USACE Huntington District
Huntington, West Virginia

FINAL REPORT

SITE-SPECIFIC SAFETY AND HEALTH PLAN
Operation and Maintenance for Groundwater Monitoring Wells Plum Brook Ordnance Works Sandusky, Ohio

USACE Contract No. W91237-08-T-0041

Stillwater Environmental Services, Inc.
May 2008

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Prepared for

USACE Huntington District
502 Eighth Street
Huntington, West Virginia 25701

Prepared by

Stillwater Environmental Services, Inc.
724 South Miami Street
West Milton, Ohio 45383

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SITE-SPECIFIC SAFETY AND HEALTH PLAN
Operation and Maintenance for Groundwater Monitoring Wells

Plum Brook Ordnance Works
Sandusky, Ohio

1.0 INTRODUCTION

The purpose of this site-specific health and safety plan (SSHP) is to establish mandatory safety practices and procedures for work required under USACE Contract No. W91237-08-T-0041, Operation and Maintenance for Groundwater Monitoring Wells and Groundwater Level Measurements at Plum Brook Ordnance Works located in Sandusky, Ohio. Applicability extends to all employees, subcontractors, and visitors. This plan assigns responsibilities and establishes standard operating procedures for field personnel working on this project. During development of this plan, consideration was given to safety standards as defined by the Occupational Safety and Health Administration (OSHA), the National Institute for Occupational Safety and Health (NIOSH), and the USACE Manual (EM 385-l-l, most current revision).

1.1 Safety Policy Enforcement

Field personnel are required to familiarize themselves with this plan so that they may adhere to its safety provisions. The provisions of this site-specific safety policy will be enforced. Failure to comply will be grounds for disciplinary action for employees, and non-compliant visitors will be required to leave the work zone. The Stillwater Environmental Services, Inc. (Stillwater) Site Supervisor has overall responsibility for the project. The Stillwater Supervisor or her designee will oversee all site work.

1.2 Visitors

Stillwater and the USACE point of contact POC for this project plan are not considered visitors. They are considered project personnel have the necessary safety training to enter the specific areas encountered during this project. All others will be considered visitors to the site. All visitors entering the work area at the site will be required to sign in with the Site Safety and Health Officer (SSHO) or the Site Supervisor and review this site specific safety and health plan. All personnel entering the site shall be required to be briefed in accordance with requirements as indicated in EM 385-1-1 Section 28.A.04.b. In the event that a visitor does not adhere to the provisions of this plan, that person will be asked to leave the work area.

2.0 PROJECT DESCRIPTION

2.1 Site History

The former Plum Brook Ordnance Works (PBOW) site is located approximately four (4) miles south of Sandusky, Ohio, near Lake Erie. Nitroaromatic explosives previously

produced at the site included trinitrotoluene (TNT), dinitrotoluene (DNT), and pentolite. Other products used at the site included nitric and sulfuric acids. The plant operated for approximately four years (1941 to 1944), and was decontaminated by the end of 1945.

Possession of the property was transferred to the Ordnance Department in 1946 and then to the War Assets Department and in 1949 to the General Service Administration (GSA). The National Aeronautical and Space Administration (NASA) acquired the property in 1963 and is presently maintaining and utilizing approximately 6,500 of the original 9,009 acres.

In 1956, an agreement was made to lease 500 acres of the north portion of the site to construct and operate the Plum Brook Reactor Facility (PBRF). NASA operated the PBRF from 1963 until 1973 under a license agreement with the Atomic Energy Commission (AEC). NASA currently has a license agreement with the Nuclear Regulatory Commission (NRC) for the safe protective storage of the PBRF. NASA acquired an additional 6,000 acres of the former PBOW on March 15, 1963 for the purpose of conducting various aerospace research activities and continues to use the site today.

2.2 Purpose

The United States Army is currently conducting studies of the environmental impact of suspected hazardous waste sites at properties previously owned by the U.S. Department of Defense (DoD). Between 1997 and 1999, International Consultants was contracted to conduct a Site-Wide Groundwater Investigation at PBOW. Approximately 100 groundwater monitoring wells have been installed during past investigations. These wells are located within the sixteen (16) areas currently under investigation. Approximately 89 of the 100 wells need mowing services and water elevation readings. Additionally, there are 4 wells located off-site that require water level measurements only. No mowing is required on the off-site wells.

2.3 Project Objectives

The project objectives under this Scope of Work (SOW) include mowing of areas for access to groundwater monitoring wells, obtaining water level elevations of the monitoring wells, and well maintenance activities at the former Plum Brook Ordnance Works.

Mowing

The PBOW site contains approximately 100 groundwater monitoring wells, of which approximately 89 require mowing. This contract requires that the areas surrounding the wells be mowed four times during 2008. The mowing is tentatively scheduled for May, June/July, August, and November. Stillwater personnel or their contractor shall perform the mowing activities. In keeping with past efforts, an approximate 10-foot radius around each well shall be mowed to an approximate height of at least four inches. Additionally, a ten foot wide path will be mowed from the nearest cleared road to the well.

All wells are to be cleared with hand tools (weed trimmers), and portable weed cutters (i.e. 30" walk behind brush hog type mowers). All mowing shall be completed by the end of November. All field activities shall be coordinated with the USACE prior to mobilization.

Stillwater will utilize existing access paths, roads, gates, and shall limit mowing activities to the areas specified by the USACE. Stillwater will mow around all guardrail gates that are used for access into the mowing sites. No existing hedgerows, brush, or other vegetation that restricts vehicular traffic shall be cleared, mowed or driven over. Such barriers are to be left undisturbed since they act to control public access.

Stillwater will exercise extreme caution at all areas of the site. Concrete rubble, miscellaneous debris, possible open manholes, exposed tank cradles, hidden stumps, and other physical hazards are present throughout the mowing area. Stillwater will coordinate site access through NASA POC.

Maintenance of Monitoring Wells

Stillwater will perform the monitoring well maintenance. All wells may require some level of maintenance. These activities may involve painting, applying decals (well numbers) on the wells, purchasing and replacing caps, loosening hinges, purchasing and replacing locks on the wells, and so forth. Maintenance efforts shall be performed during the scheduled mowing efforts. Photos will be taken during the November field activities.

Measurement of Monitoring Well Water Elevations

Pursuant to the SOW, Stillwater will obtain the water elevations from the on-site wells (approximately 100) and the four wells located outside the perimeter of the PBOW property. The elevation shall be measured from the black tick mark on top of riser. Information collected and documented as follows:

- Monitoring well number
- Water elevation in feet to the nearest tenth
- List of maintenance activities

The data shall be compiled in Microsoft Excel spreadsheet and provided to the client on a virus-free CD ROM. Water elevations will be taken in May 2008, August 2008, November 2008, and February 2009.

3.0 CONTRACTOR PROJECT ORGANIZATION AND TRAINING

3.1 Project Organization

The collection of quality data and the completion of any given project are strongly affected by the project organization. A project that is properly organized with well-defined personnel responsibilities results in a successful project. A listing of functional areas and qualified personnel are given for this project.

USACE POC - This is the technical point of contact (POC) representing the USACE who will serve as a liaison between the USACE and the contractor.
Lisa Humphreys – Office (304) 399-5953, cell phone number (304) 360-2558

Contractor's Site Supervisor - The supervisor will have overall responsibility for this project. Stillwater Environmental Site Supervisor - Helen Owens
Office (937) 698-5090, cell phone (937) 478-2322

Site Safety and Health Officer (SSHO) – This person is responsible for safety on-site. The Site Supervisor will serve as the SSHO for this project or she will assign the SSHO duties to one of the field personnel.

Field Personnel - These personnel are responsible for assisting the Site Supervisor in completing the tasks required under this contract. One or more of the following personnel will perform work on-site.

Stillwater Environmental Personnel
Andrew Owens – cell phone (937) 694-8128
David Swigart – cell phone (937) 608-5889
Jacob Wilson – cell phone (937) 573-9686

3.2 Training

The Site Supervisor or SSHO has received forty-hour HAZWOPER training and is current on the annual 8-hour refresher training. Due to the non-invasive nature of this project, not all employees will be HAZWOPER Certified. The Site Supervisor will be conducting water level measurements of the groundwater monitoring wells; therefore this individual will be HAZWOPER Certified and current with 8-hour Refresher Training. At least two on-site personnel have received first aid and CPR training. Appendix A contains copies of the training certifications for employees that may work on this project.

