft. 6. Personnel will be informed of the float requirements. 7. At least two individuals on-site will have current CPR, First Aid, and Bloodborne pathogen training. 8. Instruct personnel of proper use of fire extinguishers. 9. Personnel will be trained on the proper use of hand and power tools.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Dewatering Operations		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
1. System Start-Up	a. Back Injuries	a. Back Injuries • Reference General Site Hazards. • Site personnel will be instructed on proper lifting techniques; mechanical devices should be used to reduce manual handling of materials; team lifting should be utilized if mechanical devices are not available.
	b. Slips/Trips/Falls	b. Slips/Trips/Falls • Reference General Site Hazards. • Maintain work areas safe and orderly; unloading areas should be on even terrain; mark and repair if possible tripping hazards.
	c. Spills	c. Spills • Reference General Site Hazards. • Secondary containment will be used during system start up to prevent spills of contaminated sediments onto ground surface.
	d. Dropped Objects	d. Dropped Objects • Reference General Site Hazards. • Steel toe boots meeting ANSI Standard Z41 will be worn during all site activities.
	e. Sharp Objects/Punctures	e. Sharp Objects/Punctures • Reference General Site Hazards. • Use hand tools properly and wear appropriate protective equipment, cut resistant work gloves will be worn when dealing with sharp objects; all hand and power tools will be maintained in safe condition; guards will be kept in place while using hand and power tools.
	f. Hand and Power Tools	f. Hand and Power Tools • Reference General Site Hazards. • Remove broken or damaged tools from service; use the tool for its intended purpose; and use in accordance with manufacturers instructions.
	g. Eye Injuries	g. Eye Injuries • Reference General Site Hazards. • Safety glasses meeting ANSI Standard Z87 will be worn.
	h. Chemical Exposure	h. Chemical Exposure • Appropriate protective clothing will be worn; skin will be rinsed with water if contact with hazardous material occurs; a portable eye wash station will be located by work area; conduct hazard communication training for decontamination and sample preservation chemicals. Air

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Dewatering Operations		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
		monitoring in accordance with Tables 6-1 and 6-2 will be conducted.
	i. Electrocution	i. Electrocution • Do not use unit near any power lines or where water can come in contact with electrical power. • Reference EHS Program EHS 3-10 for electrical considerations. • All electrical wiring and hookups will be completed by a licensed electrician. Lockout/Tagout will be utilized to make sure lines are not hot prior to beginning work on them and making connections. Reference EHS Program EHS 6-4 for Lockout/Tagout procedures. • The ESS is responsible for providing the training required in the procedure EHS-6-4 to supervisors and craft employees, and conducting periodic inspections to ensure this procedure is effectively implemented. • The ESS shall also implement lockout/tagout procedures as required.
2. Dewatering Operations	a. Exposure to Site Contaminants (PCBs)	a. Exposure to Site Contaminants (PCBs) • Personnel will take care to minimize contact with contaminated media. This involves a conscientious effort to keep "clean" during site activities. • When the potential for contact with contaminated media exists, personnel will wear appropriate PPE described in Table 5-1 to minimize if not prevent exposure. • Air monitoring will be performed as specified is Section 6. Personnel will follow those response procedures detailed in Section 6 as appropriate to the results of the air monitoring. • Personnel will wash hands and face after leaving the contamination reduction zone with soap and water or waterless hand cleaner.
	b. Lockout/Tagout (Release of Hazardous Energy)	b. Lockout/Tagout (Release of Hazardous Energy) • Reference EHS Program EHS 6-4. • Reference 29 CFR 1910.147, Control of Hazardous Energy (Lockout/Tagout). • The ESS is responsible for providing the training required in the procedure EHS Program EHS 6-4 to supervisors and craft employees, and conducting periodic inspections to ensure this procedure is effectively implemented. • The ESS shall also implement lockout/tagout procedures as required.
	c. Lockout/Tagout (Tags without Locks)	c. Lockout/Tagout (Tags without Locks) • The use of tags without locks is prohibited, except in those cases where it is physically impossible to attach a locking device to an isolation point. In this case, follow steps in EHS Program EHS 6-4.

		• Employees shall be warned not to tamper with the tag or isolation point.
	d. Lockout/Tagout (Failure to Clear Locks)	d. Lockout/Tagout (Failure to Clear Locks) • Reference EHS Program EHS 6-4. • Supervisor will attempt to contact person who applied lock and resolve issue. • If person cannot be contacted, supervisor will investigate the situation and determine that removal of the lock will not create a hazard in the work zone. • The supervisor will then verify that the work zone is clear, and blocking devices have been removed and the system has been restored to the normal configuration. • The supervisor will then cut the lock off and restore energy to the system. • A written incident and investigation report per EHS Program EHS 1-7, Incident Reporting and Investigating, shall be prepared by the supervisor stating the reason for cutting the lock, why the lock was not removed, and the procedure used to ensure the safety of personnel in the area. • The individual whose lock was cut off must be notified ASAP.
	e. Fire and Explosion	e. Fire • Reference General Site Hazards and Section 10.9. • Equip all heavy equipment with 20A:B:C-type fire extinguishers. • Area(s) for personnel smoking will be designated. • Flammable liquids and gases will be stored away from oxidizers. • No hot work without properly executed work permit
	f. Spills	f. Spills • Reference General Site Hazards, Section 10.13, and the Contingency Plan. • Secondary Containment will be provided in storage areas. • Spill and absorbent materials will be readily available.
EQUIPMENT USED	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
1. Heavy Equipment 2. Hand and Power Tools 3. Appropriate PPE 4. Portable Eyewash 5. First Aid Kits 6. 20A:B:C Fire Extinguisher	1. Hand and power tools will be inspected to ensure they are in good condition prior to each day's use. 2. PPE will be inspected before and after each use. 3. Periodic inspections pursuant to EHS	1. Authorized Employees shall receive training in the following prior to being allowed to use lockout/tagout procedures: • Recognition of hazardous energy sources; • Types and magnitudes of energies available at the site; • Methods and means needed for energy isolation and control; and • The requirements of this procedure and 29 CFR 1910.147.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities **Activity: Dewatering Operations**		**Location: Brown, Outagamie, and Winnebago Counties, Wisconsin**
7. GFCI	Program EHS 3-3, Inspections, shall be completed during the monthly inspections by the ESS, PESM or other qualified personnel to ensure that the lockout tagout program is being effectively implemented. As a minimum the following shall be done: • Existing lockouts will be reviewed for effectiveness; • Permits for each existing lockouts shall be reviewed for adequacy; • Incident reports and past permits shall be reviewed to determine if deficiencies in the program exist; • Corrections to the system will be made as warranted; and • Results will be logged in the health and safety logbook. 4. Inspect portable eye washes and First Aid Kits weekly. 5. Inspect Fire Extinguishers weekly. 6. Check and Test GFCIs weekly.	2. Affected Employees shall be instructed in the following: • Purpose of the lockout tagout program; • Use and requirements of this procedure and 29 CFR 1910.147; • Prohibitions of restarting or tampering with equipment that has been locked out; and • Prohibitions of tampering with locks and tags installed on equipment. 3. All site personnel will read and comply with this HASCP. 4. All site personnel will receive site specific training. 5. Only qualified electricians will install electrical wiring and hookups. 6. At least two individuals on-site will have current CPR, First Aid, and Bloodborne pathogen training. 7. Instruct personnel of proper use of fire extinguishers. 8. Personnel will be trained on the proper use of hand and power tools, including the pipe welding machine. 9. Training on Lockout/Tagout procedures are listed in EHS Program EHS 6-4.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Loading Trucks for T&D		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
1. Loading Trucks for T&D	a. Heavy Equipment Operation	a. Heavy Equipment Operation • Reference General Site Hazards. • Only operators trained and experienced with the specific equipment will operate that equipment. • Equipment will have guards, canopies or grills to protect from flying objects. • Ground personnel will stay clear of all suspended loads. • Eye contact with operators will be made before approaching equipment. Equipment will not be approached on blind sides. • Avoid equipment swing radius. This area will be delineated with cones. • Know hand signals. • All equipment will be equipped with backup alarms. • The use of headphones for entertainment purposes is prohibited. • A 15 foot minimum safe separation distance will be maintained between equipment and overhead utility lines. • Equipment will be shut down before and during fueling operations.
	b. Struck by Heavy Equipment/Vehicles	b. Struck by Heavy Equipment/Vehicles • Speed limit for traffic is 15 mph for all areas of the site. • Trucks shall slow down before approaching loading/unloading area. • Operators will remain in truck when being loaded. • On-site personnel working in the loading area will not walk along the blind side of equipment and must not approach heavy equipment without making eye contact with the operator. • Do not approach heavy equipment unless eye contact with appropriate hand signals has been made with the operator to cease activity. Equipment operators will confirm that eye contact had been made by stopping operation and clearly showing their hands are off of the controls. • Be aware of heavy equipment operations. • Keep out of the swing radius of heavy equipment. • Ground personnel in the vicinity of heavy equipment operations will be within the view of the operator at all times. • Ground personnel will be aware of the counterweight swing and maintain an adequate buffer zone. • Ground personnel will not stand directly behind heavy equipment when it is in operation.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Loading Trucks for T&D		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		• Loaded trucks have right of way. • Leave ½ truck length between the truck being loaded and the next truck in line.
	c. Equipment Rollover	c. Equipment Rollover • Equipment will have rollover protective structures and seat belts. • Operators will wear seat belts when operating equipment. • Do not operate equipment on grades which exceed the manufacturer's recommendations. • Be aware of weather and road conditions. • A spotter will be used when loading equipment in high traffic areas. • Do not load equipment on unstable ground. • Run articulated equipment up and down slopes – not at an angle.
	d. Contact with Overhead Utilities	d. Contact with Overhead Utilities • If equipment is being operated or loaded in an area with overhead utilities, a spotter must be used.
	e. Fall into Excavation	e. Fall into Excavation • Install open trench warning devices/barricades.
	f. Caught In/Between	f. Caught In/Between • Do not allow personnel between a moving object and a stationary object. • Ensure all personnel within loading areas are accounted for and out of the way.
	g. Vehicular Traffic	g. Vehicular Traffic • Employees will need to pay attention to operations around and adjacent to their work and continually evaluate the need for traffic control measures. • Establish one-way (if possible) traffic routes for loaded trucks, so that they can keep the same path. • Traffic control patterns may be modified based on changed conditions (as observed) due to weather or due to modified operations at the site.
	h. Spread of PCB Contaminated Media Off-site	i. Spread of PCB Contaminated Media Off-site • Once loaded, trucks will be processed through a decontamination pad where an automated spray will be used to remove loose material from the wheels. • As necessary, a power washer will be used to wash the exterior of the loaded trucks. • Lined trucks and secure covers will be used to minimize the potential for

