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FINAL WORK PLAN LAKEFRONT TRAP AND SKEET RANGES NSTC GREAT LAKES IL  
4/1/2013  
VRHABILIS-KEMRON, LLC

# FINAL WORK PLAN LAKEFRONT TRAP AND SKEET RANGES

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NAVAL STATION GREAT LAKES  
GREAT LAKES, ILLINOIS

Contract #: N40083-11-D-0032-0005

April 2013

PREPARED FOR:



NAVAL FACILITIES ENGINEERING COMMAND MIDWEST

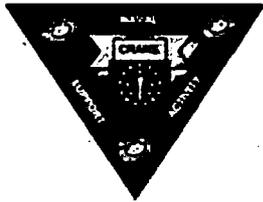
PREPARED BY:



VRHabilis-KEMRON, LLC  
3155 Blackhawk Drive, Building 379  
Fort Sheridan, IL 60037  
Tel: (847) 266-1350 Fax: (847) 266-3584  
Tax ID: 27-5032748

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## LIST OF ACRONYMS

AHA	Activity Hazard Analyses
APP	Accident Prevention Plan
ASTM	American Standard Test Method
BaP EQ	benzo(a)pyrene equivalent
bgs	below ground surface
BMP	Best Management Practices
ECATTS	Environmental Compliance Assessment Training and Tracking System
ESCP	Erosion and Sediment Control Plan
IEPA	Illinois Environmental Protection Agency
IUM	Illinois Urban Manual
NAVFAC	Naval Facilities Engineering Command
NC	Navy Consultant (3 <sup>rd</sup> Party Oversight)
NFA	No Further Action
NSGL	Naval Station Great Lakes
PAH	Polynuclear Aromatic Hydrocarbon
PWD	Public Works Department
RA	Remedial Action
RAWP	Removal Action Work Plan
RPM	Navy Project Manager
SSHP	Site Safety and Health Plan
TACO	Tiered Approach to Corrective Action Objectives
TSA	Trap, Skeet and Archery (per Tetra Tech RAWP, 2012 nomenclature)
VRHK	VRHabilis-KEMRON, LLC
WP	Work Plan

## 1.0 INTRODUCTION AND PROJECT BACKGROUND

VRHabilis-KEMRON, LLC (VRHK) has been contracted by the Naval Facilities Engineering Command (NAVFAC) Midwest to perform activities in support of Excavation and Disposal of Contaminated Soil, Lakefront Trap and Skeet Ranges, Great Lakes, Illinois.

The following Work Plan (WP) includes details of mobilization, site preparation, excavation of impacted soils, site restoration, and demobilization of equipment and personnel. Appendix A contains the Removal Action Work Plan (RAWP) prepared by Tetra Tech in 2012.

### 1.2 General Requirements

VRHK understands that this project is subject to federal, state, and local regulatory agency inspections and review for compliance with environmental laws and regulations. VRHK will cooperate with any representative from any federal, state, or local regulatory agency who may visit the job site, and shall provide immediate notification to the Navy Project Manager (RPM), who shall accompany them on any subsequent site inspections. VRHK will complete, maintain, and make available to the RPM, Facility, or regulatory agency personnel all documentation relating to environmental compliance under applicable federal, state, and local laws and regulations. VRHK will immediately notify the RPM if a Notice of Violation, Notice of Deficiency, or similar regulatory notice is issued.

Contractors will work directly with PWD Great Lakes Environmental personnel on all local environmental issues. Construction and safety planning activities will be coordinated through the NAVFAC MW Safety Construction Manager, but all final technical decisions will be with the RPM, Benjamin Simes.

#### 1.2.1 TSA Ranges

The site is the former location of a trap range, a skeet range, and an archery range (TSA). For the sake of clarity, the acronym TSA Ranges refers to the terminology used in the RAWP by Tetra Tech, 2012. For this WP, reference will be made to the Trap and Skeet Ranges. The former TSA Ranges site (both the land and water portions) encompasses approximately 30.5 acres. The land portion of the TSA Ranges is a small area (approximately 1 acre), located east of the bluff on the beachfront of Lake Michigan. The shotfall zone, which is defined as the maximum extent that lead shot would have traveled, extends into Lake Michigan. This encompasses an area of approximately 29.4 acres (consisting of overlapping areas for the skeet range (29 acres) and the trap range (6.6 acres) located over Lake Michigan. Appendix A, Figure 1-1 shows the location of the Naval Station Great Lakes (NSGL) in relation to the surrounding area. Appendix A, Figure 1-2 shows the location of the TSA Ranges within NSGL. Only the Trap and Skeet Ranges are addressed in the WP.

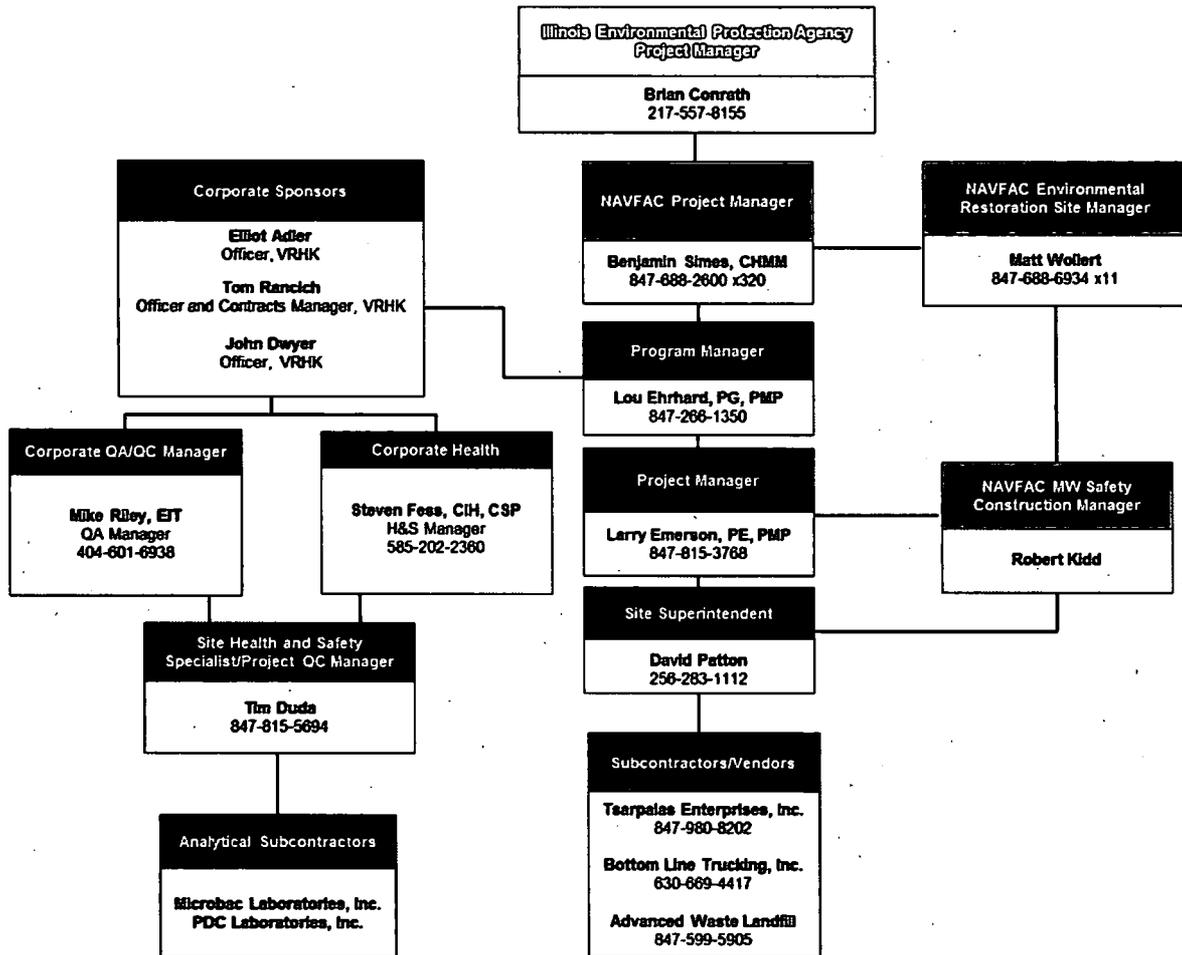
The site originally consisted of only the trap range (constructed in the early 1940s), which was used in conjunction with the Naval Training Center (NTC) Lakefront, where Navy personnel first learned to experience targeting a moving object before handling the large caliber anti-aircraft (AA) guns. The use of the trap range in conjunction with the AA training center ended with the closing of the NTC Lakefront site in October 1945; however, the trap range was likely used recreationally afterward, which was a common practice to offset costs for maintenance. Based on the construction drawings for the site, the skeet and archery ranges were added to the site in 1968. The skeet and archery ranges were likely used for recreational purposes and for military

practice sessions. Munitions use was limited to small arms ammunition, primarily shotgun ammunition. Structures associated with the trap and skeet ranges and firing lines were located on land at the site.

The equipment storage building and trap/skeet houses that were originally located at the site were demolished, and the ranges were decommissioned, at an undetermined time. When the recreational vehicle (RV) park was constructed in July 2000 within the TSA Ranges site, all visible signs of the ranges and associated structures (such as the trap house) were removed.

Environmental investigation work was performed at the TSA Ranges site in 2010 and 2011. A more detailed history of the site activities are presented in the SI Report (Tetra Tech, 2010) and the Addendum to the SI Report (Tetra Tech, 2012). Based on the findings of the SI, a prescriptive remediation (i.e., excavation to a predetermined horizontal and vertical boundary without any confirmation sampling) was selected as the remedy.

2.0 PROJECT ORGANIZATION/PERSONNEL



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### 3.0 IDENTIFICATION OF REMEDIAL ACTION OBJECTIVES

#### 3.1 Scope Objectives

The objectives for this scope are to excavate soil with concentrations of lead exceeding the human screening criteria and polycyclic aromatic hydrocarbon (PAH) benzo(a)pyrene equivalent (BaP EQ) exceeding the Tiered Approach to Corrective Action Objectives (TACO) background screening criteria in the area east of the RV Park.

The removal of select lead and PAH-contaminated soil from 0 to 2 and 2 to 4 feet below ground surface (bgs) will reduce the potential risk and exposure to human receptors to acceptable risk levels between  $10^{-4}$  and  $10^{-6}$  in those areas, which will then support a no further action (NFA) determination for the site.

#### 3.2 Project and Scope

The purpose of this WP is to present the construction activities for the TSA Ranges at NSGL located in Great Lakes, Illinois. The proposed removal action consists of the excavation and offsite disposal of soil contaminated with lead and PAHs located within the former TSA Ranges site; backfill with clean soils; and restoration of the disturbed areas.

Environmental site inspection activities were performed at the TSA Ranges site in 2010 and 2011. The removal actions described in this WP are based on the results of these investigations. The WP is part of the formal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process.

#### 4.0 PLANNING AND PERMITS

A dig permit will be obtained from NSGL prior to commencement of planning and permitting activities. An Accident Prevention Plan (APP) with Site Safety and Health Plan (SSHP) and Activity Hazard Analyses (AHAs) has been developed for this scope in accordance with the latest edition of the U.S. Army Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1 and 29 CFR 1910.120.

Fire permits required for any hot work and designation of smoking zones will be coordinated with the NSGL Fire Department.

In the event that unexploded ordnance is encountered during site activities, all work will stop immediately and the NAVFAC MW Safety Construction Manager and NSGL Dispatch Center will be notified. The area will be evacuated.

VRHK will acquire Facility-specific permits, including but not limited to, Safety and Building Availability Permit, Digging Permit and although not anticipated for this project, a Hot Work Permit.

Waste disposal will be managed as special waste, pending waste characterization results and coordinated with the Environmental Restoration Site Manager (ERSM), Matthew Wollert. The disposal of all investigative wastes associated with soil sampling must meet applicable and relevant federal, state, local and Navy regulations.

## 5.0 SITE SECURITY AND ACCESS

VRHK and all subcontractors will have completed the required Environmental Compliance Assessment Training and Tracking System (ECATTS) training requested by NAVFAC Midwest. Prior to mobilization, proof of ECATTS training will be provided to the NAVFAC MW Safety Construction Manager.

Security clearance will be obtained for all employees working on site. Proper identification for all onsite employees will be provided to the Navy PM at least 48 hours prior to onsite work. Anyone driving at NSGL will have valid registration, proof of insurance, and no felony record within the last five years.

The work area will be set-up to restrict unauthorized entry and to provide safety and security for work area hazards (i.e., excavation) and equipment.

Work onsite will be conducted during normal working hours, Monday through Friday, 0700 to 1630 unless special arrangements are made through the Contracting Officer. Work outside regular working hours will require Contracting Officer written approval.

## **6.0 EROSION AND SEDIMENT CONTROL PLAN**

### **6.1 General Purpose**

This Erosion and Sediment Control Plan (ESCP) has been prepared by VRHK to identify and address erosion control regulations and protection measures. The objective of this ESCP is to establish site procedures to control storm water and prevent the transport of sediments or contaminants from the project site. This ESCP was prepared in accordance with the minimum standards and specifications of Illinois Urban Manual (IUM) regulations (2012). VRHK will ensure that all personnel are qualified to perform the work as outlined within the regulations. During active project operations, a copy of this ESCP will be maintained on-site at all times. The ESCP will be implemented as necessary before land disturbance activities other than those indicated are performed. This plan shall adhere to the NSGL Stormwater Management Program (SWMP).

### **6.2 Applicable Regulations and Plan Approval**

It is not anticipated that the remedial activities for this project will disturb more than one acre of land, therefore, federal regulatory standards for construction sites are not anticipated to be applicable. However, VRHK will apply appropriate erosion and sediment controls.

### **6.3 Erosion and Sediment Control Plan**

Before excavation activities commence, erosion and sediment controls will be established to prevent impacts to surface water (Lake Michigan) downgradient of the disturbed areas. See Figure 2. For example, this will include installing silt socks and/or silt dikes/silt fences downgradient of the disturbed area, temporarily stabilizing the surface, and other measures. Erosion and sediment control measures will remain in place until soil excavation, backfilling, and restoration activities are completed. Completed restoration activities will include establishment of permanent vegetation, where applicable. The disturbed area to be vegetated will be regularly inspected and maintained until the area is stabilized. Once the area has been restored and stabilized, VRHK will remove all non-biodegradable temporary erosion and sediment control structures such as the silt fences. Erosion and sediment control measures will be in accordance with the IUM (2012).

As part of the remedial actions being performed at the TSA Ranges, VRHK will:

- Construct staging area with erosion and sedimentation barriers when and where applicable.
- Construct erosion and sedimentation barriers downgradient of disturbed areas.

The anticipated major land disturbance will consist of the following activities:

1. Excavation of TSA Ranges;
2. Grading and backfilling of the excavation areas following removal; and
3. Restoration of all disturbed areas with topsoil and seed.

Temporary erosion and sediment control structures must be in place at selected locations and functional before earth moving disturbance activities begin. During excavation, the runoff will be directed into the excavated areas to prevent runoff off site. Prior to filling the excavated area,

the contractor shall ensure that erosion controls are strategically placed based on topographic survey along the downgradient areas to prevent off site migration of stormwater. See Figure 3. Portions of the temporary erosion control measures may be removed at the beginning of each day as required to complete the work, but will be replaced at the end of the day.

Structural, Vegetative, Management Strategies, Material Handling and Waste Management will be utilized for erosion and sediment control at the TSA Ranges. A description of the Best Management Practices (BMPs), Installation Schedule, Maintenance and Inspections, and Responsible Personnel for the project are provided below.