Site Specific Training

All field personnel shall receive training and guidance concerning the provisions of this SSHP. Training will specifically address the activities, procedures, monitoring, equipment, and hazard analysis for site operations. This training will allow personnel to ask questions, clarify misunderstandings, and reinforce their previous safety and health training.

Safety Meetings

The Site Supervisor/ SSHO shall brief field personnel prior to daily field operations, and on an as needed basis. The Site Supervisor/SSHO shall hold daily "tailgate" safety meetings. Additional briefings will be performed when work practices change, if site conditions change, or if a deficiency has been found. The SSHO/Site Supervisor conducting the meeting shall record the following information on a Daily Safety Meeting form. A copy of this form is provided in Appendix B. This form, to be filled out daily and signed by the SSHO/Site Supervisor, will include the following:

- Personnel attending the safety meeting shall be recorded
- The date of the safety meeting shall be recorded
- The SSHO/Site Supervisor shall list the topics discussed in the safety meeting
- The SSHO/Site Supervisor shall discuss work conditions and task expected to be completed that day
- The Site Supervisor/SSHO shall record notes and comments concerning the safety meeting
- The Site Supervisor/SSHO shall record any safety-related incidents noticed by field personnel.

4.0 EMERGENCY RESPONSE AND CONTINGENCY PLAN

This section describes contingencies and emergency planning procedures to be implemented at the site. The provisions of this emergency response plan will be reviewed with all field personnel prior to beginning work at the site.

4.1 Pre-Emergency Planning

Field personnel will be briefed concerning emergency response procedures, contingency plans, and lines of authority as well as their role in the plan. The plan will be reviewed and revised, if necessary, on a regular basis by the Site Supervisor. This will ensure that the plan is adequate and consistent with site conditions.

4.2 Personnel Roles and Lines of Authority

The Site Supervisor has the primary responsibility for responding to and correcting emergency situations. This includes taking appropriate measures to ensure the safety of site personnel, visitors, and the public. Possible actions may involve stopping operations and evacuating personnel from the site. The Site Supervisor is additionally responsible for ensuring that corrective measures have been implemented, appropriate authorities notified, and follow-up reports have been completed and filed with appropriate agencies. All personnel are responsible for reporting potential safety hazards and shall assist the Site Supervisor within the scope of their training and knowledge. A SSHO may be on-site or called on to the site to assist the Site Supervisor in dealing with personnel safety issues and/or emergency situations, which exceed the training and/or knowledge of the Site Supervisor.

4.3 Emergency Recognition

Personnel will be familiar with techniques of hazard recognition from pre-assignment training and site-specific briefings. Emergency situations include, but are not limited to, chemical release, fire, serious injury or illness. Conditions that may lead to such events will be identified and preventive measures will be implemented prior to an emergency occurring. The Site Supervisor will brief the personnel concerning the hazard assessment associated with this project.

4.4 Emergency Contacts

In the event of a medical emergency the Site Supervisor will notify the NASA Communication Center at the security check point. NASA personnel are responsible for coordinating emergency removals and traffic in the event of an emergency. Emergency contact numbers will be provided to each team member. Emergency contact numbers are listed below:

Contact Organization Telephone

- NASA Communications Center – (419) 621-3226
- Police - 911
- Ambulance - 911
- Fire - 911
- Hospital Firelands Community Hospital (419) 609-0558
- Poison Control Poison Control Center (800) 642-3625
- Lisa Humphreys USACE (304) 399-5953, *(cell phone) (304)360-2558*
- Robert (Bob) Lallier NASA POC (416) 621-3234

The Firelands Regional Medical Center is located at 911 Decatur Street, Sandusky, Ohio. All field personnel shall become familiar with the route to the hospital. Appendix C contains a map showing the location of the hospital and evacuation routes for this area.

4.5 First Aid Response

At least two members of the field crew on-site have valid first aid and CPR certificates. Each employee attempting to render first aid is performing the service as a Good Samaritan. To minimize contact with body fluids, personnel shall use disposable gloves when rendering first aid and use mouth guards when performing CPR. Pursuant to the requirements of EM 385-1-1 Section 03A.06 the employees designated as responsible for rendering first aid or medical assistance shall be:

- Instructed in the sources, hazards, and avoidance of blood-borne pathogens, and
- Provided, use, and maintain personnel protective equipment (gloves, masks, glasses, and so forth) when appropriate for rendering first aid or other medical assistance to prevent contact with blood or other potentially infectious materials.

The Site Supervisor shall be contacted concerning all emergencies. Victims of medical emergencies will be transported to the hospital by emergency vehicles.

4.6 Fire or Explosion

In the event of a fire or explosion, the local fire department shall be called immediately. The Site Supervisor will advise the NASA Communications Center of the location, nature, and identification of hazardous materials on-site. If the fire is minor and it is safe to do so, site personnel may:

- Use fire-fighting equipment available on-site to control and/or extinguish the fire

- Remove or isolate flammable or other hazardous materials, which may contribute to the fire.

4.7 Accident Reporting

In the event of an accident, employees are responsible for reporting all injuries or illnesses as soon as possible to the SSHO/Site Supervisor. The Site Supervisor/SSHO is responsible for investigating and reporting accident information and maintaining exposure data. The SSHO shall report the findings to management along with a plan to correct whatever deficiency resulted in the accident. Any accident resulting in a serious injury or a fatality must be reported to OSHA within 24 hours and the accident scene shall not be disturbed until it has been released by the investigating authority, except for rescue and emergency measures. The Site Supervisor will notify the POC immediately in the event of an accident or incident and they will file form ENG 3394 with the USACE within 2 working days for all reportable accidents. An ENG 3394 will be submitted any time there is an occupational illness/injury resulting in lost work days, a fatality, permanent disability, or 3 or more persons are hospitalized. Also, a copy of ENG Form 3394 will be completed for property damage of $2,000.00 or more. A copy of form ENG 3394 is located in Appendix B.

4.8 Emergency Equipment

The SSHO will check emergency equipment daily. The following emergency equipment shall be used on-site:

- Fire Extinguishers
- 16-unit first aid kit
- Eye wash bottle
- Cellular phone

5.0 SAFETY PROCEDURES/PPE PROGRAM

5.1 Personal Protective Equipment (PPE)

Personnel will wear protective equipment meeting appropriate American National Standards Institute (ANSI) requirements when their activities involve known or suspected contaminated materials. Level D PPE will be used for all site activities. Based upon the nature of the project activities, it is not anticipated that an upgrade of PPE will be necessary.

Level D PPE will consist of:

- Steel toe safety shoes
- Safety glasses with side shields
- Chemical resistant gloves when checking monitoring well elevations and leather gloves are required for well maintenance and mowing activities
- Hard hat
- Sleeved shirt and long trousers
- Hearing protection (for use when weed trimmers and mowers)

Appendix B contains a sample PPE inspection form. These inspection forms will be included in the daily safety inspection logs.

5.2 Safety Equipment

At a minimum, a waterproof 16-unit first aid kit shall be available on-site in the work zone. There shall be at minimum two fire extinguishers, a portable eyewash station, and personnel decontamination materials located on-site. The Site Supervisor or his designee will perform a daily check to assure that the safety equipment is present and in good working condition. Appendix B contains a copy of the safety equipment checklist to be used.

5.3 Exposure Monitoring

Stillwater does not anticipate a need to perform personnel exposure monitoring for this project.

5.4 Standard Orders for Work Zone

Level D PPE will be utilized for all field activities. General safety procedures to be followed by all field personnel are:

- All workers and visitors entering the work area shall sign that they have read and will comply with the SSHP
- All site workers and visitors shall follow the contents of this SSHP
- All visitors to the site must sign in with the Site Supervisor/SSHO
- Personnel will not be allowed to work on-site during periods of inclement weather that endanger their lives
- Personnel shall not eat, or drink, or smoke while in the work area
- Any unnecessary contact with potentially contaminated substances shall be avoided
- No horseplay
- During activities that present a risk to personnel, the buddy system as described in Section 7.1 will be implemented.

5.5 Illumination

Work will be performed during daylight hours only.