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Loading Trucks for T&D		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		loss of contaminated sediment is spilled on public roads. • All trucks will be inspected prior to leaving the site to ensure no gross contamination on the trucks. • Once the trucks have left the site, the hauling company is responsible for responding to and cleaning up any material released during transportation to the disposal facility. Prior to selecting waste hauling vendors, TtEC will require each vendor to provide information about their emergency response plan for spill cleanup. For haulers transporting DOT regulated shipments of PCB-contaminated sediments or debris (i.e., loads containing equal to or more than 1 pound of PCBs), TtEC shall require the transporters to confirm their company has prepared a DOT Hazardous Materials Security Plan.
EQUIPMENT USED	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
1. Heavy Equipment 2. Appropriate PPE 3. Portable Eyewash 4. First Aid Kits	1. Inspect all heavy equipment prior to use. 2. Inspect all PPE prior to use. 3. Inspect portable eye washes and First Aid Kits weekly.	1. All site personnel will read and comply with this HASCP. 2. All site personnel will receive site specific training. 3. Qualified operators will be used for heavy equipment operation. 4. At least two individuals on-site will have current CPR, First Aid, and Bloodborne pathogen training.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Wastewater Treatment Plant Operations		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
1. System Start-Up	a. Back Injuries	a. Back Injuries • Reference General Site Hazards. • Site personnel will be instructed on proper lifting techniques; mechanical devices should be used to reduce manual handling of materials; team lifting should be utilized if mechanical devices are not available.
	b. Slips/Trips/Falls	b. Slips/Trips/Falls • Reference General Site Hazards. • Maintain work areas safe and orderly; unloading areas should be on even terrain; mark and repair if possible tripping hazards.
	c. Spills	c. Spills • Reference General Site Hazards. • Secondary containment will be used during system start up to prevent spills of contaminated sediments onto ground surface.
	d. Dropped Objects	d. Dropped Objects • Reference General Site Hazards. • Steel toe boots meeting ANSI Standard Z41 will be worn during all site activities.
	e. Sharp Objects/Punctures	e. Sharp Objects/Punctures • Reference General Site Hazards. • Use hand tools properly and wear appropriate protective equipment, cut resistant work gloves will be worn when dealing with sharp objects; all hand and power tools will be maintained in safe condition; guards will be kept in place while using hand and power tools.
	f. Hand and Power Tools	f. Hand and Power Tools • Reference General Site Hazards. • Remove broken or damaged tools from service; use the tool for its intended purpose; and use in accordance with manufacturers instructions.
	g. Eye Injuries	g. Eye Injuries • Reference General Site Hazards. • Safety glasses meeting ANSI Standard Z87 will be worn.
	h. Chemical Exposure	h. Chemical Exposure • Appropriate protective clothing will be worn; skin will be rinsed with water if contact with hazardous material occurs; a portable eye wash station will be located by work area; conduct hazard communication training for decontamination and sample preservation chemicals.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Wastewater Treatment Plant Operations,		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
	i. Electrocution	i. Electrocution • Do not use unit near any power lines or where water can come in contact with electrical power. • Reference EHS Program EHS 3-10 for electrical considerations. • All electrical wiring and hookups will be completed by a licensed electrician. Lockout/Tagout will be utilized to make sure lines are not hot prior to beginning work on them and making connections. Reference EHS Program EHS 6-4 for Lockout/Tagout procedures. • The ESS is responsible for providing the training required in the procedure EHS-6-4 to supervisors and craft employees, and conducting periodic inspections to ensure this procedure is effectively implemented. • The ESS shall also implement lockout/tagout procedures as required.
2. Wastewater Treatment Plant Operations	a. Exposure to Site Contaminants (PCBs)	a. Exposure to Site Contaminants (PCBs) • Personnel will take care to minimize contact with contaminated media. This involves a conscientious effort to keep "clean" during site activities. • When the potential for contact with contaminated media exists, personnel will wear appropriate PPE described in Table 5-1 to minimize if not prevent exposure. • Personnel will wash hands and face after leaving the contamination reduction zone with soap and water or waterless hand cleaner.
	b. Lockout/Tagout (Release of Hazardous Energy)	b. Lockout/Tagout (Release of Hazardous Energy) • Reference EHS Program EHS 6-4. • Reference 29 CFR 1910.147, Control of Hazardous Energy (Lockout/Tagout). • The ESS is responsible for providing the training required in the procedure EHS Program EHS 6-4 to supervisors and craft employees, and conducting periodic inspections to ensure this procedure is effectively implemented. • The ESS shall also implement lockout/tagout procedures as required.
	c. Lockout/Tagout (Tags without Locks)	c. Lockout/Tagout (Tags without Locks) • The use of tags without locks is prohibited, except in those cases where it is physically impossible to attach a locking device to an isolation point. In this case, follow steps in EHS Program EHS 6-4. • Employees shall be warned not to tamper with the tag or isolation point.
	d. Lockout/Tagout (Failure to Clear Locks)	d. Lockout/Tagout (Failure to Clear Locks) • Reference EHS Program EHS 6-4. • Supervisor will attempt to contact person who applied lock and resolve

		issue. • If person cannot be contacted, supervisor will investigate the situation and determine that removal of the lock will not create a hazard in the work zone. • The supervisor will then verify that the work zone is clear, and blocking devices have been removed and the system has been restored to the normal configuration. • The supervisor will then cut the lock off and restore energy to the system. • A written incident and investigation report per EHS Program EHS 1-7, Incident Reporting and Investigating, shall be prepared by the supervisor stating the reason for cutting the lock, why the lock was not removed, and the procedure used to ensure the safety of personnel in the area. • The individual whose lock was cut off must be notified ASAP.
	e. Fire and Explosion	e. Fire • Reference General Site Hazards and Section 10.9. • Equip all heavy equipment with 20A:B:C-type fire extinguishers. • Area(s) for personnel smoking will be designated. • Flammable liquids and gases will be stored away from oxidizers. • No hot work without properly executed work permit
	f. Spills	f. Spills • Reference General Site Hazards, Section 10.13, and the Contingency Plan. • Secondary Containment will be provided in storage areas. • Spill and absorbent materials will be readily available.
EQUIPMENT USED	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
1. Heavy Equipment 2. Hand and Power Tools 3. Appropriate PPE 4. Portable Eyewash 5. First Aid Kits 6. 20A:B:C Fire Extinguisher 7. GFCI	1. Hand and power tools will be inspected to ensure they are in good condition prior to each day's use. 2. PPE will be inspected before and after each use. 3. Periodic inspections pursuant to EHS Program EHS 3-3, Inspections, shall be completed during the monthly inspections by the ESS, PESM or other qualified personnel to ensure	1. Authorized Employees shall receive training in the following prior to being allowed to use lockout/tagout procedures: • Recognition of hazardous energy sources; • Types and magnitudes of energies available at the site; • Methods and means needed for energy isolation and control; and • The requirements of this procedure and 29 CFR 1910.147. 2. Affected Employees shall be instructed in the following: • Purpose of the lockout tagout program; • Use and requirements of this procedure and 29 CFR 1910.147; • Prohibitions of restarting or tampering with equipment that has been

	that the lockout tagout program is being effectively implemented. As a minimum the following shall be done: • Existing lockouts will be reviewed for effectiveness; • Permits for each existing lockouts shall be reviewed for adequacy; • Incident reports and past permits shall be reviewed to determine if deficiencies in the program exist; • Corrections to the system will be made as warranted; and • Results will be logged in the health and safety logbook. 4. Inspect portable eye washes and First Aid Kits weekly. 5. Inspect Fire Extinguishers weekly. 6. Check and Test GFCIs weekly.	locked out; and • Prohibitions of tampering with locks and tags installed on equipment. 3. All site personnel will read and comply with this HASCP. 4. All site personnel will receive site specific training. 5. Only qualified electricians will install electrical wiring and hookups. 6. At least two individuals on-site will have current CPR, First Aid, and Bloodborne pathogen training. 7. Instruct personnel of proper use of fire extinguishers. 8. Personnel will be trained on the proper use of hand and power tools, including the pipe welding machine. 9. Training on Lockout/Tagout procedures are listed in EHS Program EHS 6-4.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Sampling (Sediment And Process Operations)		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
3. Sediment sampling from small boat.	a. Working around water and in small boat. Falling into Water other boat traffic interactions (large wakes)	• Coast Guard approved flotation equipment, PFD's Type I, II, or selected Type III (i.e. Mustang Survival work suits & Jackets, at discretion ESS) will be worn when in boat or on the dock, in areas without adequate safety rails (<3-ft). • Survey vessels will display day-shapes to communicate to boat traffic that there is gear in the water (i.e. towfish or other instrumentation), and that the survey vessel has limited maneuverability. • Survey vessels will monitor VHF Channel 16 • Survey vessels will avoid operating in shipping channels as much as is practicable, and will be aware of the possibility of large ship wakes. • Set of oars and emergency horn shall be available in the boat prior to operation. • No standing or leaning over edge in small boats. • Comply with Coast Guard right-of-way rules. • Use horn to signal or warn other boats as appropriate. • Suspend work during bad weather or poor visibility. • Have experienced boat crews operate vessel • Ensure boat manufactures recommendation for operation and load limits are followed. • At least one US Coast Guard approved lifesling attached to approximately100 feet of rope will be located on the boat. The hydrographic and geophysical crew vehicle will also have a rescue throw rope.
	b. Exposure to Site Contaminants (PCBs)	• Personnel will take care to minimize contact with contaminated media. This involves a conscientious effort to keep "clean" during site activities. • When the potential for contact with contaminated media exists, personnel will wear appropriate PPE described in Table 5-1 to minimize if not prevent exposure. • Personnel will wash hands and face after leaving the contamination reduction zone with soap and water or waterless hand cleaner.
	c. Adverse weather. High winds and rain and/or snow storms, high water flow in river. Struck by lightning	• If adverse weather is affecting crew's safety, work will be halted until conditions improve. (i.e. wind, snow, rain etc.) • Area is prone to windstorms during the spring, when this work is anticipated to occur. • If road conditions are too bad to access the work site, the work will be postponed until conditions improve. • In the case of extreme weather, vessel operations may be delayed. • At no time will personnel and equipment enter the river, if the flow rate exceeds 1,500 cubic feet per second (CFS) • Follow the 10-second rule (time between lightning strike and thunder) for shutdown of operations. Immediately suspend operations when lightning is in the

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Sampling (Sediment And Process Operations)		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		immediate vicinity and seek shelter.
	d. Fueling boat	• Check the entire fuel system for leaks. Tighten connections frequently. Engine vibration can loosen them. • Turn off all engines and electrical equipment; shut off all fuel valves; and close all windows, doors and openings. • Try to fuel in daylight. If light is required, use a flashlight or a light that is spark-proof. • Never smoke or strike a match while fueling or when near a fueling dock. • When filling a tank or gas can, follow these guidelines: • Remove portable tanks from the vessel. • Touch the fuel pipe or tank with the spout to prevent buildup of static electricity. • Never fill a tank to the brim. Leave room for gas to expand. • After fueling, put the fill cap on tightly to prevent vapors from escaping. • Immediately wipe up any spilled gas. • Air out the rag after using it. Never throw it in the vessel or the water. • Store gas onboard in a safety-approved storage tank, away from the engine in an area of good ventilation. • Refueling should be performed on land as often as possible (i.e. @ auto gas station, not via gas cans). • Funnels will be used when filling gas tanks from portable gas cans. • Sorbent pads will be placed under and/or around item being fueled to capture any spills. • To the extent possible fuel all systems before launching the boat so that on water refueling is kept to a minimum.
	e. Chemicals brought on site	• Reference EHS Program EHS 4-2. • Identify all chemical hazards and receive training (Haz Com-Material Safety Data Sheets/MSDS) regarding safe handling and storage of chemicals. • The ESS maintains copies of all MSDS for chemicals that are on site. • A portable 15 minute eye wash station will be located by the work area.
	f. Boating activities	• Boat Captains shall be USCG licensed • Prior to placing boats, survey equipment and personnel on the river, the river's flow rate will be assessed. At no time will personnel and equipment enter the river, if the flow rate exceeds 1,500 cubic feet per second (as measured by the nearly USGS flow monitoring station). • Debris may present a significant hazard to personnel during survey activities. During cold weather (<40° F) blanket shall be on the survey vessel and the vessel will be kept warm, in the event that personnel get wet. • Due to the potential for limited rescue capability and other emergency impedances, activities on the river will be limited to one half hour before sunrise to one half

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Sampling (Sediment And Process Operations)		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		hour after sunset. Personnel should allow sufficient time to shutdown operations at the end of each day to ensure personnel are off of the river by the specified time. • Survey Boats shall have adequate lights (navigation and "head lights" / spot lights for safe operation during dawn/dusk and after dark if necessary. • Boat launches with adequate lighting will be used to the greatest extent possible • If working in the vicinity of the De Pere Dam additional precautions will be taken to insure safe boat operations are conducted. This will include use of one or several of the following safety precautions; inclusion of an auxiliary motor (i.e. "kicker" motor) on the survey vessel, use of a tagline(s) to the river back, use of one or several points of anchor, installation of a cable which would prevent the survey boat and/or crew from passing over the dam.
	g. Man Overboard/Drowning	• All personnel shall wear United States Coast Guard (USCG) Approved Type III Life Preservers at all times while on the water. • As per OSHA requirements (29 CFR 1926.501(b)(1)) and EM 385-1-1 Section 19.A.07, guardrails are required on working platforms for barges that are 6 feet or more above the water. • All means of barge access shall be properly secured, guarded, and maintained free of slipping and tripping hazards. • A Coast Guard approved Type IV flotation device (life ring) will be maintained on each barge. • Water craft will not be used without shore support personnel with rescue skiff available onshore. • All persons on board will remain seated/standing securely whenever a water craft is moving, • Maximum weight capacity for water craft will not be exceeded. • Barges will be equipped with perimeter guardrails. • Water craft will be operated with a minimum of two personnel on board. • Water craft will not be used without shore support personnel. • A line extended from the water craft to the shore will always be available, so that shore personnel are able to retrieve water craft remotely in the event of an emergency. • Personnel on board water craft must be in constant radio contact with shore personnel. • Non slip surfaces shall be provided on all working decks, stair treads, ship ladders, platforms, catwalks, and walkways. • All barge deck obstructions will be removed if possible, if not possible to