Silt barriers will be installed along the base of the break wall for the length of the project area to be excavated. The coir logs or straw wattle, when used along the toe of riprap, will be left in place and will biodegrade naturally, therefore they won't be trip hazards. In addition, straw bales will be secured in the upstream section of the swale that crosses the excavation to slow and deflect water before it gets to the hole in the case of a rain event.

### 6.3.1 Structural Practices

#### Silt Barriers

**BMP Description:** Silt barriers (e.g., fence, dikes, straw wattle or coir logs) will be utilized on the down-gradient limits of the excavation areas, due to the presence of boulders. Biodegradable straw wattle will most likely be utilized for this project unless it becomes necessary to upgrade to a stronger variety.

**Installation Schedule:** The silt barriers will be installed before any remedial actions begin or any materials are brought onsite and as determined necessary by the VRHK project manager and the NSGL representative.

**Maintenance and Inspection:** After initial installation, the silt barriers will be inspected every day and within 24 hours after storm events of 0.5 inches or greater during active remediation to ensure it is intact and that there are no gaps where the barriers meet the ground or tears along the length of the fence. If gaps are found during the inspection, silt barriers will be repaired or replaced. Accumulated sediment will be removed from the silt barriers base if it reaches one-third the height of the barrier. If accumulated sediment is creating noticeable strain on the silt barriers and the silt barriers might fail from a sudden storm event, the sediment will be removed more frequently. Before the fence or dikes are removed from the project area, the sediment will be removed. The anticipated life span of the straw wattle is about one month before it degrades naturally.

**Responsible Staff:** VRHK or Subcontractor(s).

### 6.3.2 Vegetative Practices

#### Surface Roughening

**BMP Description:** The surface of re-graded areas will be roughened to reduce runoff velocity and to aid in the establishment of vegetative cover.

**Installation Schedule:** To be completed following re-grading activities and prior to ground cover establishment and permanent stabilization.

**Maintenance and Inspection:** Stabilized areas will be inspected prior to demobilization from the site.

**Responsible Staff:** VRHK or Subcontractor(s).

### Topsoil

**BMP Description:** Loamed based topsoil will be placed on all restored surfaces as necessary to allow permanent stabilization and vegetative growth.

**Installation Schedule:** Topsoil will be installed within 7 days of re-grading following remediation activities.

**Maintenance and Inspection:** Stabilized areas will be inspected prior to demobilization from the site.

**Responsible Staff:** VRHK or Subcontractor(s).

### Permanent Stabilization/Seeding

**BMP Description:** All areas disturbed by construction will be stabilized with permanent seeding following finished grading or when areas are left dormant for more than 30 days. Erosion control matting, pinned in place, may be used for steep slopes, as determined necessary by the project manager, and mulch or matting will be used for mild slopes to secure seeding. Alternately, hydroseeding with tack mulch may be used to stabilize and seed the disturbed area.

**Installation Schedule:** All areas disturbed by the remedial activities will be stabilized with permanent seeding within 14 days of final grading or earth moving activities, unless construction activity will resume on a portion of the site within 30 days from when activities ceased.

**Maintenance and Inspection:** All seeded or re-vegetated areas will be inspected every day during site activities and within 24 hours after storm events of 0.5 inches or greater until a dense cover of vegetation has become established. If failure is observed, the area will be reseeded, fertilized, and/or mulched. After remedial actions are completed at the site, permanently stabilized areas will be monitored until final stabilization is reached.

Using the IUM standards as a guide, all disturbed ground will be fertilized with low nitrogen, starter fertilizer and then seeded with an appropriate Kentucky 31 Fescue based "highway mix" with an annual rye nurse crop. Annual rye generally germinates within a week, which serves to immediately begin stabilizing the soil as the permanent grasses take hold. Inspections and watering will be performed, as required, once a week for up to four waterings or until about 75% of the reseeded work has established a healthy growth.

**Responsible Staff:** VRHK or Subcontractor(s).

### 6.3.3 Management Strategies

#### Initial Site Preparation Work

**BMP Description:** VRHK will be responsible for the implementation and execution of the specified erosion and sediment controls. The work schedule will be sent to NSGL and applicable agencies a minimum of one week in advance to any site work or land disturbance. The site preparation work that will be completed prior to the full scale remedial actions, to include the installation of erosion control devices and storm water runoff controls such as silt barriers, temporary earthen dikes, gravel pads or temporary sumps.

**Installation Schedule:** Erosion, sediment, and storm water control features will be installed and/or constructed before the start of any earth-disturbance activities.

**Maintenance and Inspection:** The VRHK project manager will be responsible for ensuring the installation and maintenance of all erosion, sediment, and storm water control practices and all site control measures will be inspected no less than once every working day and within 24 hours after storm events of 0.5 inches or greater until a dense cover of vegetation during final stabilization has become established. Inspections will be documented and any non-functional or damaged control structure will be repaired within 24 hours. Any silt fence control device with 50% accumulated sediment will be either replaced or the sediment removed.

**Responsible Staff:** VRHK or Subcontractor(s).

#### Water Used to Control Dust

**BMP Description:** Dust control will be implemented as needed once site excavation activities have been initiated and during windy conditions while site grading and remediation activities are occurring. Dust from the site will be controlled by using water supplied by a fire hydrant adjacent to the site, clean non-contact ponded water from an excavation area (e.g., rain water trapped atop a plastic tarp in a low area). A hose will be used to apply water at a rate to prevent runoff and ponding and a backflow preventer shall be used when operating the hydrant. Water will be applied whenever the dryness of the soil warrants it, which will be based on air monitoring results. A water truck or dolly may be used, as required.

**Installation Schedule:** Dust control will be implemented as needed once soil excavation has been initiated and during windy conditions while excavation is occurring. Spraying of water will be performed as the dryness of the soil warrants it, based on air monitoring levels for dust.

**Maintenance and Inspection:** At least one watering unit will be available at all times to distribute water to control dust in the remediation areas. The hydrant will be equipped with a valve.

**Responsible Staff:** VRHK or Subcontractor(s).

#### Street Cleaning/Sweeping

**BMP Description:** NSGL compliant street sweeping will be conducted as needed if silt is observed to be transported onto paved roads or parking areas or if 30% opacity is exceeded. Sweeping or cleaning of the roads may be done with vacuuming, wet mopping, wet sweeping,

or wet power brooming methods. Silt recovered will be returned to the site. Dust suppressants may be used.

**Installation Schedule:** Street cleaning/sweeping will occur as needed as determined by on-site project management.

**Responsible Staff:** VRHK or Subcontractor(s).

### **Post Construction**

**BMP Description:** The pre and post-construction runoff volumes will remain relatively the same with no significant changes due to the remedial actions. Project-derived pollutant run-off is not expected to occur after construction operations have been completed and the site has been stabilized. Once final vegetation has developed, all remaining erosion and sediment controls will be removed, except coir logs which will degrade in place.

**Installation Schedule:** Once final vegetation has been planted, all remaining erosion and sediment controls will be removed.

**Maintenance and Inspection:** The VRHK project manager will be responsible for ensuring the competency of all erosion, sediment, and storm water control practices at the site. Inspections will be documented and any non-functional or damaged control structure will be repaired within 24 hours. Any silt control device with 50% accumulated sediment will be either replaced or the sediment removed during onsite activities.

**Responsible Staff:** VRHK or Subcontractor(s).

### **General Maintenance and Inspections**

**BMP Description:** The inspection schedule and documentation procedures have been designed so that vegetation, erosion, sediment control measures, and other protective measures are kept in good and effective operating condition.

The following list includes, but is not limited to, areas that will be inspected by qualified personnel at least once every working day and within 24 hours of the end of a storm that is 0.5 inches or greater:

- Disturbed areas of the construction site that have not undergone final stabilization;
- Areas used for the storage of materials that are exposed to precipitation that have not undergone final stabilization;
- Structural control measures;
- Soil staging areas; and
- Locations of vehicle ingress and egress.

**Installation Schedule:** In general, during the remedial actions, all erosion, sediment, and storm water control measures will be visually inspected daily, but at a minimum, a formal inspection will occur at least every seven days and after each runoff-producing rainfall event. Any required repairs will be made within 24 hours of detection. Based on the results of the inspection, any inadequate control measures or control measures in disrepair will be replaced, modified, or repaired as soon as practicable (i.e., before the next rain event if possible), but in

no case more than 24-72 hours after the need is identified. In general, all repairs to the erosion and sediment control structures shall be made within 24 hours or as soon as practicable.

**Maintenance and Inspection:** The stabilized areas will be checked regularly to ensure that a good stand of vegetation is reached. Areas will be fertilized and reseeded as deemed necessary by the project manager during site activities.

**Responsible Staff:** VRHK or Subcontractor(s).

### **Staging Area**

**BMP Description:** The primary staging area for the project will accommodate parking and materials containment. All solid waste will be bagged and removed daily. All hazardous materials such as petroleum products and equipment maintenance fluids will be properly stored in this area.

**Installation Schedule:** The staging area will be constructed prior to the work conducted at the site.

**Maintenance and Inspection:** The staging area will be inspected every day and within 24 hours after storm events of 0.5 inches or greater. The staging area will be kept clean, well-organized, and equipped with ample cleanup supplies as appropriate for the materials being stored. Material safety data sheets, material inventory, and emergency contact numbers will be maintained by the VRHK project manager.

**Responsible Staff:** VRHK or Subcontractor(s).

## 7.0 PROJECT EXECUTION

### 7.1 Definable Features of Work

As part of the scope, VRHK will perform the following Work Tasks:

- Prepare all work plans;
- Waste characterization;
- Backfill soil sampling;
- Prepare site and mobilization;
- Establish temporary soil erosion and sediment control;
- Excavation of impacted soils;
- Restore site; and
- Demobilize equipment and personnel.

#### 7.1.1 Prepare All Work Plans

The following plans require Navy approval prior to mobilization for this scope; VRHK will ensure each of the following documents are finalized prior to initiation of site work:

- Work Plan;
- Accident Prevention Plan with a SSHP and AHAs.

#### 7.1.2 Waste Characterization

Waste characterization will consist of hand auguring in the trap and skeet areas to be excavated. A minimum of one representative composite sample will be obtained to run TCLP lead analyses to satisfy landfill disposal requirements. The waste characterization work will be performed at least one week prior to mobilization. Based on our experience at other skeet ranges, no hazardous levels of total lead are anticipated for the Trap and Skeet Ranges. We have performed past correlations on similar lead contaminated soils versus corresponding TCLP test analyses and found that average total lead concentrations generally need to be greater than 2,000 mg/kg total lead before the TCLP value exceeds the hazardous threshold of 5.0 mg/l lead. We are confident therefore that the waste characterization on average lead composite samples will demonstrate the soil to be non-hazardous and managed as special waste, pending waste characterization results.

Characterization samples will be collected as a composite sample consisting of ten aliquots obtained from the representative depths of lead contaminated soil (five random samples from the Trap Range and five random samples from the Skeet Range). Table 3-1 of the RAWP, Appendix A, will be used as a guideline for determining the appropriate sampling depth within each excavation area. The Navy Consultant (NC) will stake out the excavation limits prior to sampling. The location of each aliquot will be clearly noted for future reference (e.g., excavation cell, depth, approximate location using landmarks). Samples will be collected using stainless steel utensils/auger and placed in labeled gallon size Ziploc bags. An equal portion of each of the ten aliquots will be composited and mixed in a stainless steel bowl to comprise one sample for TCLP analysis. The remaining aliquots will be held until it has been verified that the composite sample is not hazardous. In the event that the composite sample is hazardous, additional analyses will be performed on each of the ten aliquots to determine the location of the lead exceedances. If it is determined that portions of the waste is hazardous, VRHK

recommends a change order for blending a phosphate based reagent with the hazardous soils until it passes the TCLP criteria. Then it would also be handled and disposed of at the same landfill (Zion).

### 7.1.3 Backfill

Fill soil to be brought into NSGL will be sampled to confirm compliance with Illinois EPA TACO Tier 1 residential property use scenario for the ingestion, inhalation, and migration to groundwater exposure pathways criteria. Samples will be analyzed for all Target Analyte List (TAL) and Target Compound List (TCL) constituents using USEPA SW846 methods with detection limits appropriate for comparison to the most restrictive Illinois EPA Tier 1 TACO residential construction worker criteria. All laboratory analyses will be performed by an Illinois EPA/National Environmental Laboratory Accreditation Conference (NELAC) certified laboratory. Sample frequency shall be two for clay backfill and one for topsoil. No soils shall be brought into NSGL until the Navy has reviewed and accepted the analytical data. Samples will be sent to Microbac Laboratory in Marietta, Ohio or Peoria Disposal Company in Peoria, Illinois. Lab Accreditations are presented in Appendix B.

Composite samples consisting of five random samples from the clay backfill (two each) and topsoil (one each) will be taken at the source areas. Samples will be collected using stainless steel utensils and composited in a stainless steel bowl to comprise one sample each for TACO analyses. Chain-of-Custody forms will be used.

### 7.1.4 Site Preparation and Mobilization

The Navy Project Manager will be notified two weeks prior to start of work. Requests for utility locates shall be submitted through the NAVFAC PWD Great Lakes Project Manager at least one week prior to the date of commencing excavation. Prior to mobilization and excavation, areas will be "white marked" with flagging and/or paint so that utility location activities can be conducted and utilities in the vicinity marked. Utility locations will be identified and marked by VRHK prior to any earth-disturbing activities. Permitting will be performed prior to mobilization at least 48 hours prior to the date of commencing excavation. Once utilities are cleared, site activities will be conducted with the possibility that unmarked utilities may be encountered at any time.

Site mobilization operations will be completed prior to commencing the prescribed project operations. Site mobilization includes mobilization of required personnel and equipment to the work area. The construction entrances/access points to the areas of excavation will provide for the transfer of construction materials, equipment, vehicles and personnel to enter and exit the area of excavation and also facilitate for the decontamination of vehicles/equipment and personnel prior to exiting the area of excavation. The location of the site access points will be adjusted or relocated as excavation operations progress from one area to the next or based on construction needs or site conditions.

As a part of the project preparation, all team members will be trained on all of the project plans that have been prepared and approved. Lead awareness training will be conducted for all personnel. In addition, every morning a tailgate safety refresher will be conducted by the Project Quality Control Manager/Site Health and Safety Specialist (PQCM/SHSS). Daily logs will be updated and readied for the day's operation, equipment will be maintained, and traffic and access controls checked to be in place.

Site preparation actions include: performing a pre-existing site condition inspection, establishing work zones, installation of erosion controls, roadway traffic control devices, access controls (e.g., caution tape or fencing), and constructing a staging area to stockpile excavated clean soil that is initially removed prior to excavation of impacted soils. The pre-existing condition inspection will identify any existing hazards to completing the excavation and aid in determination of work zones. The Site Health and Safety Specialist will be responsible for determining the boundaries of the work zones and the level of personnel protection required. In general, the worksite is anticipated to be a Modified Level D worksite. If hazardous waste is encountered based on waste characterizations, then work will be managed as described in Section 7.1.2. Along with establishment of the work zones, the staging areas will be situated in a manner that provides a secure location that is in the immediate vicinity of the excavation to minimize soil handling. All construction activities will be coordinated with the Navy PM. The RV Manager will relocate all RVs to the west side of the park. Construction traffic will be limited to the east half of the park loop with RV owners restricted to use the west half of the loop.

All personnel working at the Site will possess the appropriate skills and knowledge necessary to function in their specified capacity. They will all have completed the necessary health and safety training, including HAZWOPER, and physical evaluations to ensure they are able and fit to complete their assigned duties in a safe and efficient manner. The SSHP presents all health and safety related requirements for project personnel. VRHK will provide a complete list of subcontractors to NSGL upon their selection. Equipment will be mobilized as needed and released when no longer required.