5.6 Sanitation

Potable water will be carried on-site. Water, soap, and towels will be available on-site for personnel hygiene.

6.0 HAZARD/RISK ANALYSIS

6.1 Activity Hazard Analysis

Appendix D presents the activity hazard analysis for the tasks provided under this contract. Awareness of the hazards is intended to prevent the occurrence of exposure or accidents.

6.2 Chemical Hazards

Based upon previous analytical data from the site, the primary chemical hazard associated with this investigation is exposure to nitroaromatic compounds and fuels that will be used for mowing equipment. Specific compounds of concern are gasoline, TNT, DNT, hydrogen sulfide, and pentolite. Pentolite is a mix of TNT with pentaerythritol tetranitrate (PETN). During the water level monitoring activities, there is a potential for exposure to hydrogen sulfide. Additionally, lead is a concern throughout the site.

Overall, exposure to chemicals at the site is expected to be very low due to the relatively non-intrusive nature of the project. Exposure itself to a chemical is not necessarily hazardous. The degree of hazard is a function of the chemical compound's toxicity or action on the body, the rate or intensity of exposure, the duration or time of exposure, and the susceptibility of the person. Therefore, it should be noted that the symptoms a worker may exhibit when exposed to a particular chemical might vary significantly. The extent of contamination and possible concentration range of contaminants that may be encountered is not completely known. All personnel entering the site must be briefed by the SSHO prior to entry to the site. The briefing shall include information concerning the site hazards and egress from the site in case of an emergency.

- Keep work areas clean & well ventilated
- Clean up spills quickly and carefully
- Personnel in the work zone shall not eat, drink, or smoke
- Personnel shall wear personal protective equipment (PPE) as listed in Section 5.1
- Unnecessary contact with potentially contaminated substances shall be avoided
- No horseplay
- No matches or lighters shall be used in the work zone
- During activities that present a risk to personnel, the buddy system will be implemented.

6.3 2,4,6-Trinitrotoluene

TNT presents danger from the formation of methemoglobinemia, which is the oxidation and inactivation of hemoglobin in the blood. Some of the chemical and physical properties of TNT are as follows:

- TNT has a molecular weight of 227.1 g/mol.
- TNT is a colorless to pale yellow, odorless solid
- TNT has a boiling point (it explodes) of 464 °F
- TNT has a vapor pressure of 0.053 mm Hg at 68 °F
- TNT has a solubility of 0.013 grams per 100 grams of water

- TNT is a Class A explosive. Rapid heating may cause an explosion
- TNT may affect the ability of blood to carry oxygen
- TNT is incompatible with strong oxidizers, ammonia, strong alkalies, and combustible materials.

Specific routes of exposure are:
- Skin absorption
- Eye contact
- Ingestion
- Inhalation

Symptoms a worker may exhibit when exposed to TNT include, but are not limited to the following:
- Skin irritation
- Irritation to the eyes, throat, and nose
- Jaundice (yellow coloring of skin, hair, and/or nails)
- Cyanosis (blue or purplish tinge to skin)
- Sneezing
- Coughing
- Sore throat
- Muscular pain
- Weakness
- Drowsiness
- Shortness of breath
- Heart irregularities
- Unconsciousness
- Cataracts

The target organs affected are:
- Skin
- Eyes
- Respiratory system
- Blood
- Cardiovascular system
- Liver
- Kidneys
- Central nervous system

The OSHA permissible exposure limit (PEL) for TNT is 1.5 milligrams per cubic meter (mg/m^3). The OSHA immediately dangerous to life and health (IDLH) limit is 500 mg/m^3.

Emergency First Aid procedures are:
Eye Contact
- Wash eyes immediately with large amounts of water, lifting the lower and upper eye lids occasionally

- Get medical attention immediately
- Contact lenses should not be worn when working with this chemical.

Skin Absorption

- Promptly wash contaminated skin using soap or a mild detergent and water
- If TNT has penetrated through clothing, remove the clothing immediately and wash the skin with soap and water
- Get medical attention immediately.

Inhalation

- Immediately move exposed person to fresh air
- If breathing has stopped, perform artificial respiration
- Keep the affected person warm and at rest
- Get medical attention immediately

Ingestion

- If conscious, give affected person large quantities of water immediately. Induce vomiting after water consumption for conscious persons. *(Do not induce vomiting if affected person loses consciousness.)*
- Get medical attention immediately.

6.4 Dinitrotoluene

Dinitrotoluene presents danger from the formation of methemoglobinemia, which is the oxidation and inactivation of hemoglobin in the blood. Dinitrotoluene has been shown to be a carcinogen and neoplastigens in laboratory experiments with animals. Some of the chemical and physical properties of DNT are as follows:

- DNT has a molecular weight of 182.2 g/mol
- DNT is an orange-yellow crystalline solid.
- DNT has a boiling point of 572 °F.
- DNT has a vapor pressure of 1 mm Hg at 68 °F
- DNT has a solubility of 0.03 grams per 100 grams of water
- DNT is incompatible with strong oxidizers, caustics, and metals such as tin and zinc.

Specific routes of exposure are:

- Skin absorption
- Eye contact
- Ingestion
- Inhalation

Symptoms a worker may exhibit when exposed to DNT include, but are not limited to the following:

- Skin irritation
- Cyanosis
- Irritability
- Drowsiness
- Nausea

- Rapid pulse
- Headache
- Shortness of breath
- Heart irregularities
- Weakness
- Dizziness
- Unconsciousness

The target organs affected are:

- Skin
- Blood
- Cardiovascular system
- Liver
- Reproductive system

The OSHA permissible exposure limit (PEL) for DNT is 2.0 parts per million (ppm). The OSHA immediately dangerous to life and health (IDLH) limit is 200 ppm.

Emergency First Aid procedures are:
Eye Contact

- Wash eyes immediately with large amounts of water, lifting the lower and upper eye lids occasionally.
- Get medical attention immediately
- Contact lenses should not be worn when working with this chemical.

Skin Absorption

- Promptly wash contaminated skin using soap or a mild detergent and water.
- If DNT has penetrated through clothing, remove the clothing immediately and wash the skin with soap and water.
- Get medical attention immediately.

Inhalation

- Immediately move exposed person to fresh air.
- If breathing has stopped, perform artificial respiration.
- Keep the affected person warm and at rest.
- Get medical attention immediately.

Ingestion

- If conscious, give affected person large quantities of water immediately. Induce vomiting after water consumption for conscious persons. *(Do not induce vomiting if affected person loses consciousness.)*
- Get medical attention immediately.

6.5 Pentaerythritol Tetranitrate

Pentaerythritol Tetranitrate presents danger from the formation of methemoglobinemia, which is the oxidation and inactivation of hemoglobin in the blood. Pentaerythritol

Tetranitrate has been shown to be a tetratogen in laboratory experiments with animals. Some of the chemical and physical properties of PETN are as follows:

- PETN has a molecular weight of 316.17 g/mol.
- PETN is a white crystalline solid.
- PETN has a melting point of 138-140 °F and explodes at 205-215 °F.
- PETN is incompatible with strong oxidizers and organic acids.

Specific routes of exposure are:

- Skin absorption
- Eye contact
- Ingestion
- Inhalation

Symptoms a worker may exhibit when exposed to PETN include, but are not limited to the following:

- Decrease in blood pressure
- Skin irritation
- Cyanosis
- Irritability
- Drowsiness
- Nausea
- Sweating
- Headache
- Shortness of breath
- Weakness
- Dizziness
- Unconsciousness

The target organs affected are:

- Skin
- Blood
- Cardiovascular system

Emergency First Aid procedures are:
Eye Contact

- Wash eyes immediately with large amounts of water, lifting the lower and upper eye lids occasionally.
- Get medical attention immediately.
- Contact lenses should not be worn when working with this chemical.

Skin Absorption

- Promptly wash contaminated skin using soap or a mild detergent and water.
- If PETN has penetrated through clothing, remove the clothing immediately and wash the skin with soap and water.
- Get medical attention immediately.

Inhalation

- Immediately move exposed person to fresh air.
- If breathing has stopped, perform artificial respiration.
- Keep the affected person warm and at rest.
- Get medical attention immediately.

Ingestion

• DO NOT induce vomiting. Transport immediately to a medical facility.