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Sampling (Sediment And Process Operations)		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		remove them they shall be clearly marked with yellow paint.
	h. Sinking Boat	• All water craft not subject to USCG inspection and certification or not having a current American Bureau of Shipping (ABS) classification shall be inspected by a marine surveyor accredited by the National Association of Marine Surveyors (NAMS) or the Society of Accredited Marine Surveyors (SAMS). • A pre-use inspection of any rented vessel shall be completed, including a video documentation of pre-use conditions. • The load ratings of barges and tenderboats will be strictly adhered to; overloading of vessels is prohibited. • Tide tables will be consulted and times of high tide, when it is most safe to move barges, will be identified. • In the event a boat becomes grounded at times of low tide, no attempt will be made to move the barge until enough water returns to refloat it.
	i. Failure to have proper medical supplies, emergency supplies, and PFDs during emergency could result in inadequate treatment of personnel or potentially increase injuries.	• Ensure that PFD's are available for each person and in good usable condition. • First-aid kit and supplies are available. • Oars, emergency horn, life ring, fire extinguisher are available. (Fire extinguisher shall be at least a 10lb. ABC type) • Cell phone is available and working for emergency notifications.
	j. Back Injuries and Strains	• Site personnel will be instructed on proper lifting techniques (keep back straight, lift with legs, limit twisting, etc). • Mechanical devices should be used to reduce manual handling of materials. Team lifting should be utilized if mechanical devices are not available. • An individual will not lift loads greater than 50 pounds. **This amount may be lowered by ESS's judgment due to individual's stature & lifting ability.**
	k. Communication	• Field personnel will use cellular telephones with adequate coverage to communicate with individuals off site. • Field personnel will use two-way radios with adequate coverage to communicate with the Coast Guard off site
4. Sampling during Process Operations	a. Exposure to Site Contaminants (PCBs)	a. Exposure to Site Contaminants (PCBs) • Personnel will take care to minimize contact with contaminated media. This involves a conscientious effort to keep "clean" during site activities. • When the potential for contact with contaminated media exists, personnel will wear appropriate PPE described in Table 5-1 to minimize if not prevent exposure. • Personnel will wash hands and face after leaving the contamination

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Sampling (Sediment And Process Operations)		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		reduction zone with soap and water or waterless hand cleaner.
	b. Eye Injuries	b. Eye Injuries • Safety glasses or goggles meeting ANSI Standard Z87 will be worn for all field operations where eye hazards exist. • A portable eye wash station will be located adjacent to work activities.
	c. Lockout/Tagout (Release of Hazardous Energy)	c. Lockout/Tagout (Release of Hazardous Energy) • Reference EHS Program EHS 6-4. • Reference 29 CFR 1910.147, Control of Hazardous Energy (Lockout/Tagout). • The ESS is responsible for providing the training required in the procedure EHS Program EHS 6-4 to supervisors and craft employees, and conducting periodic inspections to ensure this procedure is effectively implemented. • The ESS shall also implement lockout/tagout procedures as required.
	d. Lockout/Tagout (Tags without Locks)	d. Lockout/Tagout (Tags without Locks) • The use of tags without locks is prohibited, except in those cases where it is physically impossible to attach a locking device to an isolation point. In this case, follow steps in EHS Program EHS 6-4. • Employees shall be warned not to tamper with the tag or isolation point.
	e. Lockout/Tagout (Failure to Clear Locks)	e. Lockout/Tagout (Failure to Clear Locks) • Reference EHS Program EHS 6-4. • Supervisor will attempt to contact person who applied lock and resolve issue. • If person cannot be contacted, supervisor will investigate the situation and determine that removal of the lock will not create a hazard in the work zone. • The supervisor will then verify that the work zone is clear, and blocking devices have been removed and the system has been restored to the normal configuration. • The supervisor will then cut the lock off and restore energy to the system. • A written incident and investigation report per EHS Program EHS 1-7, Incident Reporting and Investigating, shall be prepared by the supervisor stating the reason for cutting the lock, why the lock was not removed, and the procedure used to ensure the safety of personnel in the area.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Sampling (Sediment And Process Operations)		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		• The individual whose lock was cut off must be notified ASAP.
EQUIPMENT USED	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
1. Boats 2. Appropriate PPE 3. Hand and Power Tools 4. Portable Eyewash 5. First Aid Kits 6. 20A:B:C Fire Extinguisher 7. GFCI	1. Inspect all boats daily. 2. Inspect all hand and power tools prior to use. 3. Inspect all PPE prior to use. 4. Inspect portable eye washes and First Aid Kits weekly. 5. Inspect Fire Extinguishers weekly. 6. Check and Test GFCI's weekly.	1. All site personnel will read and comply with this SHSP. 2. All site personnel will receive site specific training. 3. Qualified operators will be used for heavy equipment and boat operation. 4. At least two individuals on-site will have current CPR, First Aid, and Bloodborne pathogen training. 5. Instruct personnel of proper use of fire extinguishers. 6. Personnel will be trained on the proper use of hand and power tools, including the steam cleaner.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Laboratory Analysis		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
1. Laboratory Analysis	a. Back Injuries and Strains	a. Back Injuries and Strains • Procedures in Section 3.3.14 will be followed. • Site personnel will be instructed on proper lifting techniques (keep back straight, lift with legs, limit twisting, etc). • Mechanical devices should be used to reduce manual handling of materials. Team lifting should be utilized if mechanical devices are not available. • An individual will not lift loads greater than 50 pounds. **This amount may be lowered by ESS's judgment due to individual's stature & lifting ability.**
	b. Electrical Hazards	b. Electrical Hazards • Extension cords are allowed for temporary use provided the wight of the cord is adequate for the load applied. Check to be sure the extension cord is three pronged and that no cords are frayed. • Multiplug devices are allowed provided they are UL listed with a built-in circuit breaker and used in accordance with their intended use. • Fuses must be appropriately rated for each appliance. • Electrical equipment must not be used in the vicinity of flammable or explosive gases. • Electrical equipment must not be used where it may get wet. Equipment that has been wet must never be switched on until the equipment has been tested. • Ensure adequate electrical service is provided in the laboratory to minimize the need for permanent use of extension cords. • Circuit breakers that service laboratory equipment should be identified as such. • Outlets located near sinks or other sources of water should be on a ground fault circuit or otherwise ground fault protected.
	c. Exposure to Site Contaminants (PCBs) and fumes during heating/processing samples	c. Exposure to Site Contaminants (PCBs) • Personnel will take care to minimize contact with contaminated media. This involves a conscientious effort to keep "clean" during site activities. • When the potential for contact with contaminated media exists, personnel will wear appropriate PPE to minimize if not prevent exposure. Standard PPE requirements will be identified and posted for additional chemicals used to process the samples. All laboratory analysis personnel will be trained in the appropriate PPE requirements for their task.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Laboratory Analysis		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		• Use proper pipetting or transfer techniques for removal of sample to new vial or container. • Personnel will wash hands and face after leaving the contamination reduction zone with soap and water or waterless hand cleaner. • Whenever heat or chemicals are added to the sample, this will be done under a fume hood to prevent exposure via inhalation. Chemicals that must be used under the hood will be identified and all laboratory personnel will be informed of this requirement. • If operations in the lab involve chemicals which present an inhalation exposure hazard, a fume hood must be available for use. • Fume hood work should be placed approximately six inches into the hood, i.e.: not right at the front edge. Fume hoods should not be strictly used for storage of chemicals. • Laboratory refrigerators and freezers are not allowed to be used for the storage of food or drink. Ice machines and microwave ovens are not to be used for human use. • Wastes should be removed from the laboratory in a timely manner. • All wastes must be labeled with a hazardous waste label and stored according to the hazards associated with the waste. Abbreviations or trade names must not be used to identify contents. Common chemical or IUPAC nomenclature must be used. Label every constituent added to the container, especially with heavy metals in the parts per million range. • Waste containers must be capped at all times unless material is being added. • Waste containers must be compatible with contents. For example do not use metal containers to store acids or glass containers for hydrofluoric acid mixtures. • All waste must be stored in a secondary container. • Do not fill liquid waste containers over 90% full.
	d. Slips/Trips/Falls	d. Slips/Trips/Falls • Visually inspect work areas and mark, barricade, or eliminate slip, trip and fall hazards if feasible. • Maintain work areas safe and orderly. • Cables must not be run across the floor in such a way as to cause a tripping hazard or to be susceptible to damage from passing traffic. If it is necessary to run cables across walkways, they must be covered with cable

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Laboratory Analysis		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		protectors. • Tools and supplies/equipment will be properly stored. • Housekeeping must be maintained so that the aisles are clear to allow for emergency egress. Storage is not permitted in exit ways (hallways). • Floors should be in good repair i.e., no tripping hazards caused by cracks, holes, protrusions, missing tiles, etc. • Excess or surplus equipment should be disposed of or relocated to a storage location. When transferring equipment for disposal be sure hazardous materials are removed prior to transfer. • If operations cause floors to be wet or slippery, mats to help prevent slippage should be used.
	e. Eye Injuries	e. Eye Injuries • Safety glasses with side shields or goggles meeting ANSI Standard Z87 will be worn for all laboratory operations where eye hazards exist. • A 15 minute eye wash station and personnel shower will be located in the laboratory. These should be inspected every 6 months. • Shields should be used when conducting experiments that could explode.
	f. Gas Cylinders Hazards	f. Gas Cylinders Hazards • Leakage or escape of flammable gases can produce a serious explosive hazard in the laboratory. Gas cylinders, control valves, and pressure regulators and gauges should all be used carefully and according to the manufacturer's recommendations. Broken or damaged equipment should not be used but must be replaced. Only equipment that is appropriate i.e. specially designed for use with toxic, explosive or corrosive gases may be used. • Gases can be reactive and highly toxic – leaking gas can react with its surroundings (i.e., equipment, chemicals, skin). There should be regular checks for leaks especially in joints pressure. Prior to introducing a flammable gas into a reaction vessel, the equipment must be purged of oxygen by evacuation or by flushing with inert gas. Naked flames or other sources of ignition must be rigorously excluded from the vicinity. • Inert gases such as nitrogen, carbon dioxide, and argon can cause asphyxiation if released in quantity. Exhaust lines must be properly vented e.g. to a fume hood. • Containers that receive the gases can explode if not rated to accept the pressure. Receiving containers must be capable of accepting the gas at the

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Laboratory Analysis		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		required operating pressure. • Gas cylinders should not be stored in laboratories unless they are being used. • Caps should be kept on the cylinders when not in use. • Cylinders need to be individually restrained by chains at approximately two thirds height from the floor. • Regulators should be replaced or recertified on a regular basis. Regulator types are matched to the type of cylinder and gas being used. Contact the gas supplier with questions. • Gas cylinders must be labeled with the contents. Unknown gas cylinders are very hazardous and expensive to dispose of. • Gas supply lines need to be compatible with the gas being used. The suppliers can provide information about proper line material. The lines also must be rated to handle the pressures used. • Some gas companies will accept their cylinders back empty or partially full. Companies such as this should be used to minimize chemical waste.
	g. Sharp Objects/punctures	g. Sharp Objects/punctures • Leather gloves (minimum) or cut resistant work gloves will be worn depending on the material working with. • All hand and power tools will be maintained in a safe condition. When possible, blunt all sharp objects. • First aid kits will be available by the work area. • All belts, blades or other moving parts on equipment should be guarded or otherwise protected. • Check for sharp edges or points sticking out on equipment, furniture etc. that could cause struck by hazards.
	h. Spills	h. Spills • Reference Section 10.13 and the Contingency Plan. • Secondary Containment will be provided in storage areas. • Spill and absorbent materials will be readily available. • Absorbent materials will be used during transfer of fuel/oil. • Contain, control and clean up the spill and affected area (soil, water). Manage and dispose of spill material appropriately. • All waste materials generated will be contained in a seal-able container appropriate for the size of the spill. • Whenever possible chemicals should not be stored above eye level and

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Laboratory Analysis		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		liquids should be stored in secondary containers. • Whenever possible all shelves used to store liquid chemicals should have a lip.
	i. Fire Hazards	i. Fire Hazards • Fire extinguishers should be located nearby and visible from the hallway. They should be inspected monthly to ensure it is charged and not damaged. • If there are smoke detectors or sprinklers in the lab, make sure that nothing is stored near them that would interfere with their intended operation. • Flammables should be stored in flammable storage cabinets wherever possible and always kept away from open flames. • Ensure combustibles are not stored near hot surfaces or equipment.
	j. Hand and Power Tools	j. Hand and Power Tools • Reference Section 3.3.12. • The proper tools will be used for each task. • All tools will be inspected before each use. Damaged tools will be removed from service and tagged (splintered wood bases, missing guards, "mushroom" head). • Tools will be used in accordance with manufacturer's instructions. • Modifications to tools are prohibited unless approved by the ESS. • GFCIs will be used with all electrical power tools.
	k. Chemicals brought on site	k. Chemicals brought on site • Reference EHS Program EHS 4-2. • Identify all chemical hazards, PPE requirements, plus special safety procedures, and receive training (Haz Com-Material Safety Data Sheets/MSDS) regarding safe handling and storage of chemicals. • Store chemicals by hazard class. Remove chemicals in accordance with hazardous waste requirements prior to their expiration date. Pay close attention to special storage requirements such as refrigeration, dry atmospheres etc. • Flammable/combustibles may not be stored in refrigerators or freezers that are not lab safe or explosion proof. Regular refrigerators and freezers should bear the caution statement prohibiting storage of these materials. • All chemical containers must be labeled and the labels must be securely affixed to the container. Reaction flasks must be labeled as well.