For this project, VRHK has retained the services of Tsarpalas Enterprises, Inc. to perform the excavation, loading and placement of backfill soils, and RV pad work. Trucking and hauling will be subcontracted to Bottom Line Trucking, Inc., a licensed and qualified firm who will be familiar with the site, responsible for the disposal of contaminated soils, offsite removal of concrete for recycling, and delivery of backfill soils using tarped haul trucks. For landfill disposal, VRHK has chosen to use the Advanced Disposal Facility (former Zion Municipal Solid Waste Landfill) located in Zion, IL.

Equipment required for the work will include:

- Crew vehicles;
- Hydraulic excavator and track skidsteer; and
- Dump trucks.

All equipment will be maintained in good working condition and possess all required safety and operational controls. Inspections upon delivery are required in the SSHP. Daily safety and operational checklists will be completed for all equipment. Existing trees growing in the riprap will be protected and saved. Any trees removed due to excavation will be saved and replanted, or replaced with a similar tree up to 2-inches in diameter.

#### **7.1.5 Excavation of Impacted Soils**

The NC will mark the limits to the excavation areas prior to VRHK commencing soil excavation. Appendix A, Figure 3-2 presents the areas of excavation with each corner identified by a location node. Appendix A, Table 3-2 presents the corresponding coordinates (NAD 83 State Plane Illinois East) for each excavation node. Soil excavation will commence only within the marked boundaries. Once ground has broken within the parcel to be excavated, all

decontamination protocols will be followed. Using brooms and shovels, any possible pickup of soil on boots or tires will be managed and contained. At the end of the excavation, any material collected will be hauled away using tarped haul trucks in the same manner as the contaminated bulk soil. If necessary to remove free liquids, excavated soil and sediments will be stacked on the footprint and allowed to drain by gravity. Also, as required to protect the existing turf from being rutted, gravel pads may be constructed for truck access to one or more loading and dumping zones.

Dewatering is not anticipated due to shallow depths of excavation compared to lake levels and anticipated good drainage of soils. In the event that there is accumulated water resulting from one or more rain events, our preference would be to wait until drier conditions prevail due to prohibition of transporting wet soils to the landfill. Alternatively, a plastic tarp will be laid on the bottom of the excavated area so the water remains clean. We will use any water pumped from the excavated areas to be used for dust control. Additional dust control water, if needed, will be obtained from the on-site hydrant. A water dolly tank may be used, if required.

Once an excavation is complete, work will begin to bring the excavation back up to grade. As the clean fill and topsoil are brought to the site, it will be mechanically compacted and graded to meet the adjacent ground. Once the grading is complete, any disturbed soil as a result of this operation will be prepared, fertilized, seeded and stabilized in accordance with this WP. To minimize site disruption and to contain all contaminated soil, the VRHK plan is to direct load the excavated soil into dump trucks for immediate transportation for disposal. Once the excavation has been completed to depth and approved by the NC as complete, certified clean backfill soil will be delivered and placed directly in the excavation minimizing as much double handling as is practical. The existing four park benches are shown outside the limits of the excavation areas and so will be protected and left undisturbed.

VRHK will continue this method of using one operator to excavate and one operator to backfill throughout the entire project site to ensure minimal disruption of the facility and to maximize safety by having a minimum number of open excavations at any one time.

As a standard practice, any time the equipment and crew members leave the excavation site while the contaminated soil is present, they will be staged in the decontamination zone for decontamination protocols, generally a stiff brooming. This process is to be repeated until the contaminated soil is completely removed. A slight wetting of the traffic areas as the excavation progresses will make certain dust is not an issue. Before the last truck leaves, the equipment, boots, tools and staging area will be thoroughly cleaned and any remaining soil hauled away in that last load.

#### **7.1.6 Site Specific Work Details**

Details of site specific work to be performed at each range are described in the following sections. As requested by Navy, we propose to excavate the Trap Range first and proceed to the Skeet Range afterwards.

*Trap Range (5 discrete areas totaling 6,451 sf):*

We will commence excavation in Areas T1-T4 in succession working north to south typically. The upper 2 feet of clean soil from Areas T2-T4 will be used as backfill in approved excavated areas of T1 or other areas. Area T5 will be excavated prior to moving to the Skeet Range.

In general, Area T5 will require careful coordination with the RV Manager/ Harbor Master. We will have performed the required utility search for the dig permit in this area (as well as all other areas). Based on discussions with the RV Manager, the water and sewer lines within Area T5 have not yet been installed. There is a buried electric line below the concrete slabs. We will have a licensed electrician to depower the lines. These original conduits will be saved if possible but may require removal during excavation. All removed electrical work will be re-installed at the original depths and locations. VRHK will coordinate with the Navy and electrician to have power supplied to the campers during non-working hours.

We anticipate the removal of two complete concrete RV pads and partial removal via wet method saw-cut of a third. All concrete removed from the demolition of the RV pads will be taken to a recycler (Petersen Excavating) and recycled aggregate will be returned for use as backfill where needed below the pads. However, based on our understanding of the 6-inch concrete slabs, we have assumed 12-18 inches of aggregate likely supports the pads. This material is shown as clean and will therefore be stockpiled for later use. The lower 2-4 feet of contaminated soil material will be excavated and disposed. Clean imported backfill will likely be used for Area T5. However, clean soil saved from areas T3 or T4 may be used as backfill, with the exception that no saved topsoil or organic rich soil will be used as backfill in Area T5. Once the common backfill and aggregate have been placed and compacted using a vibratory packer, the concrete will be formed and reinforced concrete mesh will be used for the pads. Gravel backfill will be placed and compacted per specifications. All grassy areas will be restored. Electric control panels and tables will be replaced to original condition. Existing trees in the RV area to be excavated will be removed, set aside and replaced.

*Skeet Range (5 discrete areas totaling 14,628 sf):*

Excavation is anticipated to commence at the north end and proceed southwards. Area S1 will be excavated to 2 feet bgs first followed by the excavation of areas S4, S3 and S2 in sequence, backfilling as approved. Area S5 will be excavated last. The upper 2 feet of clean soil area will be placed in the bottom of Area S3. Excavation will proceed until the prescribed maximum depths as shown in Table 3-1 of the RAWP (Appendix A) has been reached or shallower due to refusal and as directed by the NC. No sample collections will be required. Approved offsite backfill will be scheduled for approved areas (north to south) so that direct dumping can be maximized, thus minimizing stockpiles, and coordinated to take advantage of the natural topographic grade to promote positive drainage in event of rain.

#### **7.1.7 Site Restoration**

No fill soil will enter NSGL until Navy approval of material has been granted. Common clay (ASTM CL designation) fill will be used to backfill the excavation to a depth of 6 inches below final grade. This material will be placed into the excavation in maximum 9-inch-thick lifts and compacted with a minimum of three passes of the skidsteer to the satisfaction of the Site Superintendent. No soft areas will be left and any such areas will be reworked.

The uppermost 6 inches of backfill used to establish final grades will be medium-textured loam suitable for establishing vegetation. Final grading will include matching the new grade with the adjacent ground. Using the IUM standards as a guide, all disturbed ground will be fertilized with low nitrogen, starter fertilizer and then seeded with an appropriate Kentucky 31 Fescue based "highway mix" with an annual rye nurse crop. An erosion control mat will be used to stabilize seeding until seedlings are established. Annual rye generally germinates within a week, which

serves to immediately begin stabilizing the soil as the permanent grasses take hold. Alternately, the site may be hydrosseeded with Tacifiers, if approved by Navy. Inspections and watering will be performed, as required, once a week for up to four waterings or until about 75% of the reseeding work has established a healthy growth. All equipment (picnic tables, fire pits, benches), if removed, will be restored as found.

#### **7.1.8 Demobilize Equipment and Personnel**

After all project work has been completed and approval of the work has been received from the Installation, demobilization will commence. Demobilization consists of removing all personnel, equipment, and materials from the Site. All equipment and supplies will have been previously decontaminated as appropriate following activities. All project signs and temporary fencing will be removed.

## 8.0 HEALTH AND SAFETY

An APP with a SSHP was prepared to address all activities as described herein and as detailed in this WP. For the activities anticipated under this scope, it is anticipated that all activities will be completed in Modified Level D.

During all site activities, the VRHK site superintendent will ensure safety is adhered to on all project activities. He will be responsible for conducting daily on-site training, tailgate safety meetings, and Health and Safety updates for weekly status meetings. The daily training sessions will provide an overview of overall site activities and the safety and health procedures applicable to the day's activities. Daily safety meetings will be mandatory for all on-site personnel, including subcontractors and attendance and safety briefing topics will be documented in a log to be kept on site at all times.

The SSSH will have authority to direct the Site Superintendent to add more water to the work areas to suppress dust, and have the ability to stop work if any unsafe conditions arise. He will be responsible for assuring all workers wear the proper PPE (Modified Level D) including Tyvek suits and/or booties depending on nature of work in the contaminated soils. The SSSH will also be responsible for setting up the Exclusion Zone and moving it as work progresses. He will maintain a list of all workers and visitors on site and assure that no unauthorized visitors access the work areas. He will be on site at all times to oversee all aspects of the work so that it meets Navy's expectations for quality control and to insure a safe working environment for all parties including workers and RV recreationalists. He will monitor dust using a real time dust monitor.

## 9.0 TRUCK ROUTE

Truck traffic will enter/leave NSGL primarily through Gate 5, although Gate 1 may be used as an alternative if directed by Navy. Trucks shall follow all posted speed limits to include reducing speed to 10 mph while passing troops in formation. Upon entering Gate 5, trucks will proceed eastward on 2<sup>nd</sup> Avenue which merges into Nimitz Avenue and then turn south onto Paul Jones Street, and then turn east on Ziegemeier Street and into RV Park. Only the eastern half of the RV Park Loop shall be used for truck traffic, both inbound and outbound. See Figure 1.

Contractors shall adhere to security inspection requirements in a way to minimize interruptions to facility operations. The contractor vehicles will travel on the designated roads (Figure 1). The Traffic Control Plan will function in accordance with the Access and Security requirements and the Traffic and Entry Plan. The contractor will not be permitted to travel within restricted areas of the facility. All waste hauling vehicles will be weighed upon arrival at the landfill and at the time of departure using the certified weight scale at the Advanced Waste Disposal area.

## 10.0 CONTINGENCY AND EMERGENCY RESPONSE PROGRAM

The details of the Contingency Plan and Emergency Response Program are included as part of the APP. The APP includes the SSHP as well as Emergency Response Procedures including contact information for personnel, offices, departments and agencies to be contacted in the event an emergency situation. Contact information for VRHK personnel on a 24 hour basis is included. A copy of the emergency contact list and contact information is available in the APP submitted under a separate cover. In the event of a spill or chemical release, VRHK will follow the procedures provided by Navy, entitled Spill or Chemical Release Policy, a copy of which is attached as Appendix C.

## 11.0 SUBMITTAL AND REPORTING REQUIREMENTS

A Closure Report will be prepared following the completion of the soil remediation. The Closure Report will document in narrative form all construction activities and shall include all documents generated including but not limited to weight tickets, field logs, maps, interim reports, manifests, trip tickets, photographs, clearance sampling results, and Chain-of-Custodies. Name and location of the samples in the field logbook and sampling form will match the Chain-of-Custody and pictures of the sample location for inclusion into the report. Select photographs will be included in electronic format (jpeg) on the CDs as well as in the report. The Closure Report will be submitted to the Navy who will forward a final copy to the Illinois EPA. The Closure Report will include all work completed as part of this scope.

## 12.0 REFERENCES

Illinois Urban Manual (2012).

Tetra Tech, 2010. Site Inspection Report Munition Response Program Ranges Naval Station Great Lakes Great Lakes, Illinois. November.

Tetra Tech, 2012. Addendum to: Site Inspection Report Munition Response Program Ranges Naval Station Great Lake Great Lakes, Illinois. May.

**FIGURES**

# Truck Route

## Lakefront Trap and Skeet Ranges, Great Lakes, IL

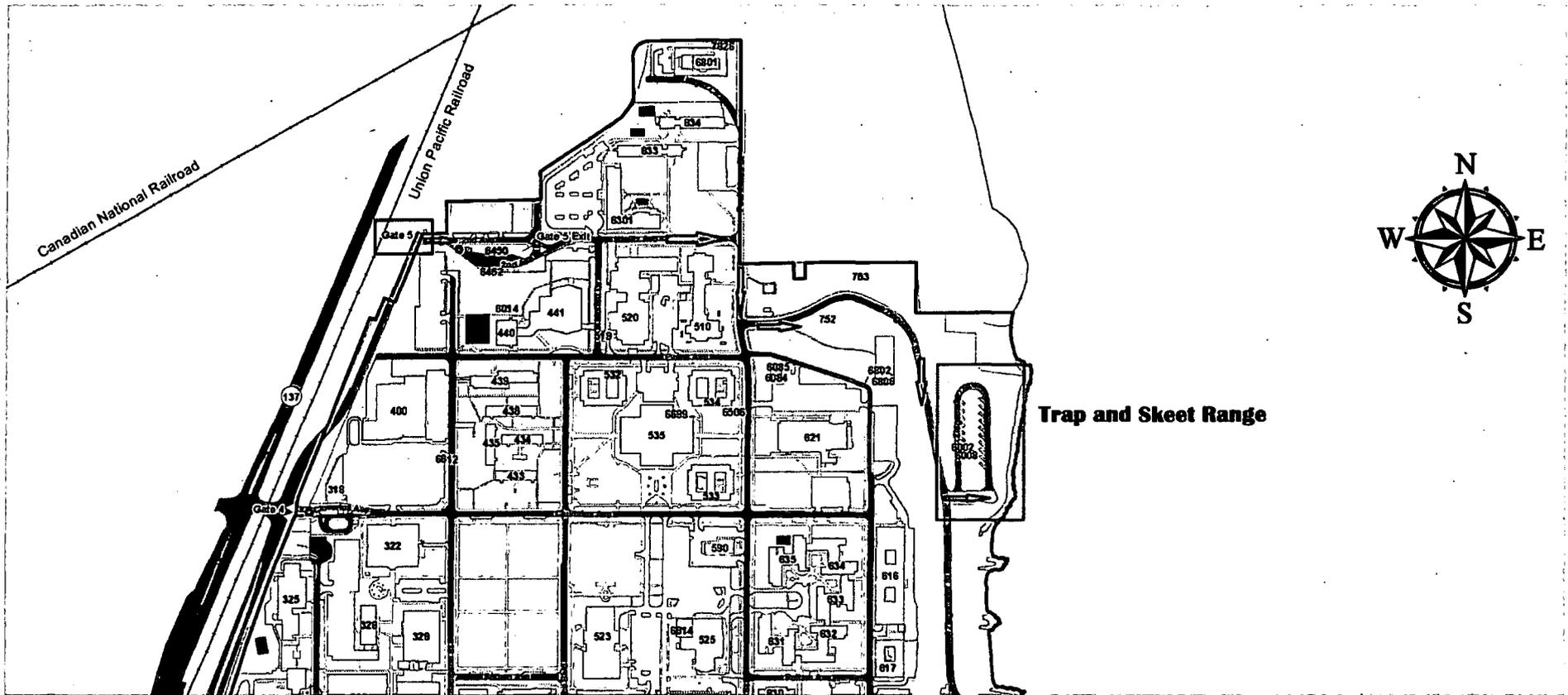
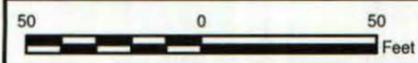