6.6 Gasoline

Gasoline will be used to power the mowing equipment. Some of the chemical and physical properties of gasoline are as follows:

- Gasoline has an approximate molecular weight of 72.
- Gasoline is a clear liquid with a characteristic odor.
- Gasoline has a boiling point of 102 °F and a closed cup flash point of -45 °F.
- Gasoline has a vapor pressure of 37-300 mm @ 68 °F.
- Gasoline has an upper explosive limit (UEL) or 7.6% by volume at room temperature.
- Gasoline has a lower explosive limit (LEL) of 1.4% by volume at room temperature.
- Gasoline is incompatible and/or reactive with strong oxidizers.

Specific routes of exposure to gasoline are:

- Inhalation
- Dermal absorption
- Ingestion

Symptoms a worker may exhibit when exposed to gasoline include, but are not limited to the following:

- Eye and skin irritation
- Mucous membrane irritation
- Headache
- Fatigue
- Blurred vision
- Disorientation
- Dizziness
- Slurred speech
- Confusion
- Convulsions

The target organs affected by gasoline are:

- Eyes
- Skin
- Respiratory system
- Central nervous system
- Kidneys
- Liver

A PEL of 300 ppm and a short term exposure limit (STEL) of 500 ppm will be acceptable exposure limits that will be adhered to for this project.

Emergency First Aid procedures are:
Eye Contact

- Wash eyes immediately with large amounts of water, lifting the lower and upper eyelids occasionally.
- Seek medical attention immediately.

Skin Absorption

- Promptly wash contaminated skin using soap or a mild detergent and water.
- Seek medical attention immediately.

Inhalation

- Immediately move exposed person to fresh air.
- If breathing has stopped, perform artificial respiration.
- Keep the affected person warm and at rest.
- Seek medical attention immediately.

Ingestion

- Seek medical attention immediately.

6.7 Hydrogen Sulfide

Hydrogen sulfide is a highly toxic gas. Some of the chemical and physical properties of hydrogen sulfide are as follows:

- Hydrogen sulfide has a molecular weight of 34.08.
- Hydrogen sulfide is a colorless, flammable gas with an offensive odor. The odor is frequently characterized as smelling like rotten eggs. *(NOTE: The sense of smell becomes rapidly deadened and can not be relied upon to warn of the continuous presence of hydrogen sulfide).*
- Hydrogen sulfide has a boiling point of -77°F.
- Hydrogen sulfide has an UEL or 44% and a LEL of 4.0%.
- Hydrogen sulfide is heavier than air and may accumulate in low areas and may travel a considerable distance to an ignition source.
- Hydrogen sulfide is a poison. Exposures of 800-1000 ppm may be fatal in 30 minutes, and higher concentrations can be instantly fatal.

- Hydrogen sulfide is an irritant. Low concentrations of 20-150 ppm causes irritation to the eyes and slightly higher concentrations may cause irritation to the upper respiratory tract.
- Hydrogen sulfide is an asphyxiate. Hydrogen sulfide in very high amounts can paralyze the respiratory system.
- Hydrogen sulfide is a very dangerous fire hazard when exposed to heat, flame, or oxidizers. Also, it is a moderate explosion hazard when exposed to heat or flame.

Specific routes of exposure to hydrogen sulfide are:

- Inhalation
- Absorption through eyes and mucous membrane

Symptoms a worker may exhibit when exposed to hydrogen sulfide include, but are not limited to the following:

- Conjunctivitis (eye irritation)
- Photophobia
- Corneal bullae
- Mucous membrane irritation
- Upper respiratory irritation
- Rhinitis
- Bronchitis
- Pulmonary edema
- Headache
- Dizziness
- Confusion
- Depression (when exposed to small concentrations)
- Excitement (when exposed to large concentrations)
- Irritability
- Gastrointestinal disturbances
- Staggering gait
- Diarrhea
- Dysuria
- Paralysis of the respiratory system
- Coma
- Death

The target organs affected by hydrogen sulfide are:

- Eyes
- Respiratory system
- Central nervous system

OSHA has set an acceptable ceiling concentration limit of 20 ppm and a 10-minute peak concentration of 50 ppm, if no other exposure to hydrogen sulfide has occurred. The IDLH value for hydrogen sulfide is 100 ppm.

Emergency First Aid procedures are:

- Flush contaminated eyes with large amounts of water for at least 15 minutes and seek medical attention. *(Note: The wearing of contact lenses by personnel is strictly prohibited when the potential exists for hydrogen sulfide exposure.)*
- Obtain medical attention immediately for inhalation exposure.

6.8 Lead

Some of the chemical and physical properties of lead are as follows:

- Lead has a molecular weight of 207.2 and a molecular formula of Pb.
- Lead is a heavy, gray solid, which is ductile and soft.
- Lead begins to melt 621 °F.
- Lead is incompatible and/or reactive with strong oxidizers, hydrogen peroxide and acids.

Specific routes of exposure to lead are:

- Inhalation
- Ingestion
- Skin contact

Symptoms a worker may exhibit when exposed to lead include, but are not limited to the following:

- Eye irritation
- Insomnia
- Nausea
- Malnutrition
- Constipation
- Colic
- Anemia
- Tremors
- Abdominal pain
- Hypotension
- Paralysis of wrist and/or ankles
- Pallor
- Gingival lead line
- Encephalopathy

The target organs affected by lead are:

- Eyes
- Gastrointestinal tract
- Central nervous system
- Kidneys
- Blood
- Gingival tissue

Lead can cause diseases of the central and peripheral nervous system, the kidney and the blood. The OSHA PEL is 0.050 mg/m3 or 50 ug/m3.

Emergency First Aid procedures are:
Eye Contact

- Wash eyes immediately with large amounts of water, lifting the lower and upper eye lids occasionally.
- Seek medical attention immediately.
- Contact lenses should not be worn when working with this chemical.

Skin Absorption

- Promptly wash contaminated skin using soap or a mild detergent and water.
- If petroleum products have penetrated through clothing, remove the clothing immediately and wash the skin with soap and water.
- Seek medical attention immediately.

Inhalation

- Immediately move exposed person to fresh air.
- If breathing has stopped, perform artificial respiration.
- Keep the affected person warm and at rest.
- Seek medical attention immediately.

Ingestion

- Seek medical attention immediately.

6.9 Physical Hazards

Field activities performed during the project present inherent dangers from physical hazards such as falls, inclement weather, strains from lifting activities, cold/heat stress, and cuts. Employee training and experience in the use of field equipment and their awareness of potential hazards will reduce risk. In cases where the situation is found to be a potential danger, field workers will cease operations until site entry can be made safely.

Walking and Working Surfaces

Due to the location (forested area) of this project and specific areas where work will be performed, the walking and working surfaces present inherent dangers. Personnel performing mowing and water level measurements will be working in areas of uneven terrain that may be densely vegetated, which present a hazard from slips, trips, and falls. Additionally, the presence of concrete rubble, miscellaneous debris, possible open manholes, exposed tank cradles, and hidden stumps present throughout the area presents walking hazards. Furthermore, the possibility of inclement weather (such as rain and snow) will present obvious walking and working surface hazards. Personnel will adhere to the following safety rules concerning walking and working surfaces:

- Personnel shall wear steel-toed boots.
- Personnel shall ensure that equipment not in use will be put in a place where it will not create a tripping hazard.

- Personnel shall be alert to tripping hazards from vines and other vegetation when performing field activities.
- Personnel shall not climb over debris.
- Personnel shall perform a walk through of an area prior to performing work in the area in order to locate potential tripping hazards.

Lifting Techniques

Lifting and moving equipment improperly can place a great deal of stress on the back, possibly resulting in severe injury. Lifting objects is inherent in performing field investigations and in mowing operations; therefore, it is important to use good lifting techniques.

- Personnel shall utilize a mechanical device to lift very heavy objects.
- If a load is heavy or bulky, seek help.
- Remember to lift with your legs and keep your back straight.
- Keep the load as close to your body as you can.
- Do not jerk the load. Lift slowly and carefully.
- Make sure the area you will be carrying the load through is clear of obstacles.
- Do not twist or turn your spine when lifting or carrying the load.
- Be sure to have a good grip on your load at all times.
- Be careful when lowering your load (seek help, if necessary).