Project: Lower Fox River OUs 2 through 5, Phase 2B Activities Activity: Laboratory Analysis		Location: Brown, Outagamie, and Winnebago Counties, Wisconsin
MAJOR STEPS	**POTENTIAL HAZARDS**	**PROTECTIVE MEASURES/CONTROLS**
		Abbreviations or trade names should not be used to label containers. Common chemical or IUPAC nomenclature should be used. • Quantities of chemicals kept in the lab should not be excessive. Outdated chemicals should be disposed of. • The ESS maintains copies of all MSDS for chemicals that are on site. • A 15 minute eye wash station and personnel shower will be located by the laboratory area. These should be inspected every 6 months.
EQUIPMENT USED	**INSPECTION REQUIREMENTS**	**TRAINING REQUIREMENTS**
1. Heavy Equipment 2. Appropriate PPE 3. Hand and Power Tools 4. Portable Eyewash 5. First Aid Kits 6. 20A:B:C Fire Extinguisher 7. GFCI	1. Inspect all heavy equipment prior to use. 2. Inspect all hand and power tools prior to use. 3. Inspect all PPE prior to use. 4. Inspect portable eye washes and First Aid Kits weekly. 5. Inspect Fire Extinguishers weekly. 6. Check and Test GFCIs weekly.	1. All site personnel will read and comply with this SHSP. 2. All site personnel will receive site specific training. 3. Qualified operators will be used for heavy equipment and boat operation. 4. At least two individuals on-site will have current CPR, First Aid, and Bloodborne pathogen training. 5. Instruct personnel of proper use of fire extinguishers. 6. Personnel will be trained on the proper use of hand and power tools, including the steam cleaner.

APPENDIX D

HEAVY EQUIPMENT INSPECTION FORMS

TETRA TECH EC, INC
EQUIPMENT TRANSFER/RELEASE FORM

TtEC Asset #: _____ Meter/Mileage: _____

Description: _____

Year/Make/Model: _____ S/N: _____

Project Releasing Equipment: _____

Date Released from Project: _____ Released to: _____

Manuals shipped with equipment:

Transportation Charge No.: _____ G/L _____

GENERAL CONDITION:

Check appropriate boxes: _____ No repairs needed _____ Repairs needed

Describe: _____

_____

_____

Check appropriate column and describe correction needed.

	Condition Good	Correction Needed (description)
Steering System		
Air System		
Hydraulic System		
Brake System		
Drive Sys. (engine/trans/diff)		
Exhaust System		
Undercarriage/tires		
Glass		
Instrumentation		
Controls		
Fluid Levels/Leaks		
Service Sticker Update		
Body (doors/panels/tinwork)		
Safety System (b/u alarm, extinguisher, s. belts, mirrors)		
Cab Systems (heat, a/c, wipers, horn)		

I certify that the above listed equipment is in good working order, all defects and damages have been noted above, and has been properly maintained, and deconned/cleaned prior to demobilization.

Signature Date Print Name Title

Receiving Project concurrence of conditions.

Signature Date Print Name Title

If Receiving Project does not concur with the above report, note findings, sign and forward to the Equipment Yard.

TETRA TECH EC, INC.

Equipment/Vehicle Inspection Report

Date: _____ Unit Number: _____ Description: _____

Miles/ Hours: _____ MFG: _____

Unit to be taken from: _____ to: _____

	Good	Satisfactory	Repair Req.	N/A		Good	Satisfactory	Repair Req.	N/A
1. Tires _____	☐	☐	☐	☐	16. Interior	☐	☐	☐	☐
2. Brakes	☐	☐	☐	☐	17. Glass	☐	☐	☐	☐
3. Steering	☐	☐	☐	☐	18. Wipers/Review Mirrors	☐	☐	☐	☐
4. Undercarriage	☐	☐	☐	☐	19. Heater	☐	☐	☐	☐
5. Suspension	☐	☐	☐	☐	20. Safety Equipment/Belts	☐	☐	☐	☐
6. Engine	☐	☐	☐	☐	21. Lights/Turn Signals	☐	☐	☐	☐
7. Drive Train	☐	☐	☐	☐	22. Mounted Equipment	☐	☐	☐	☐
8. Fuel System	☐	☐	☐	☐	23. Mounted Attachments	☐	☐	☐	☐
9. Cooling System	☐	☐	☐	☐	24. Blade/Bucket	☐	☐	☐	☐
10. Electrical System	☐	☐	☐	☐	25. Boom	☐	☐	☐	☐
11. Exhaust System	☐	☐	☐	☐	26. Outriggers	☐	☐	☐	☐
12. Hydraulic System	☐	☐	☐	☐	27. Fire Ext./First Aid Kit	☐	☐	☐	☐
13. Transmission	☐	☐	☐	☐	28. Horn/Backup Alarm	☐	☐	☐	☐
14. Clutch	☐	☐	☐	☐	29. _____	☐	☐	☐	☐
15. Body	☐	☐	☐	☐	30. _____	☐	☐	☐	☐

Note percentage of tread usefulness

Comments: _____

Inspected By: _____

DISTRIBUTION: (1) Sent with equipment (2) Tetra Tech FW, Inc. Equipment Department (3) Receiving Copy (4) Originator's Copy

EQUIPMENT TRANSFER REPORT MUST ACCOMPANY THIS FORM

TETRA TECH EC, INC.

DAILY EQUIPMENT INSPECTION

EQUIP. NO. _____ TYPE _____

MANUFACTURER _____ MODEL _____

PROJECT _____ DATE _____

ENGINE HRS/MILEAGE _____ SHIFT _____

Check appropriate column and describe correction needed.

	Condition Good	Correction Needed
Steering		
Service Brakes		
Emergency Brakes		
Retarder		
Transmission		
Controls		
Hydraulic Leaks		
Exhaust System		
Warning Gauges		
Windshield		
Lights		
Mirrors		
Seat and Seat Belts		
Tires/Tread		
Regular Horn		
Back-up Alarm		
Steps, Hand-holds		
Fire Extinguisher		
Rollover Cage		
Oil Level		
Other		

Remarks: _____

_____

_____

Signed _____
Operator

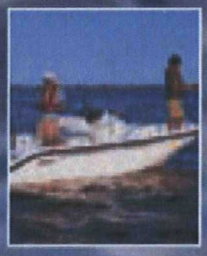
Repairs or adjustments completed:
Date: _____

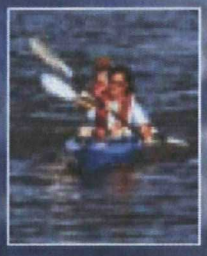
Signed _____
Equipment Supervisor/Mechanic

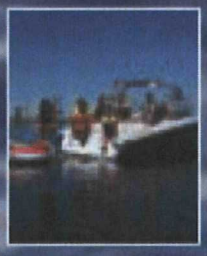
APPENDIX E

HANDBOOK OF WISCONSIN BOATING LAWS AND RESPONSIBILITIES

the HANDBOOK!







OF WISCONSIN BOATING LAWS AND RESPONSIBILITIES

Approved by

2008 Edition

BOAT WISCONSIN

A Course on Responsible Boating

Boater education certification is required by law for anyone born on or after 01/01/1989 to operate a motorboat on Wisconsin's waterways. Even if it's not required for you, becoming certified may save you money on boat insurance. You have two ways to be certified.

1. ***Over the Internet ...***

Learn what you need to be a safe boat operator online! The complete course with exciting visuals awaits you on the Internet. Interactive graphics help you learn and retain information on how to boat safely in Wisconsin. Successfully complete the online test and you will receive a Wisconsin Department of Natural Resources boater education certificate by mail.

Start today at www.boat-ed.com/wi

---

2. ***In a classroom ...***

Share the learning experience with other interested students and a qualified instructor. Wisconsin Department of Natural Resources can help you find a classroom course in your area.

Call 888-936-7463 for information or visit dnr.wi.gov

Safer Boating Through Partnerships

UNITED STATES POWER SQUADRONS

Be a Smart Boater ... Increase your Boating Skills! DNR–certified classes offered throughout the state. For more information, call **1-888-FOR-USPS** or visit our website at **www.USPS.org**.

UNITED STATES COAST GUARD AUXILIARY

Helping Wisconsin Boaters ... by providing boating courses, courtesy vessel examinations, and surface and air operations. For more information, call the CG Info line at **1-800-368-5647** or visit our website at **www.cgaux.org**.

the HANDBOOK! OF WISCONSIN BOATING LAWS AND RESPONSIBILITIES

This handbook includes a summary of Wisconsin boating laws. For a complete set of what is legal when boating in Wisconsin, see the Wisconsin Statutes and Regulations and federal laws.

- To stay up-to-date on Wisconsin boating laws:
  - Call the Wisconsin Department of Natural Resources at **1-888-936-7463**
  - Or visit our website at **dnr.wi.gov**
- For federal boating laws, visit the U.S. Coast Guard's website at **www.uscgboating.org**

Published by Boat Ed, 2906 Ladybird Lane, Dallas, TX 75220, 214-351-0461

Front cover side photos courtesy of U.S. Coast Guard for *Canoeing Couple* and *Family Swimming*

Table of Contents

It's the LAW!

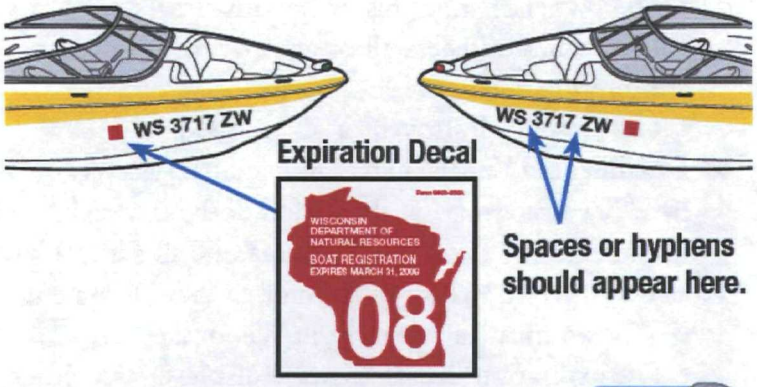
Boating BASICS

Before Going Out

All operators are required to obey laws that regulate your vessel's registration and operation.

Registering Your Vessel

- You must have a Wisconsin Certificate of Number (registration) and expiration decals to operate a recreational vessel legally. Exceptions to the requirement to register a recreational vessel include:
  - Sailboats 12 feet of length or less and not equipped with a motor and sailboards
  - Manually propelled vessels that are not equipped with a motor or sail
  - Vessels registered in another state and using Wisconsin waters for less than 60 consecutive days
- The Certificate of Number is obtained by submitting the proper application and fee to the Wisconsin Department of Natural Resources (DNR).
- *The Certificate of Number (registration card) must be on board and available for inspection by an enforcement officer whenever the vessel is operated.*
- If your vessel requires registration, it is illegal to operate it or allow others to operate your vessel unless it is registered and numbered properly.



For More Information on Registering ...

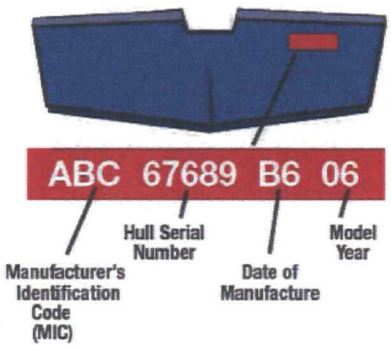
- Call Wisconsin DNR at **1-888-936-7463**
- Visit the Wisconsin DNR website at **dnr.wi.gov**

Other Facts About Titling and Registration

- **Titling:** Only vessels 16 feet or more in length require a Certificate of Title.
- **Expiration:** Registration is valid for three years, beginning on April 1 and expiring on March 31 at the end of each three-year period. No vessel may be operated after March 31 without renewing the registration.
- **Duplicates:** If a Certificate of Number is lost or destroyed, the vessel owner must apply to the Department of Natural Resources (DNR) to replace it with a duplicate Certificate of Number.
- **Buying or Selling a Vessel:** Transfer of ownership of a vessel terminates the Certificate of Number and title.
  - The "buyer" must apply for a new registration and/or title on forms furnished by the DNR. The previous owner's Certificate of Number and title must accompany the application.
  - Upon receipt of the required fee and application, the DNR will issue a new Certificate of Number and/or title.
  - After applying, the "buyer" may operate the vessel if a copy of the application is carried on board.
  - It is unlawful to transfer the number designated by the DNR from one vessel to another.
- **Changes Requiring Notification:** The owner of a registered vessel must notify the DNR within 15 days of the occurrence of any of the following events.
  - The owner changes his or her address.
  - The owner transfers all or any part of his or her interest in the vessel.
  - The vessel is destroyed or abandoned.
- **Documented Vessels:** Larger recreational vessels owned by U.S. citizens may (at the option of the owner) be documented by the U.S. Coast Guard. Call the USCG at **1-800-799-8362** for more information. Documented vessels also must be registered in Wisconsin.
  - The expiration decals must be displayed on either side of the vessel's name on the transom, but it is not required to display the registration number.
  - If the expiration decals are not displayed beside the vessel's name, then the registration number and decals must be displayed as they are for undocumented vessels.