Figure 1

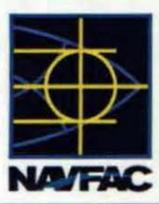


**Legend**

- Excavation Location Node
- Soil Sample Location with Benzo(a)Pyrene Equivalent (BaP EQ) Exceedance of TACO Background Criteria (2,100 ug/kg) and Lead Exceedance of TACO Human Health Criteria (400 mg/kg)
- 0 - 2 feet bgs and 2 - 4 feet bgs
- 0 - 2 feet bgs
- 2 - 4 feet bgs
- Soil Sample Location with Concentrations Less Than TACO Screening Criteria for Lead and TACO Background Criteria for BaP EQ
- × Fence Line
- - - Proposed Excavation, 0 - 2 feet bgs
- ▨ Proposed Excavation, 0 - 4 feet bgs
- ▭ Range Boundary
- ▬ Erosion Control Barrier
- - - Wastewater Line



DRAWN BY	DATE
S. PAXTON	09/19/12
CHECKED BY	DATE
J. DUCAR	09/19/12
REVISED BY	DATE
SCALE AS NOTED	



**PROPOSED SOIL EROSION CONTROL MAP**  
**TSA RANGES**  
**NAVAL STATION GREAT LAKES**  
**GREAT LAKES, ILLINOIS**

CONTRACT NUMBER	CTO NUMBER
	F274
APPROVED BY	DATE
APPROVED BY	DATE
FIGURE NO.	REV
FIGURE 2	0

Illinois Professional Design Corporation 184-000938

8501 West Higgins Road  
Suite 280  
Chicago, IL 60631-2801  
773 / 399 0112  
773 / 399 0170 fax

www.graef-usa.com

PROJECT TITLE:

NAVFAC Midwest

RV Park

SHEET TITLE:

Topographic Survey

ORDERED BY:

HDR  
8550 W. Bym Mawr Avenue  
Chicago, IL 60631-3223

PROJECT INFORMATION:

PROJECT NUMBER: 20096044.00

DATE: 1-11-2010

DRAWN BY: LAG

CHECKED BY: WJF

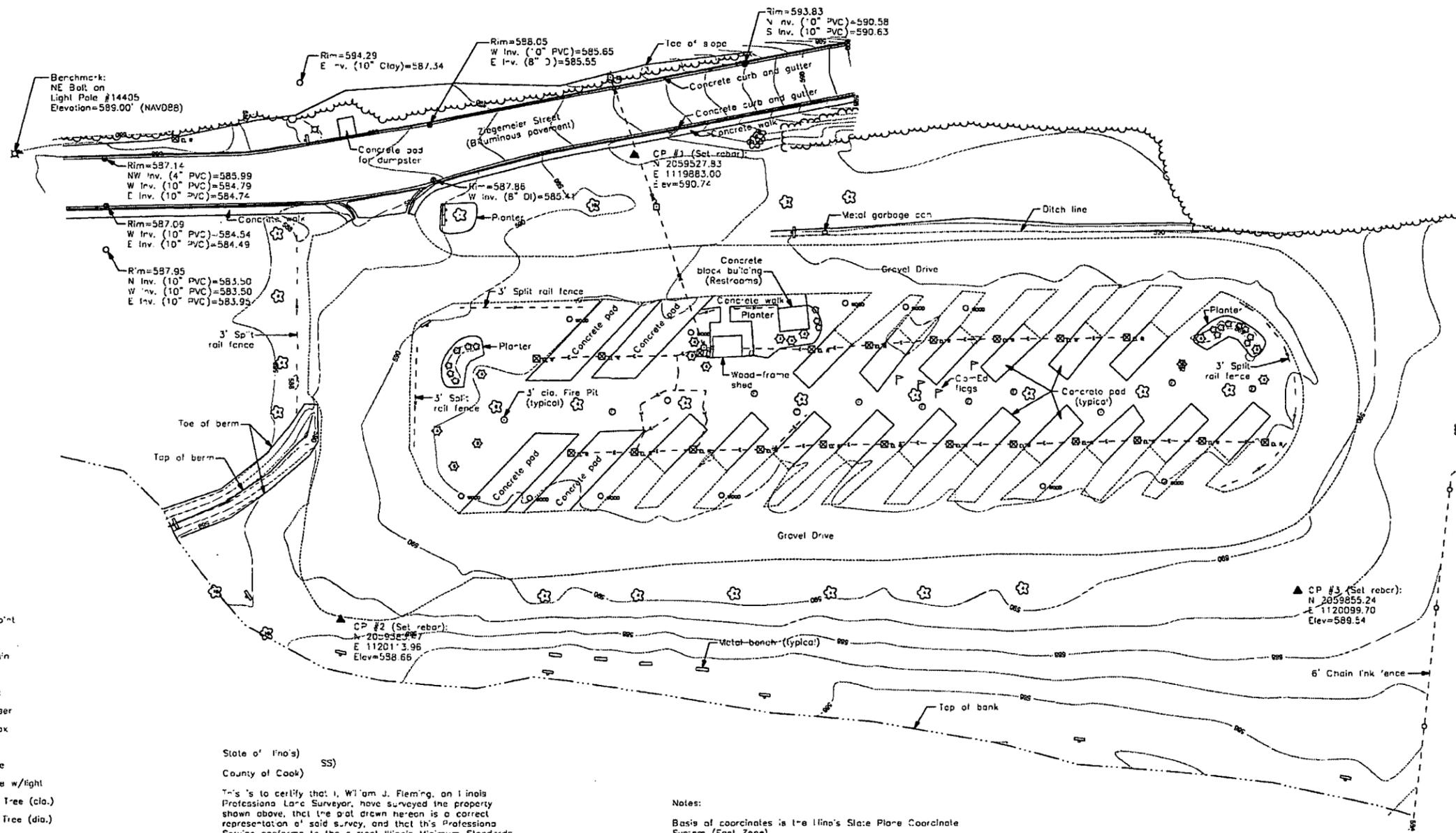
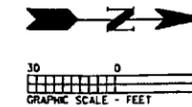
APPROVED BY: WJF

SCALE: 1" = 30'

FILE PATH:

SHEET NUMBER:

▲ CP #4 (Found 60D-nc1):  
N 2059390.69  
E 119724.02  
Elev=661.79



- ▲ Control Point
- Vanhole
- Catch basin
- Sign
- Wood post
- Electric riser
- Control box
- Light Pole
- Power Pole
- Power Pole w/light
- Deciduous Tree (dia.)
- Evergreen Tree (dia.)
- Bush
- Overhead Electric
- Underground Electric
- Chain Link fence
- Split rail fence
- Brushline

State of Illinois) SS)  
County of Cook)

I, \_\_\_\_\_, State of Illinois, do hereby certify that I, William J. Fleming, an Illinois Professional Land Surveyor, have surveyed the property shown above, that the plot drawn hereon is a correct representation of said survey, and that this Professional Service conforms to the current Illinois Minimum Standards of Practice applicable to Topographic Surveys.

Dated at Chicago, Illinois on this 11th day of January, A.D. 2010.

Illinois Professional Land Surveyor 35-3226  
Expires 1/30/2010

Notes:

Basis of coordinates is the Illinois State Plane Coordinate System (East Zone).

All elevations shown are referenced to NAVD83 datum.

The underground utilities shown hereon have been located from field survey only. The surveyor has not physically located underground utilities and makes no guarantee that the underground utilities shown comprise all such utilities in the area, either in-service or abandoned. The surveyor further does not warrant that the underground utilities shown are in the exact location indicated, but that they are located as accurately as possible from available information.

This professional service conforms to the current Illinois Minimum Standards for Topographic Surveys.

Field work completed: 1-6-2010

**APPENDIX A**

**Removal Action Work Plan (Tetra Tech, 2012)**

**FINAL**  
**Removal Action Work Plan**  
  
**for**  
  
**Munitions Response Program**  
**Range – TSA Ranges**

**Naval Station Great Lakes**  
**Great Lakes, Illinois**



**Naval Facilities Engineering Command Midwest**

**Contract Number N62472-03-D-0057**

**Contract Task Order F274**

**September 2012**

**FINAL  
REMOVAL ACTION WORK PLAN  
MUNITION RESPONSE PROGRAM TSA RANGES  
NAVAL STATION GREAT LAKES  
GREAT LAKES, ILLINOIS  
COMPREHENSIVE LONG-TERM  
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT**

**Submitted to:  
Naval Facilities Engineering Command Midwest  
201 Decatur Avenue, Building 1A  
Great Lakes, Illinois 60088**

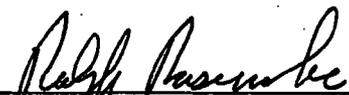
**Submitted by:  
Tetra Tech  
234 Mall Boulevard, Suite 260  
King of Prussia, Pennsylvania 19406**

**CONTRACT NUMBER N62472-03-D-0057  
CONTRACT TASK ORDER F274**

**SEPTEMBER 2012**

**PREPARED UNDER THE DIRECTION OF:**

**APPROVED FOR SUBMISSION BY:**

  
\_\_\_\_\_  
**RALPH BASINSKI  
PROJECT MANAGER  
TETRA TECH  
PITTSBURGH, PENNSYLVANIA**

  
\_\_\_\_\_  
**JOHN TREPANOWSKI, P.E.  
PROGRAM MANAGER  
TETRA TECH  
KING OF PRUSSIA, PENNSYLVANIA**

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## ACRONYMS

AA	anti-aircraft
AHA	Activity Hazard Analysis
ASTM	American Society for Testing and Materials
bgs	below ground surface
BaP EQ	benzo(a)pyrene equivalent
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLEAN	Comprehensive Long-term Environmental Action Navy
CPR	cardiopulmonary resuscitation
CTO	Contract Task Order
cy	cubic yards
DoD	Department of Defense
EMAC	Environmental Multiple Award Contract
EPA	Environmental Protection Agency
FBL	fixed base laboratory
HERO	Hazards of Electromagnetic Radiation to Ordnance
HTRW	hazardous, toxic and radioactive waste
IAC	Illinois Administrative Code
ILCS	Illinois Compiled Statutes
NAVSTA	Naval Station
NELAC	National Environmental Laboratory Accreditation Conference
NFA	no further action
NSGL	Naval Station Great Lakes
NTC	Naval Training Center
OICC	Officer in Charge of Construction
OSHA	Occupational Safety and Health Administration
PAHs	polycyclic aromatic hydrocarbons
QA/QC	quality assurance/quality control
QCP	Quality Control Plan
RAWP	Removal Action Work Plan
RV	recreational vehicle
SHSS	Site Health and Safety Specialist
SI	Site Inspection
SSC	Service School Command

SSHSP	Site Specific Health and Safety Plan
TACO	Tiered Approach to Corrective Action Objectives
TAL	Target Analyte List
TCL	Target Compound List
TSA	Trap, Skeet and Archery
USDOT	United States Department of Transportation
XRF	x-ray fluorescence

## 1.0 INTRODUCTION

### 1.1 PURPOSE AND SCOPE

The purpose of this document is to present the Removal Action Work Plan (RAWP) for the Trap, Skeet and Archery Ranges (TSA Ranges) at Naval Station Great Lakes (NSGL) located in Great Lakes, Illinois. The proposed removal action consists of the excavation and offsite disposal of soil contaminated with lead and polycyclic aromatic hydrocarbons (PAHs) located within the former TSA Ranges site. This RAWP was prepared for the United States Navy, Naval Facilities Engineering Command, Midwest (NAVFAC MW) by Tetra Tech, Inc. (Tetra Tech) under Contract Task Order (CTO) F274 of the Comprehensive Long-term Environmental Action Navy (CLEAN) IV Contract Number N62467-04-D-0055.

Environmental Site Inspection (SI) activities were performed at the TSA Ranges site in 2010 and 2011. The removal actions described in this work plan are based on the results of these investigations. The RAWP is part of the formal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process.

### 1.2 FACILITY DESCRIPTION

#### 1.2.1 NS Great Lakes

NSGL is the largest active duty Department of Defense (DoD) training center in the United States. NSGL is home to enlisted people training and officer accession training. The installation is one of Illinois' largest employers with over 25,000 military and civilian personnel. The Great Lakes Naval Hospital trains 4,000 Navy Corpsmen annually and is the Navy Regional Processing Site for several hundred reservists.

NSGL provides support for the Navy through its intense training and specialized itinerary for enlisted personnel preparing for the fleet. Major commands at NSGL include Naval Station (NAVSTA); a shore activity reporting command; the Recruit Training Command, which trains sailors, and the Service School Command (SSC), which provides initial technical training. The SSC consists of combat systems schools, engineering systems schools, and a training department. Figure 1-1 shows the location of NSGL in relation to the surrounding area.

### **1.2.2 TSA Ranges**

The site is the former location of a trap range, a skeet range, and an archery range. The former TSA Ranges site (both the land and water portions) encompasses approximately 30.5 acres. The land portion of the TSA Ranges is a small area (approximately 1.1 acre), located east of the bluff on the beachfront of Lake Michigan. The shotfall zone, which is defined as the maximum extent that lead shot would have traveled, extends into Lake Michigan. This encompasses an area of approximately 29.4 acres [consisting of overlapping areas for the skeet range (29 acres) and the trap range (6.6 acres)] located over Lake Michigan. Figure 1-2 shows the location of the TSA Ranges within NSGL. Only the skeet and trap ranges are addressed in this RAWP.

The site originally consisted of only the trap range (constructed in the early 1940s), which was used in conjunction with the Naval Training Center (NTC) Lakefront, where Navy personnel first learned to experience targeting a moving object before handling the large caliber anti-aircraft (AA) guns. The use of the trap range in conjunction with the AA training center ended with the closing of the NTC Lakefront site in October 1945; however, the trap range was likely used recreationally afterward, which was a common practice to offset costs for maintenance. Based on the construction drawings for the site, the skeet and archery ranges were added to the site in 1968. The skeet and archery ranges were likely used for recreational purposes and for military practice sessions. Munitions use was limited to small arms ammunition, primarily shotgun ammunition. Structures associated with the skeet and trap ranges and firing lines were located on land at the site.