Inclement Weather Conditions

Work shall not be performed when inclement weather (heavy rains, strong winds, tornado, floods, extreme temperatures, and so forth) is in the area that could cause or contribute to an accident. If a change in the weather poses a health or environmental threat and work shall cease. Extremes in temperature can pose serious physical hazards to personnel. Personnel shall be aware of appropriate steps that can be taken to minimize the effects of temperature extremes.

Cold Stress

Personnel who work outdoors during winter months are subject to cold stress. Exposure to extreme cold can result in severe injury or even death. Areas of the body most susceptible to the effects of cold stress are the fingers, toes, nose, and ears. The cold stress management requirements as outlined in Section 6 of the EM 385-1-1 Safety and Health Requirement Manual will be followed. A precaution a worker may take to prevent injury from the cold includes, but is not limited to the following:

- Extremities shall be protected from extreme cold by protective clothing.
- The work area shall be shielded or employees shall be given an outer windbreak garment when the wind chill is a factor during field operations.
- Outer garments must provide ventilation to prevent wetting of inner clothing by sweat.
- Employees who are prone to getting their clothing wet shall be issued an outer protective garment that is water repellent. The weather conditions shall be monitored and work halted if the temperature drops to levels that present a danger to worker safety.

Heat Stress

Heat stress may occur when protective clothing decreases natural body ventilation and/or when working in areas having elevated temperatures. The heat stress work/rest standards as outlined in the heat stress section of the 1996 ACGIH Threshold Limit Values (TLV) & Biological Exposure Indices (BEI) Handbook, and Section 6 of the EM 385-1-1 Safety and Health Requirement Manual will be followed. Heat stress is any series of conditions where the body is under stress from overheating. It can include heat cramps, heat exhaustion, heat rash, or heat stroke. The victim often overlooks the signs of heat stress. The employee may at first be confused or unable to concentrate. Heat stress can produce bodily symptoms, which may include profuse sweating, dizziness, cessation of sweating, and collapse. Refer to the following table for common forms of heat stress.

Heat Stress

Condition	**Signs/Symptoms**	**First Aid**
Heat cramps	Heavy sweating Painful muscle spasms	Sport drink intake (Gatorade) Rest in cool environment Salt water intake (0.5% solution)
Heat Syncope	Brief fainting Blurred vision	Water intake Lie down in cool environment
Dehydration	Fatigue and reduced movement	Fluid and salted food intake
Heat Exhaustion	Pale and clammy skin, possible fainting, weakness, fatigue, nausea, dizziness, heavy sweating, blurred vision, body temperature slightly elevated	Lie down in cool environment, water intake, loosen clothing
Heat Stroke	Skin hot and dry, red face, high body temperature, unconsciousness, collapse, convulsions, confusion or erratic behavior	Immediate total cooling Transport to hospital

The following precautions will be taken to prevent injury from heat stress:

- The work schedule will be adjusted, if possible, to schedule heavy work during the cooler part of the day.
- The work will be paced to include adequate rest periods. Five to fifteen minute rest periods will be scheduled hourly or every 2 hours depending upon the workload, temperature, and relative humidity. The frequency and time of rest periods will be increased, if the SSHO believes that it is necessary to protect the workers' safety.
- Drinking water and ice will be provided in the clean zone. Personnel will be encouraged to drink plenty of water.
- The weather conditions shall be monitored and work halted if the temperature (including humidity) rises to levels that present a danger to worker safety.

Harmful Plants, Animals, and Insects

Personnel working in the field must be aware of the physical hazards posed by coming into contact with harmful plants, animals, and insects. Of the potential exposures to poisonous plants, field personnel are likely to be most affected by exposure to poison ivy and poison oak, which are very common in this area. Both of these plants have greenish white flowers with berries that grow in clusters. The leaves are composed of three (3) leaflets each. These plants can cause a severe rash, which is characterized by redness, blisters, swelling, intense burning, and itching. If these plants are to be removed from the work area, personnel shall wear appropriate PPE to prevent dermal exposure.

Copperheads and rattlesnakes are the predominant poisonous species of snakes in this area. Rattlesnakes have horny sheaths towards the end of the tail, which make a rattling sound. Copperheads are brown in color with a V-shaped head characteristic of poisonous snakes.

Bees, mosquitoes, and ticks are the predominant insects that will be of concern. Insect repellants can be used since volatile organic compound (VOC) sampling is not to be performed. Personnel that have known allergies shall report this to the Site Supervisor and SSHO. These personnel need to keep medicine available to counteract their specific allergy.

The following steps shall be considered in preventing exposure to these hazards.

- Field personnel are required to wear PPE at all times while performing work in heavily vegetated areas. This should be helpful in limiting skin exposure to plants and insects.
- Insect repellants may be used to reduce potential contact with insects.
- A 16-unit first aid kit shall be available at the site and shall contain a variety of ointments for skin afflictions.
- When practical, poisonous plants (such as poison ivy) shall be removed or destroyed.
- Water and soap shall be provided on-site for personnel to wash affected skin areas.
- Personnel shall report all known allergies to plants, insects, and medications to the Site Supervisor or SSHO prior to work.

Mowing Hazards

The following precautions shall be taken to prevent injuries associated with the grass mowing activities.

- Perform a pre-site walk through and pick up any items that might be thrown by the mowing equipment.
- Do not allow site visitors or the general public to operate any mowing equipment.
- Stop mowing operations if bystanders approach within one hundred feet of the mower/tractor.
- When mowing near roadways, make sure that the mowing equipment is operated such that any flying objects from the mower blades will be directed back away from where people are.

- Before starting any mowing equipment make sure that bystanders are clear of the area.
- Perform a check of all mowing equipment daily prior to use. The pre-operation check should be performed in accordance with the manufacturers' recommendations.
- Never allow passengers on a riding lawn mower or tractor/brush hog.
- Do not operate a lawn mower, weed trimmer, or tractor/brush hog with bystanders nearby.
- Ensure that all guards and shields provided by the manufacturer are in place prior to beginning work. Do not remove any safety devices that were provided by the manufacturer.
- Never modify the equipment in any way.
- Ensure that all guards and shields are installed and inspected in accordance with the manufacturers recommendations. (Missing guards or shields are to be replaced immediately).
- Do not operate brush hog cutter in a raised position.
- Never place hands, feet, any other body part, or clothing, under the mower or near moving parts of the mower while the engine is running. Ensure that all motion has stopped prior to checking moving parts.
- Ensure that blades are in good condition and can swing freely.
- Perform routine maintenance of mowing equipment prior to beginning work to ensure that all nuts, bolts and other fasteners are properly tightened.
- For riding lawn mowers and tractors, place all controls in neutral, stop engine, set brake, remove ignition key, and wait for all moving parts to stop before servicing, adjusting, repairing, or unplugging.
- Prior to mowing, check for entangled material in all rotating parts and remove as appropriate.
- Loose and frayed clothing, loose long hair, and dangling jewelry shall not be worn while working with any mowing equipment.
- Personnel should wear gloves and use care when performing fueling operations.
- Do not fuel any mowing equipment when the equipment is hot. Let mowing equipment cool prior to refueling.
- Do not store fuel in the open sun. Store fuel in a protected area away from heat sources and away from the public.
- Remove mowing equipment and fuels from access by the public when these items are not in use or intended for immediate usage.
- For tractors, always wear the seat belt provided as part of the roll over protection system (ROPS).
- If a ROPS component becomes damaged, replace it immediately and do not attempt repairs.
- Do not drive the tractor close to the edges of ditches or banks, which may break under the weight of the tractor, especially when the ground is loose or wet.
- Always slow the tractor prior to turning. Turning at a high speed may tip the tractor over.
- Personnel shall wear personal protective equipment as specified in Section 5.1 of this plan.

6.10 Accident Prevention

Stillwater is committed to ensuring the safety of its employees, contractors, and visitors. The company believes that occupational injuries and illnesses can be prevented, that exposures to hazardous materials, and hazardous work situations can be controlled, and that prevention of injuries and illnesses is equal in importance to production, quality, cost, and morale. The Activity Hazard Analysis for this project can be found in Appendix D. The hazard analysis provides a description of potential hazards and the actions to be taken to eliminate or minimize each of these hazards.