Hull Identification Number

- The Hull Identification Number (HIN) is a unique, 12-digit number assigned by the manufacturer to vessels built after 1972.
- Hull Identification Numbers:
  - Distinguish one vessel from another.
  - Are engraved in the fiberglass or on a metal plate permanently attached to the transom.



- You should write down your HIN and put it in a place separate from your vessel in case warranty problems arise or your vessel is stolen.
- If a vessel has no HIN, or if the manufacturer's HIN has been removed, obliterated, or altered, the condition must be noted in the application for Certificate of Title and the DNR will assign a HIN to the vessel.

Who May Operate

- It is illegal for a parent or guardian to allow a child to operate in violation of the requirements below.
- Individuals who are required to complete a boater safety course before operating a vessel must carry the course certificate on board.

Motorboats (Other Than a Personal Watercraft)

- **A person under the age of 10** may not operate a motorboat.
- **A person 10 or 11 years old** may operate a motorboat *only if* accompanied by a parent, guardian, or a person at least 18 years old who is designated by the parent or guardian.
- **A person born on or after January 1, 1989 *and* ...**
  - **12-15 years old** may operate a motorboat *only if*:
    - Accompanied by a parent, guardian, or a person at least 18 years old who is designated by the parent or guardian ***or* ...**
    - He or she has completed a boating safety course that is accepted by the Wisconsin DNR.
  - **16 years old or older** may operate a motorboat *only if* he or she has completed a boating safety course that is accepted by the Wisconsin DNR.

Personal Watercraft (PWC)

- **A person under the age of 12** may not operate a PWC.
- **A person born on or after January 1, 1989 *and* ...**
  - **12-15 years old** may operate a PWC *only if* he or she has completed a boating safety course that is accepted by the Wisconsin DNR. (Parental supervision is not a substitute for a boating safety course certificate as with other motorboats.)
  - **16 years old or older** may operate a PWC *only if* he or she has completed a boating safety course that is accepted by the Wisconsin Department of Natural Resources.
- **A person under 16 years old** may not rent or lease a PWC.

Local Regulations

Many local waterways in Wisconsin have specific equipment requirements, operational restrictions, and restrictions on certain activities in addition to those covered in this handbook. Be sure to check with the local boat patrol or municipality for additional regulations before you go boating.

Enforcement

Wisconsin conservation wardens, county sheriffs, and municipal police enforce the boating laws of Wisconsin. U.S. Coast Guard officers also patrol and have enforcement authority on federally controlled waters.

- Officers have the authority to stop and board your vessel in order to check for compliance with state and federal laws.
- It is illegal to refuse to follow the directive of a person with law enforcement authority.
  - A vessel operator who has received a visual or audible signal from a patrol boat must reduce speed to "slow, no wake" speed and give way to the patrol boat.
  - A vessel operator must stop when requested or signaled to do so by a law enforcement officer or a patrol boat.

Required Equipment

When preparing to go out, the operator must check that the legally required equipment is on board.

Personal Flotation Devices (PFDs)

- All vessels must have at least one Type I, II, III, or V PFD (life jacket) for each person on board.
- In addition to the requirement for life jackets, one Type IV U.S. Coast Guard–approved PFD must be on board vessels 16 feet or longer (except canoes and kayaks) and immediately available.
- Federal law requires children under the age of 13 to *wear* a USCG–approved PFD while underway in an open vessel on federally controlled waters.
- Sailboarders and windsurfers are exempt from PFD requirements but are encouraged to wear a PFD.
- Every person on board a personal watercraft must *wear* a USCG–approved Type I, II, III, or V PFD.
- Besides being USCG–approved, all PFDs must be:
  - *In good and serviceable condition.*
  - *Readily accessible,* which means you are able to put the PFD on quickly in an emergency.
  - *Of the proper size for the intended wearer.* Sizing for PFDs is based on body weight and chest size.

TYPE I: Offshore Life Jackets
These vests are geared for rough or remote waters, provide the most buoyancy, and will turn most unconscious persons face up.

TYPE II: Near-Shore Vests
These vests are good for calm waters and may not turn some unconscious wearers face up.

TYPE III: Flotation Aids
These vests or full-sleeved jackets are good for calm waters and will not turn most unconscious persons face up.

TYPE IV: Throwable Devices
These cushions and ring buoys are designed to be thrown to someone in trouble and are not designed to be worn.

TYPE V: Special-Use Devices
To be acceptable, these PFDs must be worn whenever the vessel is underway.

Sound-Producing Devices

In periods of reduced visibility or whenever a vessel operator needs to signal his or her intentions or position, a sound-producing device is essential.

- Although not required on state waters, sound-producing devices are required on federally controlled waters. The requirements are:
  - Vessels less than 65.6 feet in length, which includes PWCs, are required to carry on board a whistle or horn or some other means to make an efficient sound signal audible for at least one-half mile.
  - Vessels that are 65.6 feet or more in length are required to carry on board a whistle or horn, *and* a bell that are audible for at least one mile.
- No vessel may be equipped with a siren, except vessels used by law enforcement officers.

Fire Extinguishers

- All vessels are required to have a Type B fire extinguisher(s) on board if one or more of the following conditions exist:
  - Inboard/outboard or inboard engine
  - Closed compartments
  - Closed living spaces
  - Closed storage compartments in which flammable or combustible materials may be stored
  - Permanently installed fuel tanks
- Approved types of fire extinguishers are identified by the following marking on the label—"Marine Type USCG Approved"—followed by the type and size symbols and the approval number.

Fire Extinguisher Requirements

Classification type & size	Foam minimum gallons	Carbon Dioxide minimum pounds	Dry Chemical minimum pounds
B-I	1¼	4	2
B-II	2½	15	10

Length of Vessel	Without Fixed System	With Fixed System*
Less than 26 ft.	one B-I	None
26 ft. to less than 40 ft.	two B-I ***or*** one B-II	one B-I
40 ft. to less than 65 ft.	three B-I ***or*** one B-II and one B-I	two B-I ***or*** one B-II

** refers to a permanently installed fire extinguisher system*

Navigation Lights

The required navigation lights must be displayed between sunset and sunrise and during periods of restricted visibility.

Power-Driven Vessels When Underway

If less than 65.6 feet long, these vessels must exhibit the lights as shown in illustration 1. Remember, power-driven vessels include sailboats operating under engine power. The required lights are:

- Red and green sidelights visible from a distance of at least two miles away—or if less than 39.4 feet long, at least one mile away—on a dark, clear night.
- An all-round white light or both a masthead light and a sternlight. These lights must be visible from a distance of at least two miles away on a dark, clear night. The all-round white light (or the masthead light) must be at least 3.3 feet higher than the sidelights.

Unpowered Vessels When Underway

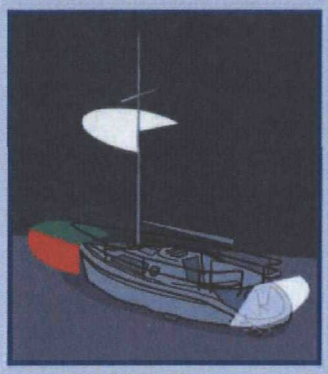
Unpowered vessels are sailboats or vessels that are paddled, poled, or rowed.

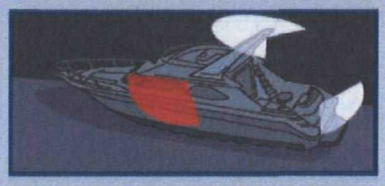
- **If less than 65.6 feet long**, these vessels must exhibit the lights as shown in illustration 2. The required lights are:
  - Red and green sidelights visible from at least two miles away—or if less than 39.4 feet long, at least one mile away.
  - A sternlight visible from at least two miles away.
- **If less than 23.0 feet long**, these vessels should:
  - If practical, exhibit the same lights as required for unpowered vessels less than 65.6 feet in length.
  - If not practical, have on hand at least one lantern or flashlight shining a white light as in illustration 3.

All Vessels When Not Underway

All vessels are required to display a white light visible in all directions whenever they are moored or anchored outside a designated mooring area between sunset and sunrise.

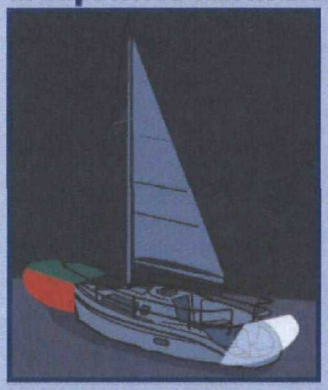
1. Power-Driven Vessels Less Than 65.6 Feet

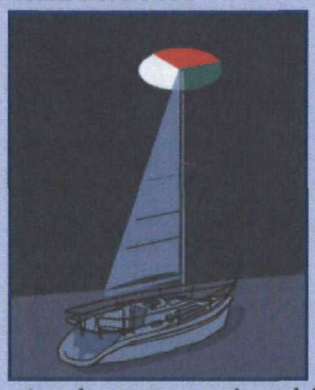




The masthead light and sternlight may be combined as an all-round white light on vessels less than 39.4 feet long.

2. Unpowered Vessels Less Than 65.6 Feet





An alternative to the sidelights and sternlight is a combination red, green, and white light, which must be exhibited near the top of the mast.

3. Unpowered Vessels Less Than 23.0 Feet

Vessel operators should never leave shore without a flashlight. Even if you plan to return before dark, unforeseen developments might delay your return past nightfall.

Boat Battery

It is unlawful to operate a motorized vessel equipped with a storage battery unless the battery is secured against shifting. The battery must be equipped with nonconductive terminal shields to prevent accidental shorting. Both positive and negative terminals must be covered. A covered battery box with a strap is best.

Ventilation Systems

The purpose of ventilation systems is to avoid explosions by removing flammable gases.

- All gasoline-powered vessels, constructed in a way that would entrap fumes, must have at least two ventilation ducts fitted with cowls to remove the fumes.
- If your vessel is equipped with a power ventilation system, turn it on for at least four minutes after fueling and before starting your engine.
- If your vessel is not equipped with a power ventilation system (for example, a personal watercraft), open the engine compartment and sniff for gasoline fumes before starting the engine.

Backfire Flame Arrestors

Backfire flame arrestors are designed to prevent the ignition of gasoline vapors in case the engine backfires.

- All powerboats (except outboards) that are fueled with gasoline must have an approved backfire flame arrestor on each carburetor.
- Backfire flame arrestors must be:
  - In good and serviceable condition ***and*** ...
  - U.S. Coast Guard–approved (must comply with SAE J-1928 or UL 1111 standards).
- Periodically clean the flame arrestor and check for damage.

Mufflers and Noise Level Limits

- The exhaust of every internal combustion engine on any vessel must be effectively muffled. That is, the engine's exhaust must be muffled or suppressed at all times so as not to create excessive noise.
- It is unlawful to operate a vessel that exceeds a noise level of 86 dBA.

Visual Distress Signals (VDSs)

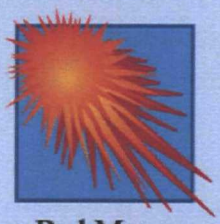
Visual Distress Signals (VDSs) allow vessel operators to signal for help in the event of an emergency.

- Vessels on federally controlled waters must be equipped with visual distress signals.
- An operator who observes another vessel or operator displaying one of these distress symbols must stop and render aid. It is prohibited to display visual distress signals unless assistance is needed.

VDSs are classified as day signals (visible in bright sunlight), night signals (visible at night), or both day and night signals. VDSs are either pyrotechnic (smoke and flames) or non-pyrotechnic (non-combustible).

Pyrotechnic Visual Distress Signals

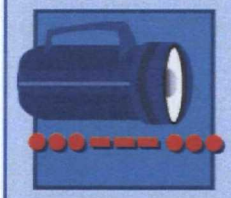
Orange Smoke
Day Signal



Red Meteor
Day and Night Signal

Red Flare
Day and Night Signal

Non-Pyrotechnic Visual Distress Signals



Electric Light
Night Signal

Orange Flag
Day Signal

Arm Signal
Although this signal does not meet VDS equipment requirements, wave your arms to summon help if you do not have other distress signals on board.