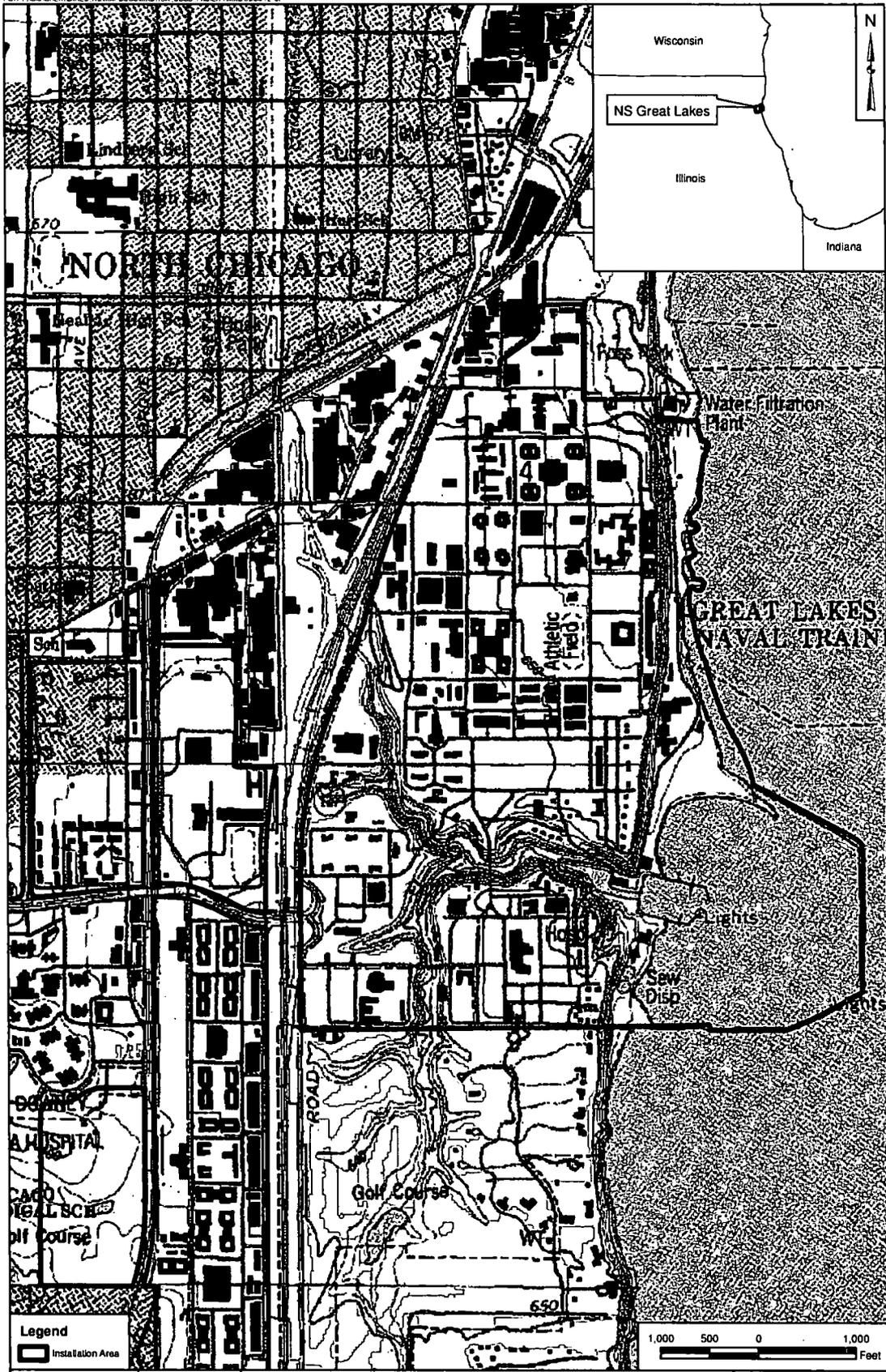
The equipment storage building and trap/skeet houses that were originally located at the site were demolished, and the ranges were decommissioned, at an undetermined time. When a recreational vehicle (RV) park (consisting of RV sites, ten tent sites, and one group camping site) was constructed in July 2000 within the TSA Ranges site, all visible signs of the ranges and associated structures (such as the trap house) were removed. Prior to the SI, no site investigations had been conducted at the NSGL TSA Ranges.

### **1.3 REPORT ORGANIZATION**

The following are the sections contained in the remainder of this document:

- Section 2.0 presents the general site conditions and site inspection summary.
- Section 3.0 presents the RAWP.
- Section 4.0 presents report references.

- Appendix A presents site photographs.
- Appendix B presents the RAWP Supplemental Specifications.



**Legend**  
 [Symbol] Installation Area

DRAWN BY	DATE
K. MOORE	07/28/10
CHECKED BY	DATE
J. DUCAR	09/04/12
REVISED BY	DATE
J. DUCAR	09/04/12

SCALE  
AS NOTED



FACILITY LOCATION  
 NAVAL STATION GREAT LAKES  
 GREAT LAKES, ILLINOIS

CONTRACT NUMBER	
CTD F274	
OWNER NUMBER	
---	
APPROVED BY	DATE
---	---
FIGURE NO.	REV
FIGURE 1-1	0



**Legend**  
 Range Boundary



DRAWN BY	DATE
K. MOORE	11/12/09
CHECKED BY	DATE
J. DUCAR	09/04/12
REVISED BY	DATE
S. PAXTON	09/04/12



SITE LOCATION  
 TSA RANGES  
 NAVAL STATION GREAT LAKES  
 GREAT LAKES, ILLINOIS

CONTRACT NUMBER CTO F274	
OWNER NUMBER —	
APPROVED BY	DATE
—	—
FIGURE NO. FIGURE 1 - 2	REV 0

SCALE  
AS NOTED

## 2.0 SITE CONDITIONS AND INVESTIGATION SUMMARY

### 2.1 SITE SUMMARY

This section describes the general physical and geophysical conditions for the TSA Ranges site. These descriptions were excerpted from the SI Report for Munitions Response Program Ranges at NSGL (Tetra Tech, 2010).

#### 2.1.1 Topography

Lakeshore bluffs rise from 20 to 75 feet in height above Lake Michigan and continue this trend beyond the west coast of the lake. Perpendicular to the bluff are ravines that discharge surface runoff to Lake Michigan. The topography of NSGL is similar to the surrounding area. There are buildings located along the bluff ravines and beachfront.

#### 2.1.2 Soil and Vegetation

The soil predominately found at NSGL is located on top of morainic ridges. Silt deposits overlay a calcareous glacial till of a silty, sandy, clay soil, which has moderate to poor draining capacity. Soil of the first 5 feet below ground surface (bgs) is relatively uniform in grain size distribution, liquid limit, and plasticity. The shoreline at NSGL has eroded over the centuries; however, fill material was placed to extend the shoreline in the early 1940s. The TSA Range generally has well drained fill material consisting of sandy clays, sands, and gravels with pieces of brick, concrete, and asphalt from 0 to 4 feet bgs. Below 4 feet bgs coarser gravel and large pieces of concrete and asphalt were used as fill. The lakefront area is composed of fill material (soil, concrete, and various consolidated materials), which serve as a foundation for the sandy beach and adjacent structures on-site. The majority of the land acquired by NSGL was cleared of buildings to accommodate housing and classroom needs; however, some native woodland remains. Terrestrial vegetation in the undeveloped sections of NSGL consists predominately of woodland species. The individual stand compositions are the result of a combination of natural seeding, forest management, and planting. The majority of trees in the area are oak, maple, hickory, and other hardwoods. Native shrubbery consists of blackberry, black oak, blueberry, huckleberry, maple, osier, sassafras, and willow. Beach-grass, Kentucky bluegrass, Canada bluegrass, creeping red fescue, sheep fescue, tall fescue, and clover are all turf vegetation found in this location.

### **2.1.3 Regional Geology**

The Wheaton Morainal Complex characterizes the geology of the area around NSGL. NSGL is listed as part of the Bluff-Ravine Complex of the Central Lowland Providence consisting of the flat land cut by ravines and edged on the east with the bluff overlooking Lake Michigan. Pettibone Creek ravine runs perpendicular to the shoreline of Lake Michigan, dividing NSGL. This land formation is the result of the Pleistocene continental glacial deposits that released unconsolidated glacial drift along the bedrock. The glacial till is composed of varying proportions of clay, sand, silt, pebbles, and boulders, and ranges from 40 to 200 feet in thickness because of the numerous glacial events that took place. The lakeshore presents the sandy phase of this formation. Underneath the glacial till are layers of dolomites, sand, stones, and shale from sea deposits. The bedrock is Precambrian granite that is relatively horizontal.

### **2.1.4 Regional Hydrology**

Lake County has a surplus of water available from the surface waters of Lake Michigan. Communities near Lake Michigan, including Great Lakes, utilize this source for potable water rather than groundwater aquifers. NSGL consumes lake water because of its close proximity. NSGL has two drainage basins: Skokie Ditch and Pettibone Creek ravine; water from these sources is not potable. There are two storm water discharges to Skokie Ditch: a storm sewer discharge from Forrestal Village (a residential area of the base), and a storm sewer located underneath the Willow Glen Golf Course that discharges to the headwaters of Skokie Ditch. Pettibone Creek receives runoff from the main area of the installation, and this water discharges into Lake Michigan from the inner harbor location of the installation.

### **2.1.5 Regional Hydrogeology**

Groundwater in the Lake County area consists of four aquifers: the Glacial Drift Aquifer, the Silurian Dolomite Formation, the Cambrian-Ordovician Aquifer, and the Mount Simon Sandstone. The Glacial Drift and Silurian Dolomite are shallow aquifers reaching depths of 150 to 500 feet. The shallow aquifer located along the shoreline at the installation has a depth to groundwater between 2 and 5 feet bgs due to the proximity of the lake. This water is not potable and is not utilized at NSGL or by the surrounding area. The remaining aquifer system is known as the deep aquifer system, with depths ranging from 900 to 1,900 feet bgs. The shallow aquifer system recharges from local rainfall infiltration, while the deep aquifer system recharges from sources in areas of central Wisconsin.

## 2.2 SITE INVESTIGATION SUMMARY

Environmental investigation work was performed at the TSA Ranges site in 2010 and 2011. A more detailed history of the site activities are presented in the SI Report (Tetra Tech, 2010) and the Addendum to the SI Report (Tetra Tech, 2012).

### 2.2.1 SI Sampling Results

The SI was initiated in April 2010 to investigate the TSA Ranges site. The field work included collection of surface and shallow subsurface soil samples. All soil samples collected in 2010 were analyzed in the field utilizing x-ray fluorescence (XRF), and a subset of those samples was selected for submittal to a fixed-base laboratory (FBL) for select metals (lead, antimony, and arsenic) and PAHs analysis.

The SI identified a limited area of the TSA Ranges site where concentrations of lead and PAH benzo(a)pyrene equivalent (BaP EQ) were greater than respective screening criteria and the Illinois Environmental Protection Agency (EPA) background surface soil concentrations. Based on the SI findings, it was determined that further actions were required.

Additional focused sampling (horizontally and vertically) was recommended at the TSA Ranges site to further characterize and quantify the contaminated soil areas, and to identify discrete areas where removal actions could address the contaminated soils that pose a threat to human health or the environment.

### 2.2.2 Supplemental SI Sampling Results

Supplemental SI field sampling activities for the TSA Ranges site were conducted in September 2011, which consisted of additional surface and subsurface soil sampling for the analysis of select metals and PAHs. The Supplemental SI results identified a limited area where concentrations of contaminants in soil exceeded with lead concentrations greater than the screening criteria (400 milligrams per kilogram [mg/kg] human health screening criterion for lead and 2,100 micrograms per kilogram [ $\mu\text{g}/\text{kg}$ ] Tiered Approach to Corrective Action Objectives [TACO] Background Criterion for PAH BaP EQ).

Figure 2-1 presents the sample locations with BaP EQ concentrations in excess of the screening criterion for both the SI and Supplemental SI sampling events. Figures 2-2 and 2-3 present the sample locations with lead concentrations in surface soil and subsurface soil, respectively, in excess of the screening

criteria for both the SI and Supplemental SI sampling events. The combined findings from the SI and supplemental SI indicate that further actions are required.

### **2.2.3 SI Recommendations**

A prescriptive removal of soil with concentrations of lead exceeding human health screening criteria and PAH BaP EQ exceeding TACO background screening criteria in the area east of the RV park is recommended at the TSA Ranges site.

The removal of select lead and PAH-contaminated soil from 0 to 2 and 2 to 4 feet bgs will reduce the potential risk and exposure to human receptors to acceptable risk levels between  $10^{-4}$  and  $10^{-6}$  in those areas, which will then support a no further action (NFA) determination for the site.

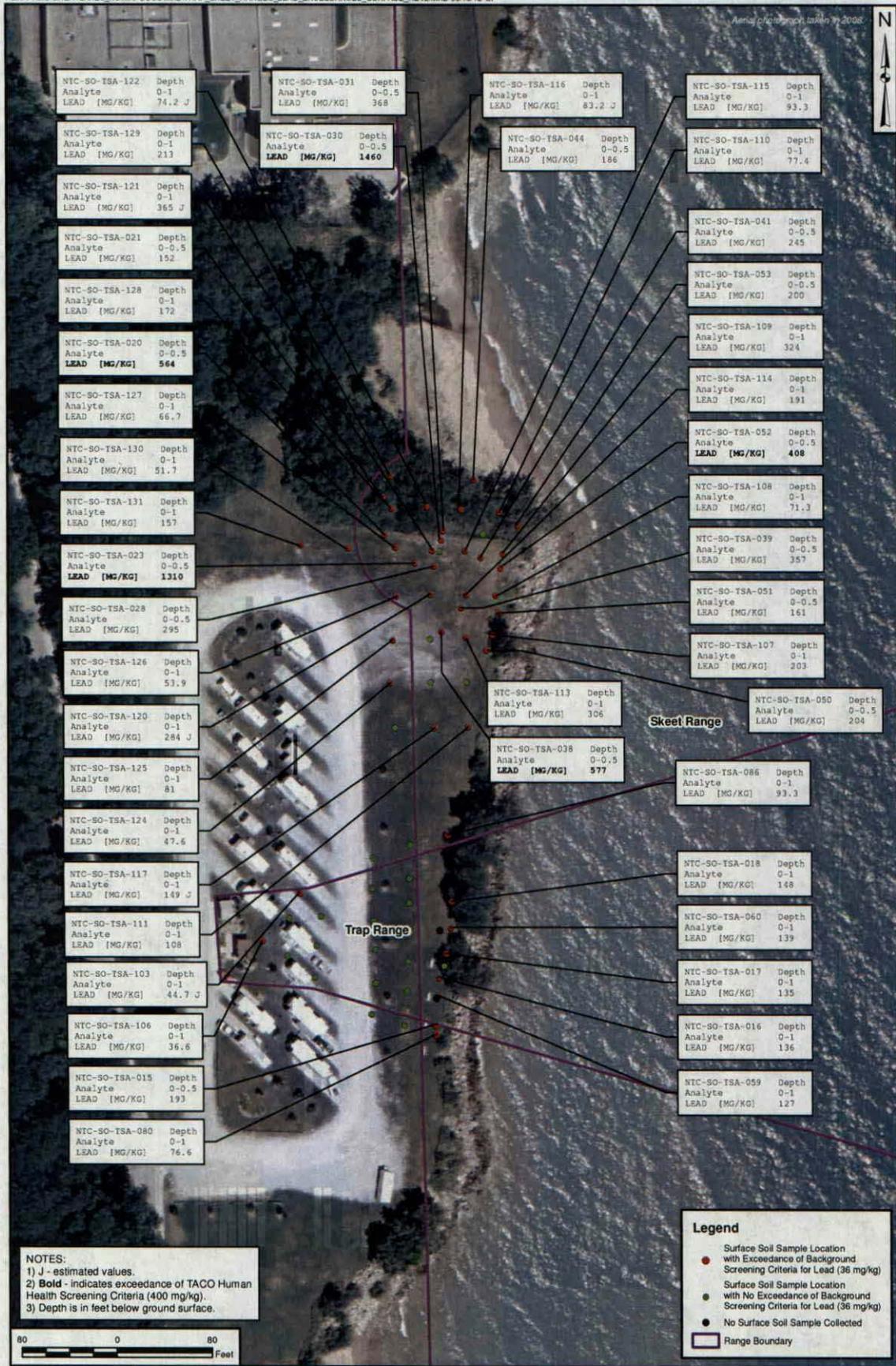


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 DATE 01/18/12  
 CHECKED BY J. DUCAR  
 DATE 09/20/12  
 REVISED BY S. PAXTON  
 DATE 09/20/12  
 SCALE AS NOTED

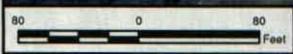


SOIL SAMPLE EXCEEDANCES - BaP EQUIVALENT  
 TSA RANGES  
 NAVAL STATION GREAT LAKES  
 GREAT LAKES, ILLINOIS

CONTRACT NUMBER	CTO NUMBER
APPROVED BY	DATE
APPROVED BY	DATE
FIGURE NO. FIGURE 2 - 1	REV 0



**NOTES:**  
 1) J - estimated values.  
 2) Bold - indicates exceedance of TACO Human Health Screening Criteria (400 mg/kg).  
 3) Depth is in feet below ground surface.