7.0 SITE CONTROL MEASURES

Site control is an essential component in the implementation of the site-specific health and safety program. This section defines the procedures for maintaining site control.

7.1 Buddy System

When conditions present a risk to personnel, the implementation of the buddy system is mandatory. A buddy system requires that at least two people work as a team; each looking out for the other. People utilizing the buddy system are required to use the same level of PPE. The activities requiring the use of the buddy system are as follows:

- Mowing activities require a minimum of two people keeping each other in a line of sight.
- Monitoring well activities require a minimum of two people keeping each other in a line of sight.

7.2 Site Communication Plan

Successful communications between field personnel and support personnel is essential. The following hand signals shall be used during field activities at the site.

Signal Definition

- Hands clutching throat - Out of air/cannot breath
- Hands on top of head - Need assistance
- Thumbs up - OK/I am all right/ I understand
- Thumbs down - No/Negative
- Arms waving upright - Send backup support
- Grip partners wrist - Exit area immediately

In the event of an emergency, the signal for personnel to evacuate will be by sounding three blasts on a vehicle horn. If this occurs, personnel shall stop work immediately, evacuate the site and report to a predetermined offsite location so that all personnel may be accounted for. All personnel shall proceed with their buddy to a safe distance from the work area. Personnel will remain in the predetermined safe meeting area until the Site Supervisor provides them with further instructions. Appendix C contains a map showing the route to the nearest hospital.

8.0 DECONTAMINATION PLAN

8.1 Personal Hygiene and Decontamination

Due to the nature of the work performed under this contract, decontamination will consist of exercising good hygiene practices. Soap and water is readily available in the event personnel come into contact with gasoline, and motor oil used for the mowing devices or exposure to poisonous plants (poison ivy, poison oak). Additionally, personnel should wash with soap and water if they come into contact the groundwater at the site or potentially contaminated soil at the site.

Personnel shall practice good personal hygiene at all times. Field workers are required to wash their hands prior to eating, drinking, or smoking after engaging in field mowing/clearing operations and activities associated with the monitoring wells. Field workers are required to wash their hands following any exposure to contaminated soils, groundwater, equipment, or other materials.

8.2 Equipment Decontamination

Equipment used during the mowing and clean up operation shall be limited to clipboards, cameras, weed removal tools, and mowing tractors. Equipment decontamination should not be necessary during the mowing and clearing operations since direct contact with contamination is not anticipated during this work.

Equipment used during the well level monitoring and maintenance will include a water level detector. The level measurement tape will be rinsed with distilled water and wiped dry with a paper towel after each use.

9.0 RECORD KEEPING

Implementation of the provisions of this SSHP shall be documented. The SSHO/Site Supervisor will be responsible for documenting steps taken to be in full compliance with this plan. The SSHO/Site Supervisor shall keep the following records:

- Copy of this SSHP
- ENG Form 3394 (USACE Accident Investigation Report Form)
- Records of safety violations and remedial actions taken
- Daily records of all first aid treatments not otherwise reportable shall be maintained
- Maintain records of all exposure and accident experienced incidental to the work; employee exposure, worker's compensation reports and project man hours
- Records of safety meetings
- Visitor register
- PPE checklist
- Other pertinent safety and health related observations or documents

APPENDIX A

Training Certifications

Certificate of Completion

This certificate was presented to

HELEN J. OWENS

for successful completion of the

40-HOUR HEALTH & SAFETY TRAINING COURSE

in accordance with the

OSHA Hazardous Waste and Emergency Response Operations Standard
(29 CFR 1910.120)

JANUARY 14, 1992
Date

[redacted]
Certificate Number

[redacted]
President

Ungers & Associates Educational Services, Inc.

THE NATIONAL ENVIRONMENTAL TRAINERS

certify that

Helen Owens

has satisfactorily passed an exam and completed an 8-hour annual refresher training course entitled

Hazardous Waste Operations and Emergency Response

meeting the requirements identified in Title 29 CFR 1910.120.

This course has been awarded 1.0 Industrial Hygiene CM Points by the American Board of Industrial Hygiene-Approval Number 13334. This course is also eligible for .66 Continuance of Certification (COC) points from the Board of Certified Safety Professionals

NATIONAL ENVIRONMENTAL TRAINERS, Inc.

Course Number 1001, Awarded 8 PDH's
Florida Board of Professional Engineers
CEU Provider Number 0004284

Signature of Instructor

April 09, 2008

www.nationalenvironmentaltrainers.com

Clay A. Bednarz, MS, RPIH

American Red Cross

Together, we can save a life

This recognizes that

Helen Owens

has completed the requirements for

CPR/AED--Adult

conducted by

ARC of the Northern Miami Valley

Date completed 4/8/2008

The American Red Cross recognizes this certificate as valid for 1 year(s) from completion date.

American Red Cross

Together, we can save a life

This recognizes that

Helen Owens

has completed the requirements for

Standard First Aid

conducted by

ARC of the Northern Miami Valley

Date completed 4/14/2007

The American Red Cross recognizes this certificate as valid for 3 year(s) from completion date.

American Red Cross

Together, we can save a life

This recognizes that

Andrew Owens

has completed the requirements for

CPR/AED--Adult

conducted by

ARC of the Northern Miami Valley

Date completed 4/28/2008

The American Red Cross recognizes this certificate as valid for 1 year(s) from completion date.

American Red Cross

Together, we can save a life

This recognizes that

Andrew Owens

has completed the requirements for

Standard First Aid

conducted by

ARC of the Northern Miami Valley

Date completed 4/14/2007

The American Red Cross recognizes this certificate as valid for 3 year(s) from completion date.

APPENDIX B

Forms

Site-Specific Safety and Health Plan
Field Certification Form

Operations and Maintenance of Wells,
Including Monitoring Water Level Elevations
Former Plum Brook Ordnance Works (PBOW)
Sandusky, Ohio

Contract W91237-08-T-0041

This document is provided to certify that field personnel have reviewed the Site-Specific Safety and Health Plan and will comply with its contents.

Print Name	Signature	Date

SAFETY MEETING REPORT

Date: _____ Project Name: _____

Project Manager: _____

Meeting Conducted By: _____

Safety Topics

Additional Topics / Comments

Meeting Attendees

Printed Name	Signature	Time

VISITOR LOG

Everyone entering the exclusion zone and the contamination reduction zone shall meet the training and medical requirements of 29 CFR 1910.120. Visitors not meeting these requirements are only allowed in the support/clean zone. All visitors to the project site are required to adhere to the Site Specific Health and Safety Plan.

Compliance Agreement

I have read and understand this Site Specific Health and Safety Plan. I will comply with the provisions contained herein.

Project Site: PBOW O&M and Water Level Measurements

Name (Printed)	Signature	Date

Emergency Equipment List

The Project Manger or SSHO will check emergency equipment daily. The following emergency equipment shall be used on-site:

_____ Fire Extinguisher

_____16-unit first aid kit

_____Eye wash bottle

_____Cellular phone

MEDICAL DATA SHEET

This medical data sheet is to be completed by all on-site personnel and will be kept on-site during field operations. This data sheet shall accompany any personnel who need medical assistance.

Project Name:	
Name	
Home Phone	
Address	
Emergency Contact Name	
Emergency Contact Phone	
Allergies	
Drug Allergies	
Corrective Lenses	
Contact Lenses	
Current Medications	
Name of Personal Physician	
Address	
Phone	

PPE CHECKLIST

All personnel shall perform an inspection of their PPE prior to performing activities on-site. The following items shall be checked.

_____ Determine the clothing material is that which has been designated for this project.

_____Visually inspect clothing for: imperfect seams, non-uniform coatings, tears, malfunctioning closures

_____Hold up to light and check for pinholes

_____Flex product and make observations for cracks or other signs of shelf deterioration

_____If the product has been used before, inspect inside and out for signs of chemical attack, discoloration, swelling, or stiffness.

_____Visually inspect gloves for imperfect seams, tears, and non-uniform coating

_____Pressurize gloves with air; listen for pinhole leaks

_____Check hardhat for cracks or other signs of stress

_____Check the suspension of your hardhat. Look for loose or torn cradle straps, loose rivets, broken sewing lines or other defects.