Federally Controlled Waters

Vessels must observe federal requirements on these waters:

- Coastal waters
- The Great Lakes (including Lake Michigan and Lake Superior)
- Territorial seas
- Waters which are two miles wide or wider and are connected directly to one of the above

On the Water

In addition to the laws mentioned previously, here are some other Wisconsin regulations that apply when vessel operators are on the water.

Unlawful Operation

Wisconsin law states that these dangerous operating practices are illegal.

- **Negligent or Reckless Operation** of a vessel or the reckless manipulation of water skis, a surfboard, or a similar device is operating in a manner that causes danger to the life, limb, or property of any person. Examples of negligent or reckless operation are:
  - Jumping the wake of any vessel that is towing a skier, tuber, wakeboarder, etc.
  - Operating a vessel within any area marked off or set aside as a prohibited area or a swim area
  - Weaving your vessel through congested waterway traffic
  - Operating a vessel in a manner to create hazardous wave or wake conditions while approaching or passing another boat
  - Steering toward another object or person in the water and swerving at the last possible moment in order to avoid collision
  - Chasing, harassing, or disturbing wildlife with your vessel
- **Riding on Bow or Gunwales** is allowing passengers to ride on the bow decking, gunwales, seat backs, or any other position where there is a danger of falling overboard.

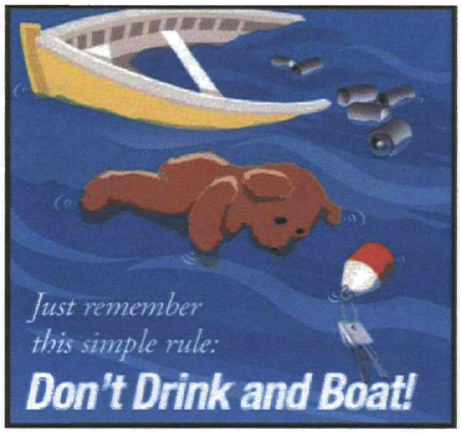
- **Overloading** is defined as operating a vessel that has been loaded beyond the recommended capacity shown on the capacity plate installed by the vessel manufacturer. The operator must limit the vessel's load to the total weight or maximum number of persons shown on the capacity plate, whichever is more restrictive.
- **Improper Speed or Distance** is not maintaining a proper speed and/or distance while operating a vessel. Specifically, it is illegal to:
  - Operate a vessel at a distance from other vessels or at a speed that exceeds safe and reasonable limits given the waterway traffic, marked speed limits, weather, and other boating conditions
  - Exceed the speeds posted or charted in any specific zone or area
  - Operate a vessel repeatedly in a circuitous manner within 200 feet of another vessel or person in the water
  - Operate a vessel within 100 feet of any dock, raft, pier, or restricted area at greater than "slow, no wake" speed
  - Operate a vessel at greater than "slow, no wake" speed on lakes that are 50 acres or less and have public access, unless such lakes serve as thoroughfares between two or more navigable lakes

> **"No Wake Speed"** means a speed at which a vessel moves as slowly as possible while still maintaining steerage control

  - Operate within 100 feet of a swimmer
- **Unsafe Condition** is placing or leaving in public waters any vessel that is not safe to operate. Law enforcement officers may instruct the operator to take immediate corrective action or return to mooring if any of the following "unsafe conditions" exist
  - The vessel is overloaded.
  - There are insufficient personal flotation devices, fire extinguishers, backfire flame arrestors, ventilation or navigation lights.
  - The vessel is leaking fuel or has fuel in the bilges.

Alcohol and Drugs

Wisconsin law prohibits operating a motorboat or manipulating water skis or similar devices while under the influence of alcohol or drugs. Alcohol and drugs cause impaired balance, blurred vision, poor coordination, impaired judgment and slow reaction time.



- Anyone who operates or attempts to operate a vessel is deemed to have given consent to an alcohol and/or drug test.
- It is illegal for a person to operate a motorboat or use water skis, a surfboard, or other device if he or she:
  - Is under the influence of an intoxicant or a controlled substance ***or ...***
  - Has a blood alcohol concentration of 0.08% or greater.

Obstructing Navigation

It is illegal to:

- Operate any vessel in such a way that it will interfere unnecessarily with the safe navigation of other vessels.
- Anchor a vessel in the traveled portion of a river or channel that will prevent or interfere with any other vessel passing through the same area.
- Moor or attach a vessel to a buoy (other than a mooring buoy), beacon, light, or any other navigational aid placed on public waters by proper authorities.
- Move, displace, tamper with, damage, or destroy any navigational aid.
- Obstruct a pier, wharf, boat ramp, or access to any facility.

Homeland Security Restrictions

- Violators of the restrictions below can expect a quick and severe response.
  - Do not approach within 100 yards and slow to minimum speed within 500 yards of any U.S. Naval vessel. If you need to pass within 100 yards of a U.S. Naval vessel for safe passage, you must contact the U.S. Naval vessel or the U.S. Coast Guard escort vessel on VHF-FM channel 16.
  - Observe and avoid all security zones. Avoid commercial port operation areas, especially those that involve military, cruise-line, or petroleum facilities.
  - Observe and avoid other restricted areas near dams, power plants, etc.
  - Do not stop or anchor beneath bridges or in the channel.
- Keep a sharp eye out for anything that looks peculiar or out of the ordinary. Report all activities that seem suspicious to the local authorities, the U.S. Coast Guard, or the port or marina security.

Boating Accidents

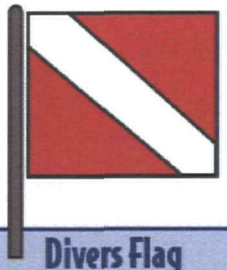
- An operator involved in a boating accident must:
  - Stop his or her vessel *immediately* at the scene of the accident ***and ...***
  - Assist anyone injured or in danger from the accident, unless doing so would seriously endanger his or her own vessel or passengers ***and ...***
  - Give, in writing, his or her name, address, and vessel identification to anyone injured and to the owner of any property damaged by the accident.
- A vessel operator is required to make an oral and written report whenever a boating accident results in:
  - Loss of life or disappearance of a person ***or ...***
  - Injury to any person ***or ...***
  - Property damage in excess of $2,000.
- Oral reports must be made immediately to a DNR conservation warden or a local law enforcement officer.
- A written report must be submitted within 10 days on a DNR *Form 4100-20* to DNR-Boat Safety, Box 7921, Madison, WI 52707.

Diving Activities

Diver-Down Flag

Persons scuba diving, skin diving, snorkeling, or underwater spearfishing must display a diver-down flag unless within 150 feet of shore.

- A diver must stay within 150 feet of the flag. Unless there is an emergency, a diver may not surface more than 50 feet from the flag. It is unlawful to display a diver-down flag when not diving.
- Vessels not engaged in diving operations must stay at least 100 feet from any displayed diver down flag. The diver down flags are:



Divers Flag

A rectangular red flag, at least 12 x 15 inches with a three-inch white diagonal stripe, mounted on a float or buoy to be clearly visible

A blue and white International Code Flag A (or Alfa flag), usually flown from a vessel and used on federally controlled waters

Diving Wisconsin's Historic Shipwrecks

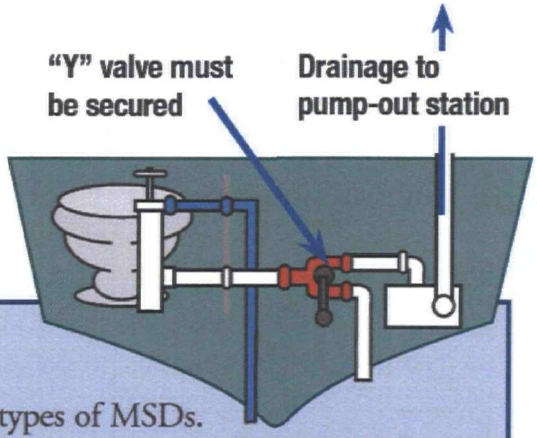
The Wisconsin Historical Society has published information about many historic shipwreck sites in Wisconsin waters, some of which are marked by seasonal mooring buoys. Damaging or removing material from a wreck site not only diminishes the enjoyment for future visitors, it is also a crime that can result in fines, imprisonment, and the loss of a diver's gear, boat, trailer, and vehicle.

Discharge of Waste

It is unlawful to place, leave, or discharge waste or waste containers into or near any Wisconsin waters.

- Every vessel with an installed toilet must have an operable marine sanitation device (MSD).
- All installed marine sanitation devices must be U.S. Coast Guard–certified and working properly.

Typical Marine Sanitation Device



Types of MSDs

There are three types of MSDs.

- Types I and II MSDs are usually found on large vessels. Waste is treated with special chemicals to kill bacteria before the waste is discharged. Types I and II MSDs with "Y" valves that would direct the waste overboard must be secured so that the valve cannot be opened. This can be done by placing a lock or non-reusable seal on the "Y" valve or by taking the handle off the "Y" valve in a closed position.
- Type III MSDs provide no treatment and are either holding tanks or portable toilets. Collected waste should be taken ashore and disposed of in a pump-out station or onshore toilet.

Discharge of Trash

It is illegal to dump refuse, garbage, or plastics into any state or federally controlled waters.

- You must store trash in a container while on board and place it in a proper receptacle on shore.
- If boating on federally controlled waters and your vessel is 26 feet or longer, you must display a Garbage Disposal Placard that is at least 4 x 9 inches and notifies passengers and crew about discharge restrictions.

Discharge of Oil and Other Hazardous Substances

- You are not allowed to discharge oil or hazardous substances into the water.
- You are not allowed to dump oil into the bilge of the vessel without means for proper disposal.

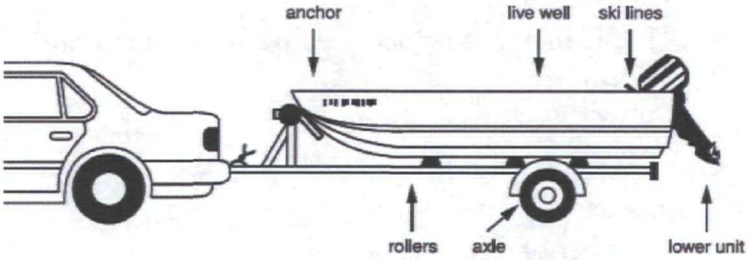
If your vessel discharges oil or hazardous substances into the water, immediately call the U.S. Coast Guard at **1-800-424-8802.**

- You must dispose of oil waste at an approved reception facility. On recreational vessels, a bucket or bailer is adequate for temporary storage prior to disposing of the oil waste at an approved facility.
- If boating on federally controlled waters and your vessel is 26 feet or longer, you must display a 5 x 8-inch placard made of durable material, fixed in a conspicuous place in the machinery spaces or at the bilge pump control station, stating the Federal Water Pollution Control Act's law.

Aquatic Nuisance Species

Introducing non-native species into Wisconsin waters can upset the balance of the ecosystem. Aquatic nuisance species, such as zebra mussels, Eurasian milfoil, and hydrilla, are most often spread between waterways by hitching a ride on vessels and trailers. When transplanted into new waters, these organisms proliferate, displacing native species and damaging the water resource.

- Wisconsin law prohibits launching a vessel, a trailer, or any boating equipment if there are any aquatic plants or zebra mussels attached.
- To help prevent spreading aquatic nuisance species:
  - Inspect your vessel and trailer, and remove any plants and animals you see before leaving the area. Be sure to check the locations labeled below.



  - Drain water from your outboard or lower unit, live well, and bilge on land before leaving the area.
  - Dispose of your bait properly on land. Never release live bait into a body of water or release aquatic animals from one body of water into another.
  - Destroy any remaining nuisance species by:
    - Rinsing your vessel and equipment with hot water (at least 104° Fahrenheit) especially if moored for more than a day ***or ...***
    - Air drying your vessel and equipment for at least five days.
  - If you think you have found a zebra mussel, save it and contact your nearest Wisconsin Department of Natural Resources office.

For more information on aquatic nuisance species found in Wisconsin, visit **http://dnr.wi.gov/invasives/**

Specifically for PWCs

PWC operators must obey laws that apply to other vessels as well as obey additional requirements that apply specifically to the operation of personal watercraft.