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J. DUCAR	09/19/12
REVISED BY	DATE
S. PAXTON	09/19/12
SCALE	AS NOTED



**SURFACE SOIL SAMPLE EXCEEDANCES - LEAD  
 TSA RANGES  
 NAVAL STATION GREAT LAKES  
 GREAT LAKES, ILLINOIS**

**Legend**

- Surface Soil Sample Location with Exceedance of Background Screening Criteria for Lead (36 mg/kg)
- Surface Soil Sample Location with No Exceedance of Background Screening Criteria for Lead (36 mg/kg)
- No Surface Soil Sample Collected
- Range Boundary

CONTRACT NUMBER	CTO NUMBER
APPROVED BY	DATE
APPROVED BY	DATE
FIGURE NO.	REV
FIGURE 2 - 2	0

Aerial photograph taken in 2009



NTC-SO-TSA-121	Depth	0-1	1-2	2-4
Analyte	LEAD (MG/KG)	365 J	<b>433 J</b>	250 J

NTC-SO-TSA-110	Depth	0-1	1-2	2-4
Analyte	LEAD (MG/KG)	77.4	<b>427</b>	NS

NTC-SO-TSA-109	Depth	0-1	1-2	2-4
Analyte	LEAD (MG/KG)	324	<b>1110</b>	<b>858</b>

NTC-SO-TSA-107	Depth	0-1	1-2	2-4
Analyte	LEAD (MG/KG)	203	<b>419</b>	<b>481</b>

NTC-SO-TSA-113	Depth	0-1	1-2	2-4
Analyte	LEAD (MG/KG)	306	<b>463</b>	<b>603</b>

NTC-SO-TSA-112	Depth	0-1	1-2	2-4
Analyte	LEAD (MG/KG)	31.9	<b>630</b>	NS

NTC-SO-TSA-111	Depth	0-1	1-2	2-4
Analyte	LEAD (MG/KG)	108	381	<b>469</b>

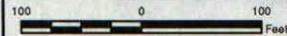
Skeet Range

Trap Range

**Legend**

- Soil Sample Location with Exceedance of Human Health Screening Criteria for Lead
- Soil Sample Location with No Exceedance of Human Health Screening Criteria for Lead
- Range Boundary

**NOTES:**  
 1) J = estimated value.  
 2) NS = not sampled.  
 3) **Bold** - indicates exceedance of Human Health Screening Criteria (400 mg/kg).  
 4) Depth is in feet below ground surface.



DRAWN BY	DATE
C. TULLEY	12/15/11
CHECKED BY	DATE
J. DUCAR	09/19/12
REVISD BY	DATE
S. PAXTON	09/19/12
SCALE	AS NOTED



SOIL SAMPLE EXCEEDANCES - LEAD  
 TSA RANGES  
 NAVAL STATION GREAT LAKES  
 GREAT LAKES, ILLINOIS

CONTRACT NUMBER	CTO NUMBER
APPROVED BY	DATE
APPROVED BY	DATE
FIGURE NO.	REV
FIGURE 2 - 3	0

### 3.0 SOIL REMOVAL ACTION MEASURES

The removal actions described in this RAWP involve the removal of soils contaminated with metals (primarily lead) and PAH within the TSA Ranges site, and will be performed under a Navy Environmental Multiple Award Contract (EMAC). The intent of this RAWP is to describe the performance standards and associated requirements for the removal and off-site disposal of contaminated soil from the land portion of the TSA Ranges. The areas where removal actions are to be performed are presented on Figure 3-1. Table 3-1 presents the volumes of soils to be removed. Figure 3-2 presents the areas of excavation with each corner identified by a location node. Table 3-2 presents the corresponding coordinates (NAD 83 State Plane Illinois East) for each excavation node.

The extent of the soil removal actions are based on the results of the environmental investigations. The removal action work to be performed will consist of the following major components, and is further discussed in the supplemental specifications presented in Appendix B.

- Planning and Permitting
- Site Preparation and Support Activities
- Soil Excavation
- Soil Dewatering
- Decontamination Pad Installation
- Transportation and Off-site Disposal of Soil
- Backfill and Restoration
- Construction documentation

The EMAC contractor will be required to perform all removal action implementation activities in accordance with the EMAC Basic Contract. The EMAC contractor will be required to submit planning documents (including a detailed Work Plan) and obtain Navy approval prior to performing the work.

#### 3.1 PLANNING AND PERMITTING

The EMAC contractor will prepare planning documents and obtain necessary site permits prior to performing the work. The planning documents will include:

- Work Plan
- Site-Specific Health and Safety Plan (SSHSP) and Activity Hazard Analysis (AHA)
- Project Quality Control Plan (QCP)

The EMAC contractor shall obtain all required permits, including but not limited to the following:

- Safety and Building Availability Permit
- Digging Permit

### 3.2 SITE PREPARATION AND SUPPORT ACTIVITIES

Prior to, during, and after soil removal, site preparation and other support activities will be performed including:

- Erosion and Sediment Control
- Site Support Measures Implementation
- Traffic Control
- Obtaining and Protecting Utilities

These items will be addressed in the Temporary Environmental Control Plan, as well as the Work Plan.

**Erosion and Sediment Control:** Before excavation activities commence, erosion and sediment controls will be established to prevent impacts to surface water (Lake Michigan) downgradient of the disturbed areas. For example, this will include installing a silt fence downgradient of the disturbed area, temporarily stabilizing the surface, and other measures. Erosion and sediment control measures will remain in place until soil excavation, backfilling, and restoration activities are completed. Completed restoration activities will include establishment of permanent vegetation, where applicable. The disturbed area to be vegetated will be regularly inspected and maintained until the area is stabilized. Once the area has been restored and stabilized, the EMAC contractor will remove temporary erosion and sediment control structures such as the silt fences. Erosion and sediment control measures will be in accordance with the Illinois Urban Manual (2012).

**Site Support Measures:** Site support measures may include installation of access controls such as fencing, and other measures to support the work. A temporary decontamination pad may be required to clean equipment used to remove, excavate and transport contaminated material. If required, the pad will be sized to accommodate all the equipment to be used at the site, and will be constructed in a manner

that contains all the contaminated materials removed from equipment and the liquids used to clean the equipment. Contaminated materials removed from the equipment will be disposed of off-site with the removed soil. Wash water will be managed as described in the approved water management plan. Waste water will be filtered and then characterized and managed accordingly. The EMAC contractor must clean all equipment prior to mobilizing to NSGL and keep his equipment clean to minimize the spread of contaminated material and soil to adjacent areas and roads.

**Traffic Control:** The EMAC contractor shall submit a Traffic Control Plan as part of the Work Plan. The Traffic Control Plan shall present details about travel routes within NSGL, and describe compliance with security inspection requirements in a way that minimizes interruptions to facility operations. The EMAC contractor vehicles will travel on the roads and use the weighing facilities as determined by the Navy. The Traffic Control Plan will function in accordance with the Access and Security requirements and the Traffic and Entry Plan. The EMAC contractor will not be permitted to travel within restricted areas of the facility. All waste hauling vehicles will be weighed upon arrival and at time of departure using the certified weight scale as determined by the Navy.

**Utilities:** The EMAC is responsible for obtaining utility locations, and adequately protecting any utilities located in the active work areas before any earth-disturbing activities begin. If it is necessary to disturb utilities during the site excavations, arrangements for necessary utility shutoffs will be made prior to initiation of earth disturbing activities. Following completion of soil excavations, utilities will be restored to their former condition. A utility map will be provided in the Scope of Work provided to the EMAC contractor.

### 3.3 SOIL EXCAVATION

This work will consist of removing the defined areas of surface soil (0 to 2 feet bgs) and subsurface soil (2 to 4 feet bgs) with contamination that exceeds the TACO criteria for lead and/or the PAH BaP EQ. The areas to be excavated are shown on Figure 3-1, and the volumes of soil to be removed are presented in Table 3-1. The volume estimates presented in Table 3-1 are in-situ estimates. Actual volumes of the soils are expected to be larger once the soils are removed from the excavation. The site RA area has been divided into two discrete areas: the trap range (T) and the skeet range (S). As shown on Figure 3-1, there are five separate RA areas within the trap range (T1 – T5), and five separate RA areas within the skeet range (S1 – S5).

### **Trap Range**

Within the Trap Range (T1 – T5), the total area to be excavated is approximately 6,451 square feet (sf). The depth of the excavation within Area T1 will be 2 feet (0 to 2 ft bgs). In addition, within the T1 area, an additional 2 feet of soil will be removed from Area T2 (2 to 4 ft bgs). Areas T3, T4, and T5 will have the top 2 feet of soil removed and temporarily stockpiled, pending placement back into the excavations as backfill. Soil in these three areas will be removed from the 2 to 4 ft bgs interval, and transported off-site for disposal. The estimated quantity of contaminated soil to be removed from the trap range area is approximately 477 cubic yards (cy).

### **Skeet Range**

Within the Skeet Range (S1 – S5), the total area to be excavated is approximately 14,628 sf. The depth of the excavation within Area S1 will be 2 feet (0 to 2 feet bgs). In addition, within the S1 area, an additional 2 feet of soil will be removed from Areas S2, S3, and S4 (2 to 4 ft bgs). Area S5 will have the top 2 feet of soil removed and temporarily stockpiled, pending placement back into the excavation as backfill. Soil from the 2 to 4 ft bgs interval will be removed and transported off-site for disposal. The estimated quantity of contaminated soil to be removed from the skeet range area is approximately 1,084 cy.

Tetra Tech will mark the limits to the excavation areas prior to removal of the soil. The EMAC contractor will be responsible to excavate within the defined limits. The actual method to remove the contaminated soil will be determined by the EMAC contractor. However, the work is expected to be performed with an excavator or backhoe. The excavated soil may be temporarily staged on-site pending final approval and/or scheduling with the disposal facility. Approval may require obtaining and analyzing a representative sample or samples of the material before and/or after excavation.

All work will be performed in accordance with the Work Plan, QCP and the HASP. This will include dust control and compliance with Occupational Safety and Health Administration (OSHA) requirements. The EMAC contractor will also be required to perform some site preparation work prior to excavation and other support activities.

## **3.4 DEWATERING**

When necessary to remove free liquids, excavated soil and sediments will be placed on a dewatering pad and allowed to drain by gravity.

The EMAC Contractor will be responsible to cover and maintain covers at the excavation sites to minimize dewatering requirements. Additionally, excavation during periods of "heavy precipitation" will be avoided. A heavy precipitation is any precipitation event that would require dewatering of the excavated materials.

Water removed during the dewatering process will be filtered to remove solids. The solids will be placed with the dewatered soils. The filtered waters will be characterized and managed in accordingly.

### **3.5 TRANSPORTATION AND OFF-SITE DISPOSAL OF SOIL**

The EMAC contractor will be responsible for transportation and offsite disposal of the contaminated soil. The waste disposal facility will be approved the Navy. Soils will be sampled for waste disposal characterization as determined by the approved waste disposal facility. All onsite transportation shall be performed on the roads determined by the Navy.

The EMAC contractor will submit the name of the proposed disposal facility to the Navy. The proposal will include facility name, contact information, permit number, and documentation/certification of the facility to accept the TSA Ranges soil. After selection, the EMAC contractor will provide transportation, treatment and disposal details in the Work Plan.

Disposal requirements vary with each disposal facility. The EMAC contractor will be responsible to notify the selected disposal facility of the classification of material to be disposed.

The EMAC contractor shall be responsible for providing and carrying waste manifests, bills of lading, placards, labeling, markings, licensing, and any other transportation/disposal documentation as required by federal, state, and local regulations. The Navy will supply a USEPA Generator ID number for this documentation. The EMAC contractor shall prepare all transportation documentation, including bills of lading, manifests, etc. for approval and signature by the Navy. A representative of the Navy will sign completed shipping manifests and bills of lading.

The EMAC contractor shall provide the Navy a 2-week notice prior to mobilization to the Site, and a minimum of 48 hours notice (2 business days) prior to shipping materials from the Site.

### 3.7 BACKFILL AND RESTORATION

The excavation will be backfilled after the contaminated soil is removed from the Site. The area will be backfilled to match the existing grade. To the extent possible, the excavated clean soil will be used as backfill.

Fill soil to be brought into NSGL must be sampled to confirm compliance with Illinois EPA TACO Tier 1 residential property use scenario for the ingestion, inhalation and migration to groundwater exposure pathways criteria [35 Illinois Administrative Code (IAC) Part 742]. If documentation is available from the borrow site vendor, the data can be submitted for a Navy sufficiency review. If the borrow site vendor does not have analytical data that documents the condition of the soils, the EMAC contractor shall collect representative samples from the proposed borrow area. All fill soils data provided by the site owner or contractor must be certified by an Illinois Licensed Professional Engineer using Illinois EPA Form LPC-663 as uncontaminated soil in accordance with the Environmental Protection Act [415 Illinois Compiled Statutes (ILCS) 5/22.51 (f)(2)(B)]. Regardless of source site use, the EMAC contractor shall analyze samples for all Target Analyte List (TAL) and Target Compound List (TCL) constituents using U.S. EPA SW846 methods with detection limits appropriate for comparison to the Illinois EPA Tier 1 TACO residential criteria. All laboratory analysis must be performed by an Illinois EPA/National Environmental Laboratory Accreditation Conference (NELAC) certified laboratory. Sample frequency shall be, at a minimum, one sample per 500 tons of soil. No soils shall be brought into NSGL until the Navy has reviewed and accepted the analytical data.

Backfill material will include common fill and topsoil.

**Common Fill.** Common fill will be used to backfill the excavations to a depth of 6 inches below final grade. This material will be placed into the excavation in maximum 9-inch-thick lifts, and compacted to 90 percent of standard proctor density. Common fill will meet the following physical characteristics:

- American Society for Testing and Materials (ASTM) D 2487, Classifications GW, GP, GM, SW, SP, or SM.
- ASTM D 4318, Liquid limit, 35 maximum.
- ASTM D 4318, Plasticity index, 12 maximum.
- Maximum of 25 percent by weight passing ASTM D 1140, No. 200 sieve.
- Maximum particle size of 1 inch.

Topsoil. The uppermost 6 inches of backfill used to establish final grades will be medium-textured loam suitable for establishing vegetation.

Following backfilling, the disturbed area (grass areas only) will be restored using permanent seeding. Restoration will consist of surface preparation, fertilizing, seeding, and mulching. Activities to establish permanent seeding will be implemented as soon as possible following the construction of final grades. Permanent vegetation activities will include site/seed bed preparation, seeding, and mulching of the restored excavation areas, and the surface soils located underneath support facilities.

The procedures and requirements for permanent seeding activities are presented in the Illinois Urban Manual (2012). The seed mixture recommended for use at the TSA Ranges site will be a standard Illinois seed mixture for open and disturbed areas. The seed mixture will include perennial ryegrass and tall fescue. Planting rates and optimum soil pH for this mixture are presented in the Illinois Urban Manual. Following seeding, the seeded areas will be covered with mulch and tack (e.g., coconut fiber matting) to provide additional stabilization until vegetation is established.

### **3.8 STORMWATER CONTROLS**

The TSA Range surface hydrology, grading, and cover will not be altered as a result of removal action implementation activities. Pre- and post-development runoff from the limits of the disturbance will be the same; therefore, permanent stormwater detention capacity is not required, and pre- and post-construction stormwater runoff calculations were not prepared.