_____If using earmuffs check the muffs for cracks, cuts or missing gaskets.

_____Check safety glasses for scratches

_____Check for cracks or scratches on the facepiece of the respirator

_____Check for loss of elasticity or tears in the straps of the respirator

_____Check for the general cleanliness of the respirator

_____Check for proper fit of the respirator by performing the positive-pressure and negative pressure tests

Daily Safety Meeting

Project: Date:

Discussion of work conditions and task expected to be completed today:

Topics to be discussed: (list below) Task related to Safety Topic: (list below)

Comments from Site Supervisor or SSHO concerning the meeting:

Notes concerning any safety related incidents that occurred:

Safety Meeting Attendance:

I have attended the daily safety meeting. I have been briefed on today's job tasks and fully understand the safety issues associated with each task.

Printed Name	Signature

Name (Printed)	Signature (Supervisor)	Date

(For Safety Staff only)	REPORT NO.	EROC CODE G0	**UNITED STATES ARMY CORPS OF ENGINEERS ACCIDENT INVESTIGATION REPORT** *(For Use of this Form See Attached Instructions and USACE Suppl to AR 385-40)*	**REQUIREMENT CONTROL SYMBOL: CEEC-S-8(R2)**

1. ACCIDENT CLASSIFICATION

PERSONNEL CLASSIFICATION	INJURY/ILLNESS/FATAL	PROPERTY DAMAGE	MOTOR VEHICLE INVOLVED	DIVING
GOVERNMENT ☐ CIVILIAN ☐ MILITARY	☐	☐ FIRE INVOLVED ☐ OTHER	☐	☐
☐ CONTRACTOR	☐	☐ FIRE INVOLVED ☐ OTHER	☐	☐
☐ PUBLIC	☐ FATAL ☐ OTHER		☐	

2. PERSONAL DATA

a. Name *(Last, First, MI)*

b. AGE

c. SEX ☐ MALE ☐ FEMALE

d. SOCIAL SECURITY NUMBER

e. GRADE

f. JOB SERIES/TITLE

g. DUTY STATUS ☐ ON DUTY ☐ TDY ☐ OFF DUTY

h. EMPLOYMENT STATUS AT TIME OF ACCIDENT ☐ ARMY ACTIVE ☐ ARMY RESERVE ☐ VOLUNTEER ☐ PERMANENT ☐ FOREIGN NATIONAL ☐ SEASONAL ☐ TEMPORARY ☐ STUDENT ☐ OTHER *(Specify)*

3. GENERAL INFORMATION

a. DATE OF ACCIDENT *(month/day/year)*

b. TIME OF ACCIDENT *(Military time)* hrs

c. EXACT LOCATION OF ACCIDENT

d. CONTRACTOR's NAME (1) PRIME: (2) SUBCONTRACTOR:

e. CONTRACT NUMBER ☐ CIVIL WORKS ☐ MILITARY ☐ OTHER *(SPECIFY)*

f. TYPE OF CONTRACT ☐ CONSTRUCTION ☐ SERVICE ☐ A/E ☐ DREDGE ☐ OTHER *(SPECIFY)*

g. HAZARDOUS/TOXIC WASTE ACTIVITY ☐ SUPERFUND ☐ DERP ☐ IRP ☐ OTHER *(Specify)*

4. CONSTRUCTION ACTIVITIES ONLY *(Fill in line and corresponding code number in box from list - see instructions)*

a. CONSTRUCTION ACTIVITY (CODE) #

b. TYPE OF CONSTRUCTION EQUIPMENT (CODE) #

5. INJURY/ILLNESS INFORMATION *(Include name on line and corresponding code number in box for items a, f & g - see instructions)*

a. SEVERITY OF ILLNESS / INJURY (CODE) #

B. ESTIMATED DAYS LOST

C. ESTIMATED DAYS HOSPITALIZED

D. ESTIMATED DAYS RESTRICTED DUTY

e. BODY PART AFFECTED (CODE)
PRIMARY #
SECONDARY (CODE) #

f. NATURE OF ILLNESS / INJURY (CODE) #

g. TYPE AND SOURCE OF INJURY/ILLNESS
TYPE (CODE) #
SOURCE (CODE) #

6. PUBLIC FATALITY *(Fill in line and correspondence code number in box - see instructions)*

a. ACTIVITY AT TIME OF ACCIDENT (CODE) #

b. PERSONAL FLOATATION DEVICE USED? ☐ YES ☐ NO ☐ N/A

7. MOTOR VEHICLE ACCIDENT

a. TYPE OF VEHICLE ☐ PICKUP/VAN ☐ AUTOMOBILE ☐ TRUCK ☐ OTHER *(Specify)*

b. TYPE OF COLLISION ☐ SIDE SWIPE ☐ HEAD ON ☐ REAR END ☐ BROADSIDE ☐ ROLL OVER ☐ BACKING ☐ OTHER *(Specify)*

c. SEAT BELTS	USED	NOT USED	NOT AVAILABLE
(1) FRONT SEAT			
(2) REAR SEAT			

8. PROPERTY/MATERIAL INVOLVED

a. NAME OF ITEM	B. OWNERSHIP	C. $ AMOUNT OF DAMAGE
(1)		
(2)		
(3)		

9. VESSEL/FLOATING PLANT ACCIDENT *(Fill in line and correspondence code number in box from list - see instructions)*

a. TYPE OF VESSEL/FLOATING PLANT (CODE) #

b. TYPE OF COLLISION/MISHAP (CODE) #

10. ACCIDENT DESCRIPTION *(Use additional paper, if necessary)*

See attached page.

11. CAUSAL FACTOR(S) *(Read Instruction Before Completing)*

a. (Explain YES answers in item 13)

	YES	NO
DESIGN: Was design of facility, workplace or equipment a factor?	☐	☐
INSPECTION/MAINTENANCE: Were inspection & maintenance procedures a factor?	☐	☐
PERSON'S PHYSICAL CONDITION: In your opinion, was the physical condition of the person a factor?	☐	☐
OPERATING PROCEDURES: Were operating procedures a factor?	☐	☐
JOB PRACTICES: Were any job safety/health practices not followed when the accident occurred?	☐	☐
HUMAN FACTORS: Did any human factors such as size or strength of person, etc., contribute to accident?	☐	☐
ENVIRONMENTAL FACTORS: Did heat, cold, dust, sun, glare, etc., contribute to the accident?	☐	☐

a. (CONTINUED)

	YES	NO
CHEMICAL AND PHYSICAL AGENT FACTORS: Did exposure to chemical agents, such as dust, fumes, mists, vapors or physical agents, such as, noise, radiation, etc., contribute to accident?	☐	☐
OFFICE FACTORS: Did office setting such as, lifting office furniture, carrying, stooping, etc., contribute to the accident?	☐	☐
SUPPORT FACTORS: Were inappropriate tools/resources provided to properly perform the activity/task?	☐	☐
PERSONAL PROTECTIVE EQUIPMENT: Did the improper selection, use or maintenance of personal protective equipment contribute to the accident?	☐	☐
DRUGS/ALCOHOL: In your opinion, was drugs or alcohol a factor to the accident	☐	☐

b. WAS A WRITTEN JOB/ACTIVITY HAZARD ANALYSIS COMPLETED FOR TASK BEING PERFORMED AT TIME OF ACCIDENT?

☐ YES *(If yes, attach a copy.)* ☐ NO

12. TRAINING

a. WAS PERSON TRAINED TO PERFORM ACTIVITY/TASK?	b. TYPE OF TRAINING.	c. DATE OF MOST RECENT FORMAL TRAINING.
☐ YES ☐ NO	☐ CLASSROOM ☐ ON JOB	(Month) (Day) (Year)

13. FULLY EXPLAIN WHAT ALLOWED OR CAUSED THE ACCIDENT; INCLUDE DIRECT AND INDIRECT CAUSES *(See instruction for definition of direct and indirect causes.) (Use additional paper, if necessary)*

a. DIRECT CAUSE

See attached page.

b. INDIRECT CAUSE(S)

See attached page.

14. ACTION(S) TAKEN, ANTICIPATED OR RECOMMENDED TO ELIMINATE CAUSE(S).

DESCRIBE FULLY:

See attached page.