Requirements Specific to PWCs

- Every person on board a PWC must *wear* a U.S. Coast Guard–approved Type I, II, III, or V PFD.
- If the PWC is equipped with a lanyard-type ignition safety switch, the lanyard must be attached to the person, clothing, or PFD of the operator.
- A PWC may not be operated between sunset and sunrise.
- A PWC operator must always face forward.
- A PWC may not be operated faster than "slow, no wake speed" within:
  - 100 feet of any other vessel
  - 100 feet of a dock, pier, raft, or restricted area
  - 200 feet of shore on any lake
- There are minimum age and boater education requirements for operators of PWCs. See page 8.
- A PWC must be operated in a responsible manner. Maneuvers that endanger people or property are prohibited, including:
  - Jumping a wake with a PWC within 100 feet of another vessel
  - Operating within 100 feet of a vessel that is towing a skier, tuber, or wakeboarder, or operating within 100 feet of the tow rope or person being towed
  - Weaving a PWC through congested waterway traffic
  - Steering toward another object or person in the water and swerving at the last possible moment in order to avoid collision
  - Chasing, harassing, or disturbing wildlife with a PWC

Specifically for Skiing

Vessel operators towing a person(s) on water skis, a surfboard, or any other device have additional laws.

Requirements for Towing Skiers

- A person may not be towed behind a vessel between sunset and sunrise.
- When a vessel is towing a person on water skis, a surfboard, or other device, the operator must have a competent person on board to act as an observer.
- A PWC operator may not tow a person on water skis or other devices unless the PWC is designed and recommended by the manufacturer to accommodate at least three people.
- Those towing skiers on water skis, a surfboard, or similar devices and those being towed must act in a safe and prudent manner.
  - Vessels towing persons may not come within 100 feet of other vessels, persons in the water, a swimming area, or a public boat landing.
  - Persons being towed behind a vessel on water skis, a surfboard, or other device, or their towing rope, may not come within 100 feet of a PWC.

Avoid Propeller Strike Injuries!

Most propeller strike accidents result from operator error. Victims include swimmers, scuba divers, fallen water-skiers, and boat operators or passengers. Most propeller accidents can be prevented by following basic safe boating practices.

- Maintain a proper lookout. The primary cause of propeller strike accidents is operator inattention.
- Make sure the engine is off so that the propeller is not rotating when passengers are boarding or leaving a boat.
- Never start a boat with the engine in gear.
- Slow down when approaching congested areas and anchorages. In congested areas, always be alert for swimmers and divers.

Before Going Out

Before going out on the water, take steps to make the outing safe and enjoyable.

Vessel Capacity

- Always check the capacity plate, which is usually found near the operator's position or on the vessel's transom. This plate indicates the maximum weight capacity and maximum number of people that the vessel can carry safely.

- PWCs and some other vessels are not required to have a capacity plate. Follow the recommended capacity in the owner's manual and on the manufacturer's warning decal.

Trailering Your Vessel Safely

- **Before leaving home:**
  - Secure and evenly distribute all gear in the vessel.
  - Properly secure the vessel with tie-down straps.
  - Tilt and secure the engine to increase clearance.
  - Crisscross the safety chains when attaching them.
  - Test the trailer brakes and lights.
- **Launching your vessel from a trailer:**
  - Prepare your vessel well away from the boat ramp.
  - Back the vessel into the water until the engine's lower unit can be submerged while on the trailer.
  - Warm up the engine. Back the trailer further until the vessel floats, and back slowly off the trailer.
- **Retrieving your vessel:**
  - Back the trailer into the water so that two-thirds of the rollers or bunks are submerged.
  - Move the vessel onto the trailer far enough to attach the winch line to the bow eye of the vessel. Finish pulling it onto the trailer by cranking the winch.
  - Tow the vessel off the ramp out of the way of others. While at the ramp area, remove all weeds from the vessel, remove the drain plug, and drain live wells.

On the Water

Safe navigation on Wisconsin waterways is everyone's responsibility. All operators are equally responsible for taking action necessary to avoid collisions.

Navigation Rules

There are two terms that help explain these rules.

- **Stand-on vessel:** The vessel that should maintain its course and speed
- **Give-way vessel:** The vessel that must take early and substantial action to avoid collision by stopping, slowing down, or changing course

Meeting Head-On

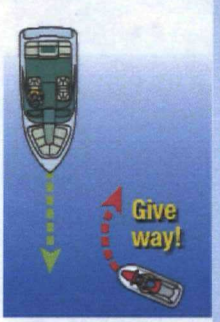
Power vs. Power: Neither vessel is the stand-on vessel. Both vessels should keep to their right.
Power vs. Sail: The powerboat is the give-way vessel.

Power vs. Power

Power vs. Sail

Crossing Situations

Power vs. Power: The vessel on the left is the give-way vessel. The vessel on the right is the stand-on vessel.
Power vs. Sail: The powerboat is the give-way vessel.



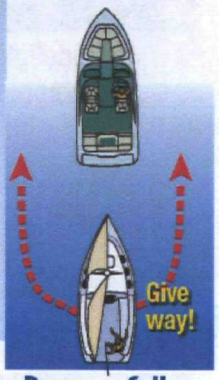
Power vs. Power

Power vs. Sail

Overtaking

Power vs. Power: The vessel that is overtaking another vessel is the give-way vessel.
Power vs. Sail: The vessel that is overtaking another vessel is the give-way vessel.

Power vs. Power



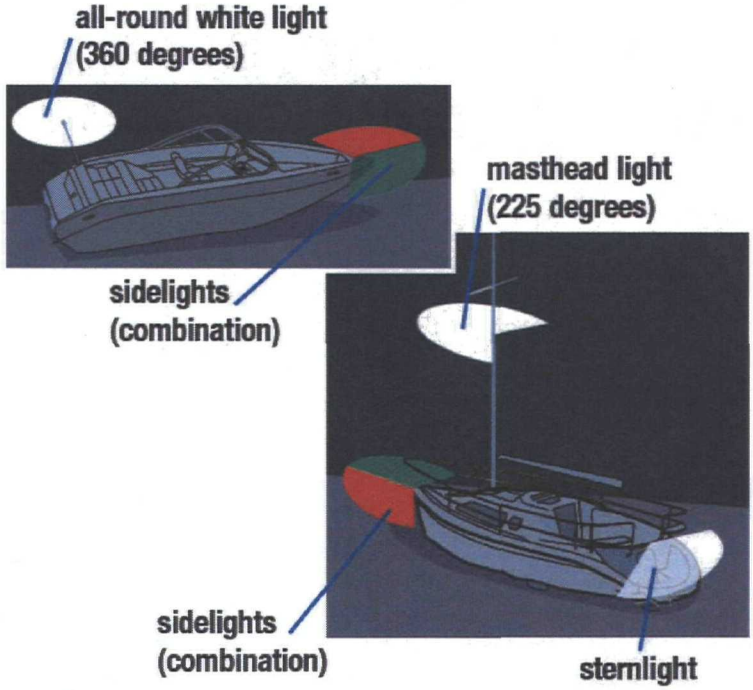
Power vs. Sail

Note: Powered vessels and sailing vessels should give way to unpowered vessels.

Nighttime Navigation

Be on the lookout for the lights of other vessels when boating at night. Several types of lights serve as navigational aids at night. There are four common navigation lights.

- **Sidelights:** These red and green lights are called sidelights (also called combination lights) because they are visible to another vessel approaching from the side or head-on. The red light indicates a vessel's port (left) side; the green indicates a vessel's starboard (right) side.
- **Sternlight:** This white light is seen from behind the vessel.
- **Masthead Light:** This white light shines forward and to both sides and is required on all power-driven vessels. A masthead light must be displayed by all vessels when under engine power. The absence of this light indicates a sailboat under sail.
- **All-Round White Light:** On power-driven vessels less than 39.4 feet in length, this light may be used to combine a masthead light and sternlight into a single white light that can be seen by other vessels from any direction. This light serves as an anchor light when sidelights are extinguished.



Encountering Vessels at Night

When you see a white and a green light, you are the stand-on vessel. However, remain alert in case the other vessel operator does not see you or does not know the navigation rules.

When you see only a white light, you are overtaking another vessel. It is the stand-on vessel whether it is underway or anchored. You may go around it on either side.

When you see a red and a white light, you must give way to the other vessel! Slow down and allow the vessel to pass, or pass to the right behind the vessel.

Encountering a Sailboat at Night

When you see **only a green light or only a red light,** you are approaching a sailboat under sail and you must give way. The sailboat under sail is always the stand-on vessel unless it is overtaking another vessel.

Non-Lateral Markers

Non-lateral markers are navigational aids that give information other than the edges of safe water areas. The most common are regulatory markers which are white and use orange markings and black lettering. These markers are found on lakes and rivers.

Information

Squares indicate where to find food, supplies, repairs, etc. and give directions and other information.

Controlled

Circles indicate a controlled area such as speed limit, no fishing or anchoring, ski only or no skiing, or "slow, no wake."

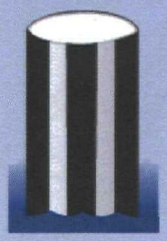
Exclusion

Crossed diamonds indicate areas off-limits to all vessels such as swimming areas, dams, and spillways.

Danger

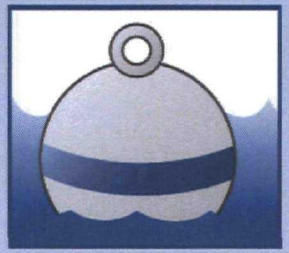
Diamonds warn of dangers such as rocks, shoals, construction, dams, or stumps. Always proceed with caution.

Other Non-Lateral Markers



Inland Waters Obstruction Markers are white with black vertical stripes and indicate an obstruction to navigation. You should not pass between these buoys and the nearest shore.

Mooring Buoys are white with a blue horizontal band and are found in marinas and other areas where vessels are allowed to anchor.



Boating Emergencies

A safe boater knows how to prevent and respond to boating emergencies.

Falling Overboard

- **To prevent persons from falling overboard:**
  - Don't sit on the gunwale, bow, seat backs, motor cover, or any other area not designed for seating.
  - Don't sit on pedestal seats when underway at greater than idle speed.
  - On fishing boats with carpeted decks (such as bass boats), don't sit or stand on the deck when the boat is moving faster than idle speed.
  - Don't stand up in or lean out from the boat.
  - Don't move about the boat when underway.
- **If someone on your boat falls overboard:**
  - Reduce speed and toss the victim a throwable PFD.
  - Turn your boat around and slowly pull alongside the victim, approaching the victim from downwind or into the current, whichever is stronger.
  - Turn off the engine. Pull the victim on board over the stern, keeping the weight in the boat balanced.

Capsizing or Swamping

- **To reduce the risk of capsizing or swamping:**
  - Don't overload your boat. Balance the load.
  - Slow your boat appropriately when turning.
  - Secure the anchor line to the bow, never to the stern.
  - Don't boat in rough water or in bad weather.
- **If you capsize or swamp your boat, or if you have fallen overboard** and can't get back in:
  - Stay with the boat.
  - Try to reboard or climb onto it in order to get as much of your body out of the cold water as possible.
- **If the boat sinks or floats away,** don't panic.
  - If wearing a PFD, remain calm and await help.
  - If you aren't wearing a PFD, look around for one or for other buoyant items to use as a flotation device.
  - In cold water, float rather than tread.

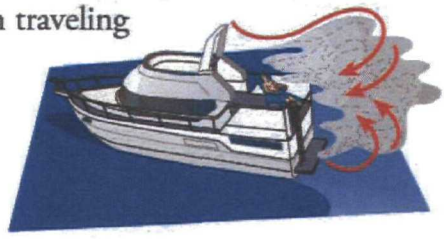
Hypothermia

- **If you are boating in cold water:**
  - Dress in several layers of clothing under your PFD or wear a wetsuit or dry suit.
  - Learn to recognize the symptoms of hypothermia. Symptoms begin with shivering and bluish lips and nails, and progress to a coma and, ultimately, death.
- **To reduce the effects of hypothermia:**
  - Put on a PFD if not wearing one. It helps you to float without excessive movement and insulates your body.
  - Get as much of your body out of the water as possible.
  - Don't take your clothes off unless necessary—clothes can help you float and provide insulation.
  - Don't thrash or move about. Excess motion consumes energy and increases loss of body heat.
  - Draw your knees to your chest and your arms to your sides, protecting the major areas of heat loss.
  - If others are in the water with you, huddle together with your arms around their shoulders.

Carbon Monoxide Poisoning

Carbon monoxide is an invisible, odorless, tasteless gas that can be deadly. To prevent carbon monoxide poisoning, keep air flowing through the boat and take extreme caution when running a generator at a dock or at anchor.

- Whenever people are using a swim platform or are in the water close to the stern, turn off all gasoline-powered generators with transom exhaust ports.
- Swimmers should never enter the cavity between the swim platform and the stern of the boat.
- When boating, be careful running downwind as exhaust gases may blow back on board. On cabin cruisers, be aware that exhaust gases can blow back into the stern when traveling into the wind.