### **3.9 SUBMITTALS DURING CONSTRUCTION**

The EMAC contractor must submit construction and quality assurance/quality control (QA/QC) documents during construction. These will include, but are not limited to the following:

- Field work reports in accordance with EMAC Basic Contract.
- Erosion and Sediment Control installation and inspection logs.
- Copies of NSGL-specific permits.
- Site plan showing limits of excavation. The site plan shall be stamped by a licensed surveyor.

- Certification and analytical results for backfill material. A minimum of one sample per 500 tons of material is required and must be submitted and approved before material can be brought on-site.
- Waste profiles, waste characterization results, and any waste disposal facility pre-approval or approval documentation.
- Work Site Decontamination Certificates (verification that all vehicles, equipment, and containers were properly decontaminated prior to leaving the work site).
- Disposal Site Decontamination Certificates (verification that vehicles and containers were decontaminated prior to leaving the disposal facility).
- Shipment Manifests (manifests and other documents required to ship waste).
- Weight tickets.
- Delivery and Disposal Certificates (verification that waste was received and disposed at identified disposal facility).
- Decontamination Log.

The EMAC contractor shall compile the above documentation in a Construction Completion Report and provide it to the Navy, or their representative.

TABLE 3-1

**SUMMARY OF TSA RANGE EXCAVATION AREAS  
NSGL - TSA RANGES SITE  
GREAT LAKES, ILLINOIS**

Area Number	Description			Area	Depth	Volume	Volume	Average PAH Concentration	Average Lead Concentration	Removal Description	Other Costs
				ft <sup>2</sup>	ft	cy	tons	(ug/kg)	(mg/kg)		
T1	Trap Range	Surface Soil	shoreline	2931	2	217	326	6492	114	Remove 0 to 2 feet	Restore site to original condition; replace removed shrubs/trees with NSGL-approved vegetation; revegetate remaining area with NSGL approved grass.
T2	Trap Range	Surface Soil	shoreline	262	2	19	29	3905	110	Removal of 2 to 4 feet	—
T3	Trap Range	Subsurface Soil	north	769	2	57	85	6734	24	Scrape 0 to 2 foot and retain. Remove 2 to 4 feet	—
T4	Trap Range	Subsurface Soil	south	449	2	33	50	3435	56	Scrape 0 to 2 foot and retain. Remove 2 to 4 feet	Possible tree removal - may be able to work around it. If required, Restore site to original condition; replace removed trees with NSGL-approved vegetation.
T5	Trap Range	Subsurface Soil	west	2040	2	151	227	13446	159	Scrape 0 to 2 foot and retain. Remove 2 to 4 feet	Removal and replacement of 2-3 RV spaces including utilities (electric, water). Replacement of stone parking spaces and grass medians.
S1	Skeet Range	Surface Soil	shoreline	10487	2	777	1165	946	524	Remove 0 to 2 feet	Restore site to original condition; replace removed shrubs/trees with NSGL-approved vegetation; revegetate remaining area with NSGL approved grass.
S2	Skeet Range	Subsurface Soil	south	1134	2	84	126	3716	420	Removal of 2 to 4 feet	—
S3	Skeet Range	Subsurface Soil	Mid	1255	2	93	139	2246	542	Removal of 2 to 4 feet	—
S4	Skeet Range	Subsurface Soil	north	522	2	39	58	222	858	Remove 2 to 4 feet	—
S5	Skeet Range	Subsurface Soil	west	1230	2	91	137	13436	119	Scrape 0 to 2 foot and retain. Removal of 2 to 4 feet	—
<b>Total</b>						<b>1561</b>	<b>2342</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>

cy - cubic yards

ft - feet

ft<sup>2</sup> - square feet

mg/kg - milligrams per kilograms

PAH - polycyclic aromatic hydrocarbons

ug/kg - micrograms per kilograms

-- not applicable

TABLE 3-2

TSA RANGE EXCAVATION NODE COORDINATES  
 NSGL - TSA RANGES SITE  
 GREAT LAKES, ILLINOIS  
 PAGE 1 OF 2

Excavation	Excavation Node ID	Easting	Northing	Comments
S1	S1a	1120186.44568	2059735.99994	
	S1b	1120104.41455	2059737.56262	
	S1c	1120104.41455	2059781.83344	
	S1d	1120146.60193	2059780.53125	
	S1e	1120146.60193	2059878.96869	
	S1f	1120117.95618	2059881.57306	
	S1g	1120120.03937	2059905.79175	
	S1h	1120082.79999	2059911.00006	
	S1i	1120084.36243	2059924.28125	
	S4b	1120221.08118	2059912.04175	Shared node with excavation S4
S2	S2a	1120136.96637	2059769.85419	
	S2b	1120191.65399	2059769.85419	
	S2c	1120188.45807	2059748.51160	
	S2d	1120136.96637	2059748.50012	
S3	S3a	1120162.74774	2059851.10419	
	S3b	1120204.41443	2059847.71881	
	S3c	1120199.14520	2059814.95795	
	S3d	1120162.48724	2059820.37500	
S4	S4a	1120190.29547	2059914.79791	
	S4b	1120221.08118	2059912.04175	
	S4c	1120216.53333	2059894.49017	
	S4d	1120188.52887	2059897.45837	
S5	S5a	1120093.60708	2059849.02083	
	S5b	1120127.48110	2059848.50234	
	S5c	1120127.48110	2059812.33828	
	S5d	1120093.60708	2059812.56250	
T1	T1a	1120156.23730	2059503.44806	
	T1b	1120138.00812	2059506.83344	
	T1c	1120144.70245	2059569.02521	
	T1d	1120113.00818	2059572.71881	
	T1e	1120111.44574	2059601.10431	
	T2a	1120147.12268	2059597.97919	Shared node with excavation T2
	T1f	1120150.21887	2059623.88427	
	T1g	1120165.35187	2059623.50006	
T2	T2a	1120147.12268	2059597.97919	
	T2b	1120163.22602	2059597.23548	
	T2c	1120162.48724	2059581.31244	
	T2d	1120146.08124	2059581.83344	

TABLE 3-2

TSA RANGE EXCAVATION NODE COORDINATES  
 NSGL - TSA RANGES SITE  
 GREAT LAKES, ILLINOIS  
 PAGE 2 OF 2

Excavation	Excavation Node ID	Easting	Northing	Comments
T3	T3a	1120108.71125	2059646.41667	
	T3b	1120139.96125	2059645.89583	
	T3c	1120139.44042	2059620.89583	
	T3d	1120109.23208	2059621.41667	
T4	T4a	1120091.10013	2059559.21387	
	T4b	1120107.81877	2059559.21387	
	T4c	1120107.81877	2059531.75626	
	T4d	1120091.83234	2059531.75626	
T5	T5a	1120033.19042	2059627.66667	
	T5b	1120054.02375	2059569.85417	
	T5c	1119993.08625	2059574.54167	
	T5d	1119992.56542	2059590.16667	

Note: Coordinates are based on NAD 83 State Plane Illinois East



DRAWN BY	DATE
J. ENGLISH	01/16/12
CHECKED BY	DATE
J. DUCAR	09/05/12
REVISED BY	DATE
S. PAXTON	09/05/12
SCALE	
AS NOTED	



**PROPOSED SOIL EXCAVATION AREAS WITH TACO EXCEEDANCES**  
 TSA RANGES  
 NAVAL STATION GREAT LAKES  
 GREAT LAKES, ILLINOIS

CONTRACT NUMBER	GTO NUMBER
	F274
APPROVED BY	DATE
APPROVED BY	DATE
FIGURE NO.	REV
FIGURE 3 - 1	0



DRAWN BY	DATE
S. PAXTON	09/19/12
CHECKED BY	DATE
J. DUCAR	09/19/12
REVISED BY	DATE
SCALE	
AS NOTED	



**PROPOSED SOIL EXCAVATION AREAS WITH LOCATION NODES**  
**TSA RANGES**  
**NAVAL STATION GREAT LAKES**  
**GREAT LAKES, ILLINOIS**

CONTRACT NUMBER	CTO NUMBER
	F274
APPROVED BY	DATE
APPROVED BY	DATE
FIGURE NO.	REV
FIGURE 3 - 2	0

#### 4.0 REFERENCES

Illinois Urban Manual (2012).

Tetra Tech, 2010. Site Inspection Report Munition Response Program Ranges Naval Station Great Lakes Great Lakes, Illinois. November.

Tetra Tech, 2012, Addendum to: Site Inspection Report Munition Response Program Ranges Naval Station Great Lakes Great Lakes, Illinois. May.

**APPENDIX A**

**SITE PHOTOGRAPHS**



A-1 The former Trap Range is now an RV park. The firing line for the former Trap Range is located behind the camper in the foreground.



A-2 The northern sampling locations at the Trap Range. Note the large concrete pieces at the water's edge used for erosion control.



A-3

View from north to south of the Lake Michigan beachfront, showing concrete slabs along the border of the TSA Ranges.



A-4

The south central sampling locations at the Trap Range. Note the large concrete pieces at the water's edge used for erosion control.



A-5

The southern sampling locations at the Trap Range. Note the large concrete pieces at the water's edge used for erosion control.

**APPENDIX B**

**SUPPLEMENTAL SPECIFICATIONS**

**SUPPLEMENTAL SPECIFICATIONS**  
**REMOVAL ACTION WORK PLAN**  
**TSA RANGES**  
**NAVAL STATION GREAT LAKES**  
**GREAT LAKES, ILLINOIS**

**Contractor Requirements**

The Contractor will be responsible for performing the following work:

1. Attend pre-Remedial Action Work Plan (RAWP) implementation conference.
2. Submit documentation in accordance with the 'Basic Contract' 30 days prior to beginning work to allow the Navy sufficient time to review and comment. The Contractor will then incorporate Navy comments into the documents. These documents include the following:
  - Work Plan
    - Excavation and Handling Plan
    - Hazardous/Waste Management Plan
    - Environmental Protection Plan
    - Erosion and Sediment Control Plan
    - Stormwater Pollution Prevention Plan
    - Transportation and Disposal Plan
  - Site Specific Health and Safety Plan (SSHSP) and Activity Hazard Analysis
  - Project Quality Control Plan (QCP)
3. Acquire Facility-specific permits, including but not limited to the following:
  - Safety and Building Availability Permit.
  - Digging Permit.
  - Flame Tool/Hot Work Permit.
  - Hazards of Electromagnetic Radiation to Ordnance (HERO) (approval for portable radios).
4. Mobilize required equipment and personnel to excavate the indicated contaminated soil.
5. Construct and maintain the required erosion and sediment control devices for the duration of the project.
6. Construct required support facilities including, but not limited to, temporary gravel construction entrance, temporary access trails, dewatering pad, decontamination pad(s), and material storage areas.
7. Excavate, transport, and dispose contaminated surface and subsurface soils.
8. Stabilize and restore surface soil excavation area to meet surrounding grades.
9. Remove all temporary support facilities, leaving perimeter erosion and sediment controls in place until revegetation is complete and as instructed by the Navy.
10. Restore areas used for temporary support facilities (regrade and revegetate).
11. Demobilize equipment and personnel.

In addition to the QC submittals and Safety and Health submittals required by the NSGL Contractor's Operations Manual and the Basic Contract, the Contractor shall submit the following to the Navy:

- Field work reports in accordance with Part 6.4 Section C of the Basic Contract.
- Contractor 40 CFR 1910.120 Employee Training Certificates for all Contractor employees scheduled to be on-site.
- Erosion and Sediment Control installation and inspection logs.
- Copies of NSGL-specific permits.
- Certification and sampling results for backfill material and topsoil.
- Waste transportation subcontractor name, address, contact name, telephone number, and United States Department of Transportation (USDOT) number.
- Hazardous waste disposal facility name, address, contact name, telephone number, and USEPA and State identification numbers, if required.

- Solid waste disposal facility name, address, contact name, telephone number, USEPA and State identification numbers.
- Copies of Treatment/Disposal Facility Permits.
- Waste profiles, complete waste characterization results, and any waste disposal facility pre-approval or approval documentation.
- Work Site Decontamination Certificates (verification that all vehicles, equipment, and containers were properly decontaminated prior to leaving the work site).
- Disposal Site Decontamination Certificates (verification that vehicles and containers were decontaminated prior to leaving the disposal facility).
- Shipment Manifests (manifests and other documents required to ship waste).
- Delivery Certificates (verification that waste was received at identified waste disposal facility).
- Treatment and Disposal Certificates (verification that waste was successfully received and disposed).
- Decontamination Log.

The Contractor-provided information will be compiled in the project CTO Closure Report to be prepared by the Navy.

#### Supplemental Specifications

In addition to the performance specifications presented in the NSGL Contractor's Operation Manual and in the Basic Contract, the Contractor shall perform the activities in accordance with the supplemental specifications provided below.

#### General Requirements

The Contractor is advised that this project is subject to federal, state, and local regulatory agency inspections and review for compliance with environmental laws and regulations. The Contractor shall fully cooperate with any representative from any federal, state, or local regulatory agency who may visit the job site, and shall provide immediate notification to the Officer in Charge of Construction (OICC), who shall accompany them on any subsequent site inspections. The Contractor shall complete, maintain, and make available to the OICC, Facility, or regulatory agency personnel all documentation relating to environmental compliance under applicable federal, state, and local laws and regulations. The Contractor shall immediately notify the OICC if a Notice of Violation, Notice of Deficiency, or similar regulatory notice is issued to the Contractor.

The Contractor shall be responsible for all damages to persons or property resulting from Contractor fault or negligence, as well as for the payment of any civil fines or penalties which may be assessed by any federal, state, or local regulatory agency as a result of the Contractor's or any subcontractor's violation of an applicable federal, state, or local environmental law or regulation. Should a Notice of Violation, Notice of Noncompliance, Notice of Deficiency, or similar regulatory agency notice be issued to the Government or Facility owner/operator on account of the actions or inactions of the Contractor or one of its subcontractors in the performance of work under this contract, the Contractor shall fully cooperate with the Government in defending against regulatory assessment of any civil fines or penalties arising out of such actions or inactions.

After approval of the Contractor's Work Plan and before commencement of work, the Contractor shall submit to the OICC the required certifications. As requested by the OICC, the Navy Representative for this project may review and provide surveillance for the OICC to determine if the Contractor's submittals comply with the contract requirements.

The Contractor shall be required to commence work on the approved Contractor's Work Plan within 5 calendar days after receiving the notice to proceed, and to prosecute the work diligently after receiving the notice to proceed.

NSGL will remain in operation during the entire construction period. The Contractor shall schedule the work as to cause the least amount of interference with the Facility. Work schedules shall be subject to the approval of the OICC. Permission to interrupt Facility road services shall be requested in writing a minimum of 15 calendar days prior to the desired date of interruption. The OICC shall be notified 48 hours prior to starting excavation activities.

Regular work hours shall consist of an 8.5 hour daily period established by the OICC, Monday through Friday, excluding Government holidays. The Contractor should assume an 8.5 hour daily period. Working outside of the 8.5 hour daily period will require approval by the OICC. Work hours shall be established during the pre-RAWP implementation conference.

On-site storage, laydown, material handling, and decontamination activities shall be limited to areas approved by the OICC.

During the progress of construction activities, the work area and adjacent areas shall be kept clean and free of rubbish, surplus materials, and unneeded construction equipment. No material or debris shall be allowed to flow or wash into watercourses, ditches, gutters, drains, or pipes. Upon completion of the work, the Contractor shall sweep paved areas and rake clean landscaped areas, and remove waste and surplus materials, rubbish, and construction facilities from the site.