15. DATES FOR ACTIONS IDENTIFIED IN BLOCK 14.

a. BEGINNING (Month/Day/Year)	b. ANTICIPATED COMPLETION (Month/Day/Year)

c. SIGNATURE AND TITLE OF SUPERVISOR COMPLETING REPORT	d. DATE *(Mo/Da/Yr)*	e. ORGANIZATION IDENTIFIER *(Div, Br, Sect)*	f. OFFICE SYMBOL
CORPS _____ CONTRACTOR _____			

16. MANAGEMENT REVIEW *(1st).*

a. ☐ CONCUR b. ☐ NON CONCUR c. COMMENTS

SIGNATURE	TITLE	DATE

17. MANAGEMENT REVIEW *(2nd - Chief Operations, Construction, Engineering, etc.)*

a. ☐ CONCUR b. ☐ NON CONCUR c. COMMENTS

SIGNATURE	TITLE	DATE

18. SAFETY AND OCCUPATIONAL HEALTH OFFICE REVIEW

a. ☐ CONCUR b. ☐ NON CONCUR c. ADDITIONAL ACTIONS/COMMENTS

SIGNATURE	TITLE	DATE

19. COMMAND APPROVAL

COMMENTS

COMMANDER SIGNATURE	DATE

*U.S. GOVERNMENT PRINTING OFFICE: 1993-0-791-257

APPENDIX C

Map of Directions to Hospital

MAPQUEST

Send To Printer Back To Directions

Start: 6100 Columbus Ave
Sandusky, OH
44870-8329 US

End: 1101 Decatur St
Sandusky, OH
44870-3335 US

Distance: 6.58 miles

Total Estimated Time: 15 minutes

Directions	Distance
START **1.** Start out going NORTHWEST on COLUMBUS AVE toward PATROL RD.	0.4 miles
2. Turn RIGHT onto TAYLOR RD.	1.1 miles
3. Turn LEFT onto US-250.	3.1 miles
4. Turn LEFT onto E PERKINS AVE.	0.5 miles
5. Turn RIGHT onto COLUMBUS AVE.	1.1 miles
6. Turn LEFT onto TOWNSEND ST.	<0.1 miles
7. Turn LEFT onto OH-4/HAYES AVE.	0.1 miles
8. Turn RIGHT onto DECATUR ST.	<0.1 miles
END **9.** End at 1101 Decatur St, Sandusky, OH 44870-3335 US	

Start:
6100 Columbus Ave
Sandusky, OH
44870-8329 US

End:
1101 Decatur St
Sandusky, OH
44870-3335 US

NAVTEQ ON BOARD

Notes:

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These directions are informational only. No representation is made or warranty given as to their content, road conditions or route usability or expeditiousness. User assumes all risk of use. MapQuest and its suppliers assume no responsibility for any loss or delay resulting from such use.

APPENDIX D

Activity Hazard Analysis

Operations and Maintenance of Wells,
Including Monitoring Water Level Elevations
Former Plum Brook Ordnance Works
Sandusky, Ohio
Contract W91237-08-T-0041

ACTIVITY HAZARD ANALYSIS Page 1 of 5				
Activity Title - Water Level Elevations and Mowing				Date: April 28, 2008
Step No.	Key Steps in Activity	Hazards	Safe Work Procedures	PPE / Clothing
1	Water level measurements and mowing	Heat stress	Rest Periods approximately every 2 hours Frequent fluid intake	Hard hat, steel-toe shoes, safety glasses, gloves, long-sleeved shirt, and long pants.
		Injuries from mowers	Do not conduct measurement activities with mowers in the immediate area	
		Contact with contaminated well water	Wear required PPE	Hard hat, steel-toe shoes, safety glasses, gloves, long-sleeved shirt, and long pants.
		Slips, trips and falls due to debris or uneven terrain	Wear appropriate footwear Be alert while walking	Hard hat, steel-toe shoes, safety glasses, gloves, long-sleeved shirt, and long pants.

ACTIVITY HAZARD ANALYSIS

Activity Title – Water Level Elevations and Mowing			Date: April 28, 2008	
Step No.	Key Steps in Activity	Hazards	Safe Work Procedures	PPE / Clothing
2	Water level measurements and mowing	Bites or stings from snakes, bees, ticks and other disease-carrying beings	Avoid wildlife seek medical attention if bitten Check skin and clothes for ticks Be alert to the presence of bee nests inside well Caps and in the ground around the wells and areas being mowed	

ACTIVITY HAZARD ANALYSIS

Activity Title – Water Elevations and Mowing			Date: April 28, 2008	
Step No.	Key Steps in Activity	Hazards	Safe Work Procedures	PPE / Clothing
3	Mowing and water level measurements	Slips, trips and falls	Check area to be mowed for debris	Hard hat, steel-toe shoes, safety glasses, gloves, long-sleeved shirt, and long pants.
	Mowing	Flying debris	Ensure all mower guards are in place Do not allow bystanders to be close to the mowers in operation Check for debris prior to entering the area Stop mowers if bystanders approach the mower	Hard hat, steel-toe shoes, safety glasses, gloves, long-sleeved shirt, and long pants.
	Mowing	Injury from mower's moving parts	Check mechanical condition of mowers prior to starting work Never modify equipment	Hard hat, steel-toe shoes, safety glasses, gloves, long-sleeved shirt, and long pants

ACTIVITY HAZARD ANALYSIS

Activity Title – Water Elevations and Mowing			Date: April 28, 2008	
Step No.	Key Steps in Activity	Hazards	Safe Work Procedures	PPE / Clothing
4	Mowing	Injury from mower's moving parts	Keep body parts away from moving parts of the mower Do not operate mower in a raised position Ensure mower is stopped completely before attempting to service, adjust, repair or unplug.	Hard hat, steel-toe shoes, safety glasses, gloves, long-sleeved shirt, and long pants, hearing protection
	Mowing	Injury from a rollover event or runaway mower	Never leave mower unattended while running Avoid sharp turns or sudden breaking Wear safety belts when provided on mower Do not remove ROPS	

ACTIVITY HAZARD ANALYSIS

Activity Title – Water Elevations and Mowing				Date: April 28, 2008
Step No.	Key Steps in Activity	Hazards	Safe Work Procedures	PPE / Clothing
4	Servicing mowers	Injury from use of hand tools	Use hand tools in accordance with manufacturers specifications Hand tools must be maintained in good repair All tools requiring guards must be intact	Hard hat, steel-toe shoes, safety glasses, gloves, long-sleeved shirt, and long pants, hearing protection
	Fueling mowers	Exposure Fire hazard	Wear gloves when fueling Allow equipment to cool before refueling	Hard hat, steel-toe shoes, safety glasses, gloves, long-sleeved shirt, and long pants, hearing protection
5	Clean-up	Tools/equipment left behind may cause injury	Remove all project related equipment	

APPENDIX E

QC Documentation

Quality Assurance Certification
Site-Specific Safety and Health Plan

Operation and Maintenance of Wells
Including Monitoring Water Level Elevations

Plum Brook Ordnance Works
Sandusky, Ohio

Contract No. W91237-08-T-0041

This document is provided to certify that the members of the Quality Control team have reviewed the Site-Specific Safety and Health Plan in Accordance with the Quality Control Plan. All comments from the various reviews have been resolved and / or incorporated.

Assignment	Name	Signature	Date
Senior Review	Helen Owens		
Peer Review	Jacob Wilson		

Internal Review Comments

Comments on Draft Site-Specific Safety and Health Plan

Operations and Maintenance of Wells,
Including Monitoring Water Level Elevations

Plum Brook Ordnance Works (PBOW)
Sandusky, Ohio

Contract W91237-08-T-0041

The following comments were provided by the Independent Quality Control Team (IQCT). All comments resulting from this review has been resolved and/or incorporated.

Comment
Section 1.2, first sentence. Insert parenthesis around POC, for example (POC).
Response
Concur. Insertion has been made.

Comment
Section 1.2, second sentence. Insert the word "and" after personnel.
Response
Concur. The insertion has been made.

Comment
Section 2.2. Clarify the number of wells or indicate a close approximate number.
Response
Concur. Clarification has been made to the approximate number of wells requiring measurement on PBOW property and off-site.

Comment
Section 4.4. "NASA comm center" should be revised to "NASA Communications Center"
Response
Concur. Revision has been made.