Sunrise and Sunset

Reference Location: Kenosha, Wisconsin

	JAN 08		FEB 08		MAR 08		APR 08		MAY 08		JUN 08		JUL 08		AUG 08		SEP 08		OCT 08		NOV 08		DEC 08	
Day	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
1	7:21	4:28	7:06	5:04	6:26	5:42	6:33	7:18	5:46	7:52	5:16	8:23	5:18	8:33	5:44	8:11	6:17	7:25	6:49	6:32	7:26	5:44	7:02	4:19
2	7:21	4:29	7:05	5:06	6:25	5:43	6:31	7:19	5:44	7:53	5:16	8:24	5:18	8:32	5:45	8:10	6:18	7:23	6:50	6:30	6:27	4:42	7:03	4:19
3	7:21	4:30	7:04	5:07	6:23	5:44	6:29	7:20	5:43	7:54	5:15	8:24	5:19	8:32	5:46	8:08	6:19	7:21	6:51	6:28	6:28	4:41	7:04	4:18
4	7:21	4:31	7:03	5:08	6:21	5:45	6:28	7:21	5:42	7:55	5:15	8:25	5:20	8:32	5:47	8:07	6:20	7:20	6:52	6:27	6:29	4:40	7:05	4:18
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10	7:21	4:37	6:56	5:16	7:11	6:53	6:18	7:28	5:34	8:02	5:13	8:29	5:24	8:30	5:53	7:59	6:26	7:09	6:59	6:17	6:37	4:33	7:11	4:18
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17	7:18	4:45	6:46	5:25	6:59	7:01	6:06	7:36	5:27	8:09	5:13	8:32	5:29	8:25	6:01	7:49	6:34	6:57	7:07	6:05	6:46	4:27	7:16	4:20
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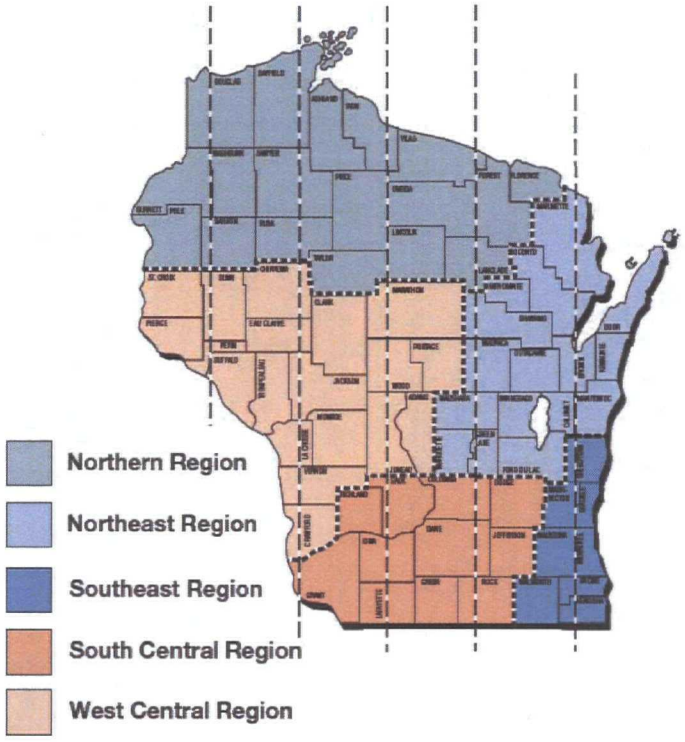
26	7:12	4:57	6:33	5:37	6:43	7:11	5:53	7:46	5:20	8:18	5:15	8:33	5:38	8:17	6:10	7:35	6:44	6:41	7:18	5:52	6:57	4:21	7:20	4:24
27	7:11	4:58	6:31	5:38	6:42	7:12	5:51	7:48	5:19	8:19	5:16	8:33	5:39	8:16	6:11	7:33	6:45	6:39	7:19	5:50	6:58	4:20	7:21	4:25
28	7:10	4:59	6:29	5:39	6:40	7:13	5:50	7:49	5:18	8:20	5:16	8:33	5:40	8:15	6:12	7:32	6:46	6:37	7:21	5:49	6:59	4:20	7:21	4:26
29	7:09	5:00	6:28	5:40	6:38	7:15	5:48	7:50	5:18	8:20	5:17	8:33	5:41	8:14	6:14	7:30	6:47	6:35	7:22	5:48	7:00	4:20	7:21	4:27
30	7:08	5:02			6:36	7:16	5:47	7:51	5:17	8:21	5:17	8:33	5:42	8:13	6:15	7:28	6:48	6:34	7:23	5:46	7:01	4:19	7:21	4:27
31	7:07	5:03			6:35	7:17			5:17	8:22			5:43	8:12	6:16	7:26			7:24	5:45			7:21	4:28

Times for Zone A. See map on next page.

Source: U.S. Naval Observatory, http://aa.usno.navy.mil

Use this map to adjust sunrise/sunset times:

Zone F	Zone E	Zone D	Zone C	Zone B	Zone A
+ 20 min.	+ 16 min.	+ 12 min.	+ 8 min.	+ 4 min.	in table



REGION DNR OFFICE COVERAGE

Boating Safety Instructors and **Boating Ambassadors** are people like you who want to make a difference on the lakes in their community.

A Boating Safety Instructor:

- Is a certified volunteer instructor whose main responsibility is to teach boating safety education classes in their community.
- As the name "volunteer" would imply, the compensation for instructors is in the satisfaction of knowing that what you are doing is important, that your contribution may save lives and positively influence the attitudes and actions of those who share or will share Wisconsin waterways with you.

Are you interested in getting involved with your community? Contact your local Recreational Safety Warden (see back cover for contact information) to learn more about this program.

Wisconsin
Required Equipment Checklist

	Unpowered Boat	PWC	Boat Less Than 16 Ft.	Boat 16 Ft. to Less Than 26 Ft.
Boater Safety Course Certificate On Board		✓1	✓1	✓1
Certificate of Number On Board		✓	✓	✓
Expiration Decals Displayed		✓	✓	✓
PFDs: Type I, II, III, or V	✓	✓2	✓3	✓3
PFD: Type IV				✓
Type B-I Fire Extinguisher		✓	✓	✓
Ignition Safety Switch		✓		
Backfire Flame Arrestor		✓	✓4	✓4
Ventilation System		✓	✓	✓
Muffler		✓	✓	✓
Horn, Whistle, or Bell		✓5	✓5	✓5
Daytime Visual Distress Signals				✓5
Nighttime Visual Distress Signals		N/A	✓5	✓5
Navigation Lights	✓	N/A	✓	✓

Numbers correspond with the chart above.

1. Applicable if born on or after January 1, 1989. See page 8 for details.
2. Those on PWCs must *wear* a PFD at all times.
3. Those under the age of 13 years must *wear* a PFD when on federally controlled waters.
4. Required on inboard and stern drives only.
5. Required when operating on federally controlled waters.

Note: Some items are not applicable to personal watercraft (PWCs) because PWCs are not allowed to operate between sunset and sunrise.

WISCONSIN DEPARTMENT OF NATURAL RESOURCES

Northeast Region
2984 Shawano Ave.
Box 10448
Green Bay, WI 54307
920-662-5100

Northern Region
107 Sutliff Ave.
Box 818
Rhinelander, WI 54501
715-365-8900

Northern Region
810 W. Maple St.
Spooner, WI 54801
715-635-2101

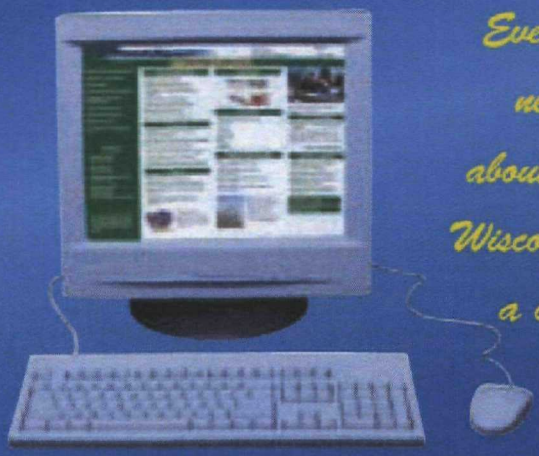
Southeast Region
2300 N. Dr. Martin Luther King Jr. Dr.
Milwaukee, WI 53212
414-263-8500

South Central Region
3911 Fish Hatchery Rd.
Fitchburg, WI 53711
608-275-3266

West Central Region
1300 W. Clairemont Ave.
Box 4001
Eau Claire, WI 54702
715-839-3700

Find out about...

- **online boat license renewal**
- **fishing and hunting permits**
- **places to boat, fish, and hunt**
- **education and outdoor programs**
- **state parks, trails, and campgrounds**



Everything you need to know about boating in Wisconsin is just a click away!

Visit our website:
dnr.wi.gov

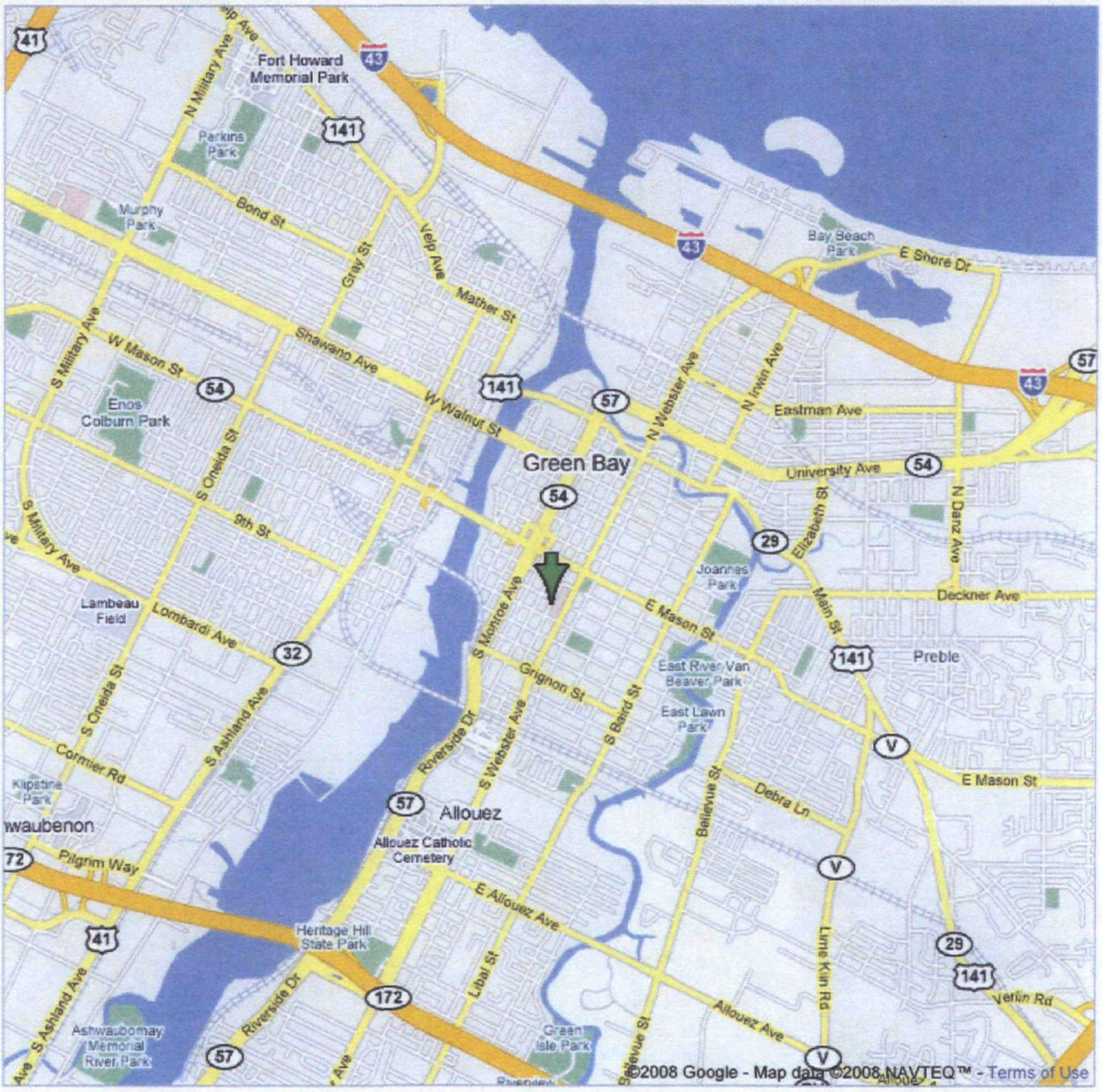
APPENDIX F

HOSPITAL AND WORKCARE FACILITY LOCATION MAPS

Google Maps

Address **835 S Van Buren St**
Green Bay, WI 54301

Notes Saint Vincent Hospital
Green Bay, WI
Phone (920) 433-0111



Google Maps

Address **744 S Webster Ave**
Green Bay, WI 54301

Notes Bellin Hospital
Green Bay, WI
Phone (920) 433-3500