#### Work Restrictions

Contractor personnel employed at the Facility shall become familiar with and obey Facility regulations and keep within the limits of the work and avenues of ingress and egress as directed. Personnel shall not enter any restricted areas unless required to do so and until cleared for such entry. The Contractor's equipment shall be clearly marked for identification.

The Contractor shall indicate on the construction schedule any activity that could potentially interrupt Facility operations. The Contractor shall notify the OICC in writing 15 calendar days prior to the required interruption.

#### Facilities and Services

Provide utility permits in accordance with Part 4.13 Section C of the Basic Contract.

NSGL shall make all reasonably required amounts of utilities available to the Contractor from existing outlets and supplies, as indicated. The amount of each utility service consumed shall be charged to or paid for by the Contractor at the prevailing rates charged to NSGL, or shall be furnished at no charge as indicated. The Contractor shall carefully conserve any utilities furnished without charge.

The point at which NSGL will deliver such utilities or services and the quantity available will be identified by NSGL.

The Contractor, at its expense and in a workmanlike manner satisfactory to the Contracting Officer, shall install and maintain all necessary temporary connections and distribution lines, and all meters required to measure the amount of each utility used for the purpose of determining charges. Before final acceptance of the work by the Government, the Contractor shall remove all the temporary connections, distribution lines, meters, and associated paraphernalia.

Electric – Electrical power available: primary voltage is 2400 volt 3 phase, 3 wire, 60 cycle AC; secondary voltages may be 120/208 or 120/240 volts. Final taps and tie-ins to the NSGL utility grid will be made by the NSGL electric shop.

Potable Water – Potable water is not available. Contractor shall provide potable water for use by all personnel.

Water – A reasonable quantity of water is available at [to be determined] at no charge. Provide backflow preventer devices on connections to potable water supplies. Under no circumstances will taps to NSGL fire hydrants be allowed for obtaining water.

Telephone – Telephone service is not available.

Sanitary Facilities - Provide temporary sanitary facilities for use by all personnel in accordance with Part 3.10 Section C of the Basic Contract.

Municipal Waste – Municipal waste storage and disposal is not available.

Sewer – Water resulting from personnel and equipment decontamination, excavation dewatering, and water from materials handling pad may be discharged to the NSGL sanitary sewer system, subject to approval of the NSGL based on characterization samples of water to be discharged.

#### Site Personnel Qualifications

Site Superintendent - The Contractor shall designate a Site Superintendent who shall have responsibility and authority to direct work performed. The Site Superintendent shall be responsible for the management and execution of all site activities in accordance with the RAWP, approved Contractor's Work Plan, and all federal, state, and local laws and regulations. The Site Superintendent may not act in the dual role as the Project Quality Control Manager or Site Health and Safety Specialist (SHSS). The Site Superintendent shall have, as a minimum, the following qualifications:

- A minimum of 6 years site superintendent experience.
- A minimum of 3 years experience on hazardous, toxic and radioactive waste (HTRW) projects.
- Familiarity with the requirements of the U.S. Army Corps of Engineers Safety - Safety and Health Requirements (EM 385-1-1).
- Experience in the areas of hazard identification and safety compliance.

Project Quality Control Manager - The Contractor shall designate a Project Quality Control (QC) Manager who shall assist and represent the QC Program Manager in continued implementation and enforcement of the approved Project QC Plan. The QC Program Manager or Project QC Manager shall be physically present at the project site whenever work is in progress. The Project QC Manager may act in the dual role as the SHSS if qualified. The Project QC Manager shall have, as a minimum, the following qualifications:

- A minimum 2 years experience as a Project QC Manager.
- A minimum of 10 years combined experience in the following positions: project superintendent, QC manager, project manager, project engineer or construction manager on similar size and type of construction contracts which included the major trades that are part of this RA.
- Alternatively, the above 10-year combined experience requirement may be satisfied by providing a professional engineer registered in the State of Illinois having at least 2 years experience as a Project QC Manager.
- Familiar with the requirements of the U.S. Army Corps of Engineers Safety - Safety and Health Requirements (EM 385-1-1).
- Experience in the areas of hazard identification and safety compliance.

Site Health and Safety Specialist - The Contractor shall designate a SHSS who shall assist and represent the Contractor's Health and Safety (H/S) Manager in continued implementation and enforcement of the approved Site-Specific Health and Safety Plan (SSHSP). The SHSS shall have the on-site responsibility and authority to modify and stop work, or remove personnel from the site if working conditions change which may affect on-site and off-site health and safety. The SHSS shall be physically present at the project site at all times. The SHSS act in the dual roles as the Project QC Manager. The SHSS shall have, as a minimum, the following qualifications:

- A minimum of 5 years safety work on similar projects.

- 30-hour OSHA construction safety class or equivalent within the last 5 years.
- An average of at least 24 hours of formal safety training each year for the last 5 years.
- Competent person status for at least the following:
  - Excavation.
  - Health hazard recognition, evaluation and control of chemical, physical and biological agents.
  - Personal protective equipment and clothing to include selection, use and maintenance.
- First aid and cardiopulmonary resuscitation (CPR) qualified.

#### Quality Control

Approval of the QC Plan is required prior to the start of construction. The OICC reserves the right to require changes in the QC Plan and operations as necessary to ensure the specified quality of work. The Contracting Officer reserves the right to interview the QC Manager at any time in order to verify his/her submitted qualifications.

The OICC shall be notified, in writing, of any proposed changes to the QC Plan, at a minimum of 7 calendar days prior to the implementation of the proposed change. Proposed changes must be approved by the OICC.

A combined Contractor Production Report/Contractor Quality Control Report (CPR/CQCR) is required for each day that work is performed. CPR/CQCRs are to be prepared, signed, and dated by the Project QC Manager.

#### Safety and Occupational Health Requirements

The SHSS and Contractor representatives who have a responsibility or significant role in accident prevention shall attend the pre-RAWP implementation conference. The purpose of the conference is for the Contractor and the OICC to become acquainted and explain the functions and operating procedures of their respective organizations, and to reach mutual understanding relative to the administration of the overall project before the initiation of work. The Contractor shall discuss the details of the work identified in the approved Contractor's Work Plan, and discuss which construction phases will require significant or additional activity hazard analysis. In addition, a schedule for the preparation, submittal, review, and acceptance of additional hazard analysis shall be established to preclude project delays. Lastly, deficiencies in the submitted accident prevention report will be brought to the attention of the Contractor at the conference. The Contractor shall revise the plan to correct deficiencies and resubmit the plan for acceptance.

New employees (prime or subcontractor) will be informed of specific site hazards before they begin work. Documentation of this orientation shall be kept on file at the project site.

If unforeseen materials hazardous to human health are encountered during operations, that portion of the work shall be stopped and the OICC shall be notified immediately. Within 14 days, the Navy will determine if the material is hazardous. If the material is not hazardous or poses no danger, the OICC will direct the Contractor to proceed without change. If the material is determined to be hazardous or to pose danger, and handling of the material is necessary to accomplish the work, the Contracting Officer will issue modifications to the proposed work.

Equipment shall be operated by designated qualified operators. Proof of qualifications shall be kept on the project site for review. Manufacturer's specifications or owner's manual for the equipment shall be on site and reviewed for additional safety precautions or requirements. Such additional safety precautions or requirements shall be incorporated into the activity hazard analysis. Mechanized equipment shall be inspected in accordance with manufacturer's recommendations for safe operations by a competent person prior to being placed into use. Daily checks or tests shall be conducted and documented on mechanized equipment by designated competent persons.

The competent person for excavations performed as a result of contract work shall be on-site when excavation work is being performed, and shall inspect and document the excavations daily prior to entry by workers. The competent person must evaluate all hazards, including atmospheric, that may be associated with the work, and shall have the resources necessary to correct hazards promptly.

#### Environmental Controls

An Erosion and Sediment Control Plan will be developed by the contractor. The Erosion and Sediment Control Plan describes the location and description of all erosion and sediment control measures, a sequence of construction to be followed, graphic details of all erosion and sediment control measures to be used, and an approval sign-off block containing the names of the Facility and Contractor contacts, whose signatures indicate plan acceptance/approval.

The Contractor shall strictly follow the Erosion and Sediment Control Plan and maintain all measures used during construction. Modifications to the Erosion and Sediment Control Plan shall be submitted to the OICC for approval. No modifications to the Erosion and Sediment Control Plan will be allowed until these changes have been approved by the OICC and three copies of the approved modifications have been submitted to the OICC.

#### Transportation and Disposal of Contaminated Material

The Contractor shall be solely responsible for complying with all federal, state, and local requirements for decontamination of vehicles, equipment, and containers, and shall bear all responsibility and cost for any noncompliance. In addition to these requirements, the Contractor shall perform the following:

- Visually inspect all vehicles, equipment, and containers leaving the work site for proper decontamination.
- Prepare and maintain a written decontamination log.

The Contractor shall be solely responsible for complying with all federal, state, and local requirements for transporting contaminated materials through the applicable jurisdictions, and shall bear all responsibility and cost for any noncompliance. In addition to these requirements, the Contractor shall perform the following:

- Inspect and document all vehicles and containers for proper operation and covering.
- Inspect all vehicles and containers for proper markings, manifest documents, and other requirements for waste shipment.

All contaminated materials removed from the site shall be disposed in a treatment/disposal facility permitted to accept such material.

The Contractor shall properly dispose of investigation derived waste, personnel protective equipment, and miscellaneous wastes associated with implementation of the RAWP, including sampling and analysis that are generated by the Navy representatives.

**APPENDIX B**

**Laboratory Accreditations**



**STATE OF ILLINOIS  
ENVIRONMENTAL PROTECTION AGENCY  
NELAP - RECOGNIZED**



**ENVIRONMENTAL LABORATORY ACCREDITATION**

is hereby granted to

**MICROBAC LABORATORIES, INC. OHIO VALLEY DIVISION**

**158 STARLITE DRIVE**

**MARIETTA, OH 45750**

**NELAP ACCREDITED**

ACCREDITATION NUMBER #200019



According to the Illinois Administrative Code, Title 35, Subtitle A, Chapter II, Part 186, ACCREDITATION OF LABORATORIES FOR DRINKING WATER, WASTEWATER AND HAZARDOUS WASTES ANALYSIS, the State of Illinois formally recognizes that this laboratory is technically competent to perform the environmental analyses listed on the scope of accreditation detailed below.

The laboratory agrees to perform all analyses listed on this scope of accreditation according to the Part 186 requirements and acknowledges that continued accreditation is dependent on successful ongoing compliance with the applicable requirements of Part 186. Please contact the Illinois EPA Environmental Laboratory Accreditation Program (IL ELAP) to verify the laboratory's scope of accreditation and accreditation status. Accreditation by the State of Illinois is not an endorsement or a guarantee of validity of the data generated by the laboratory.

Primary Accrediting Authority: FL Department of Health, Bureau of Laboratories

Gary Germann  
Manager  
Environmental Laboratory Accreditation Program

Janet Cruse  
Accreditation Officer  
Environmental Laboratory Accreditation Program

Certificate No.: 002920  
Expiration Date: 04/30/2013  
Issued On: 04/04/2012



The American Association for Laboratory Accreditation

World Class Accreditation

# Accredited DoD ELAP Laboratory

A2LA has accredited

**MICROBAC LABORATORIES, INC.  
OHIO VALLEY DIVISION**

*Marietta, OH*

for technical competence in the field of

**Environmental Testing**

In recognition of the successful completion of the A2LA evaluation process that includes an assessment of the laboratory's compliance with ISO/IEC 17025:2005, the 2003 NELAC Chapter 5 Standard, and the requirements of the Department of Defense Environmental Laboratory Accreditation Program (DoD ELAP) as detailed in version 4.2 of the DoD Quality System Manual for Environmental Laboratories (QSM); accreditation is granted to this laboratory to perform recognized EPA methods as defined on the associated A2LA Environmental Scope of Accreditation. This accreditation demonstrates technical competence for this defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009).



Presented this 30th day of January 2012.

President & CEO  
For the Accreditation Council  
Certificate Number 2936.01  
Valid to December 31, 2013  
Revised June 1, 2012

*For the tests or types of tests to which this accreditation applies, please refer to the laboratory's Environmental Scope of Accreditation.*



**STATE OF ILLINOIS  
ENVIRONMENTAL PROTECTION AGENCY  
NELAP - RECOGNIZED**



**ENVIRONMENTAL LABORATORY ACCREDITATION**

is hereby granted to

**PDC LABORATORIES, INC.**

**2231 W. ALTORFER DRIVE**

**PEORIA, IL 61615**

**NELAP ACCREDITED  
ACCREDITATION NUMBER #100230**



According to the Illinois Administrative Code, Title 35, Subtitle A, Chapter II, Part 186, ACCREDITATION OF LABORATORIES FOR DRINKING WATER, WASTEWATER AND HAZARDOUS WASTES ANALYSIS, the State of Illinois formally recognizes that this laboratory is technically competent to perform the environmental analyses listed on the scope of accreditation detailed below.

The laboratory agrees to perform all analyses listed on this scope of accreditation according to the Part 186 requirements and acknowledges that continued accreditation is dependent on successful ongoing compliance with the applicable requirements of Part 186. Please contact the Illinois EPA Environmental Laboratory Accreditation Program (IL ELAP) to verify the laboratory's scope of accreditation and accreditation status. Accreditation by the State of Illinois is not an endorsement or a guarantee of validity of the data generated by the laboratory.

Celeste M. Crowley  
Acting Manager  
Environmental Laboratory Accreditation Program

Scott D. Siders  
Accreditation Officer  
Environmental Laboratory Accreditation Program

Certificate No.: 002960  
Expiration Date: 06/30/2013  
Issued On: 06/26/2012

**APPENDIX C**

**NSGL Spill or Chemical Release Policy**

**SPILL OR CHEMICAL RELEASE POLICY  
NAVAL STATION GREAT LAKES (NSGL)**

1. Spills or chemical releases occurring on Navy property. All spills or chemical releases of petroleum products (including cooking oil and animal grease), hazardous substances, regulated waste, regulated gases or sewage occurring on Navy property shall be immediately reported to:
  - a. Great Lakes Emergency Dispatch Center      911  
(HAZMAT, Fire, Police, Ambulance)      (847) 688-3333
  - b. PWD 24-Hour Service Desk      (847) 688-4820
  - c. Public Works Department (PWD)      (847) 688-6934 x11 or x12  
Environmental Division
  
2. The Navy will take prompt response action as deemed necessary to contain and otherwise resolve spills or releases with potential impact to environmentally sensitive areas occurring on NSGL including storm sewers; tributary waters of Lake Michigan; creeks/streams; wetlands; critical habitats; and protected or susceptible habitats.
  
3. Off-site spills or releases. All spills or releases occurring off-site involving government property is responsibility of the Contactor for reporting to federal, State and local agencies, and will be reported to:
  - a. Navy Project Manager or Contracting Officer  
(as identified in the initial project meeting)
  - b. PWD Environmental Division      (847) 688-6934 x11 or x12
  - c. PWD 24-Hour Service Desk      (847) 688-4820  
(after normal business hours)
  
4. Reporting of spills or releases. The Navy's designated PWD Environmental Representative is responsible for reporting spill or release incidents occurring on Navy property to Federal, State, and local agencies. Contractor is responsible for reporting all incidents occurring off Navy property.
  
5. Liability. Spills and/or chemical release cleanup, remediation, damage to the environment and other related costs incurred resulting from Contractor actions shall be the responsibility of the Contractor. Such actions taken by the Navy or its designated responder(s) as deemed appropriate, shall be at the expense of the responsible Contractor.