Application Report
For
U.S. Army - Fort Monmouth
Minor Landfill Disruption Approval:
Remedial Investigation and Remedial Action Activities

U.S. Army Garrison Fort Monmouth
167 Riverside Avenue
Boroughs of Eatontown, Oceanport, and Tinton Falls
Monmouth County, New Jersey

PREPARED FOR:

Directorate of Public Works
167 Riverside Avenue
Fort Monmouth, NJ 07703

PREPARED BY:

Princeton Hydro, LLC
1108 Old York Road, Suite 1
P.O. Box 720
Ringoes, New Jersey 08551
(P) 908.237.5660 • (F) 908.237.5666
email •info@princetonhydro.com

May 2010
Princeton Hydro, LLC Project No. 0959.003

INTRODUCTION

The U.S. Army Garrison at Fort Monmouth is located east of New Jersey Route 35 and north of New Jersey Route 71 in the Boroughs of Eatontown, Oceanport, and Tinton Falls, Monmouth County, New Jersey. This minor landfill disruption approval application pertains to the on-going remedial investigation and remedialaction activities regarding a series of nine inactive, former disposal areas situated throughout Fort Monmouth. Minor disruption activities will occur within the floodplains of Lafetra Creek, Parkers Creek, Wampum Creek, and Husky Brook, all of which are classified as freshwater, non-trout/saline estuarine waters (FW2-NT/SE1) and all are located in the Monmouth Watershed Management Area.

The scope of this minor landfill disruption involves nine (9) areas of on-going characterization and/or remediation. Activities include the following: (1) soil borings; (2) test pits; (3) piezometer and monitoring well installation; (4) injection of chemical and biological oxidation stimulants for groundwater remediation; and, (5) methane gas surveys. Landfill CW-3A located in Tinton Falls Borough; landfills M-2, M-3, M-4, and M-5 are located in Eatontown Borough; and landfills M-8, M-12, M-14, M-18 are located in Oceanport Borough.

In addition to this application for minor landfill disruption approval, the applicant will obtain, as warranted, approvals from the New Jersey Department of Environmental Protection (NJDEP) for soil boring, well installation, and in-situ injection activities.

Due to planned de-activation of the U.S. Army Garrison at Fort Monmouth and to support on-going and future remediation associated with the complement of inactive disposal areas, this applicant requests that the minor landfill disruption approval remain valid for the balance of their tenure at the site, anticipated to be approximately ten (10) years from the date of this application. The applicant recognizes that a separate Landfill Closure Plan also is required; however, minor disruption activities are envisioned as part of the long-term, on-going commitment to the deactivation of Fort Monmouth and rather than repetitively seek authorization for minor disruption events, maintaining an open-ended minor landfill disruption authorization is expected to simplify matters for all relevant parties. Similar to its management of on-going remedial measures with NJDEP – Site Remediation Program (SRP), the applicant proposes to notify NJDEP staff from the Bureau of Landfill and Hazardous Waste Permitting in advance of activities that constitute minor landfill disruption as well as generate and distribute post-disturbance activity summaries.

As coordinated with SRP, a primary objective of activities planned within this minor landfill disruption approval application includes the confirmation of landfill boundary delineation activities that were previously conducted on the basis of geophysical survey methods. At the suggestion of SRP, boundary delineation will be confirmed for all nine landfills at Fort Monmouth using soil borings and test pits.

It also should be noted that stabilization of the streambank / landfill areas was completed during a first phase of activities involving a subset of landfills in 2009-10 in preparation of comprehensive

landfill capping site-wide. Phase II (capping of all landfills) is not part of this application; a subsequent Landfill Closure Plan application will be submitted for Phase II activities.

PROJECT BACKGROUND

Fort Monmouth is located in central – east New Jersey in Monmouth County. In addition to its Main Post (MP), Fort Monmouth includes two subposts, the Charles Wood (CW) Area and the Evans Area. MP encompasses approximately 630 acres and is broadly bounded by State Highway 35, Parkers Creek, Lafetra Creek, a New Jersey Transit Railroad corridor, and a residential area. The CW area is located one mile west of MP and covers approximately 511 acres.

Fort Monmouth was established in 1918 during World War I as an Army Signal Corps training center. MP currently provides administrative, training, and housing support functions. Fort Monmouth's primary mission is to furnish command, administrative, and logistical support for Headquarters, US Army Communications and Electronics Command (CECOM). CECOM is a major subordinate command of the US Army Materiel Command (AMC) and is the host tenant at Fort Monmouth.

Fort Monmouth includes nine inactive disposal settings (i.e., landfills) situated primarily within its MP; one such landfill is located in the CW area. The majority of landfills were used for disposal of construction/demolition debris, miscellaneous landscaping refuse, domestic-type waste (i.e., household trash), and various other discarded items. Most disposal areas were "active" during the 1950s – 1960s; one reportedly dated from WWI. Each of the landfills has been the subject of separate and on-going remedial investigation activities with oversight by NJDEP since at least the 1990s. Long-term remedial management strategies have been developed for all site-related landfills.

REGULATORY POLICIES AND TECHNICAL GUIDANCE

Pursuant to NJAC 7:26-2A.8, the remedial investigation and remedial action activities described herein qualify as sanitary landfill disruption, as such, this Application Report addresses pertinent requirements contained in Section 9 of NJAC 7:26-2A. A completed copy of the NJDEP Solid Waste Facility Application Form is provided in Attachment A. The following subsections discuss particular aspects of the project.

Administrative Forms

Attachment A includes a completed copy of the NJDEP Solid Waste Facility Application Form for disruption of inactive landfills identified as: CW-3A, M2, M3, M4, M5, M8, M12, M-14, and M-18 located at Fort Monmouth.

Purpose and Extent of Operations

The scope of this landfill disruption involves all nine (9) landfill areas at Fort Monmouth. Proposed activities consist of the following: (1) soil borings; (2) test pits; (3) piezometer and monitoring well installation; (4) injection of chemical and biological oxidation stimulants for groundwater remediation; and, (5) methane gas surveys. The general purpose of proposed activities is to facilitate the on-going remedial management of contaminant impacts that had sources associated with the on-site landfill network. It is expected that activities that require minor landfill disruption approval will recur periodically as part of routine remedial management, in order to close data gaps, and to ensure the effective remediation of contaminants.

The following paragraphs provide brief descriptions of each proposed activity; Attachment B includes a detailed standard operating procedure (SOP) for each activity; Attachment C includes the site-specific Health and Safety Plan (HASP) for activities at Fort Monmouth.

Soil borings are installed in order to obtain information regarding subsurface conditions. Soil borings are used primarily to collect soil samples for laboratory analyses, characterize and document soil characteristics, and rule-out the physical presence of landfill items as part of boundary delineation activities. The use of soil borings enables information to be generated rapidly and with little disturbance to cover, cap, and buried materials. Soil borings may be installed using manual auger or mechanical direct-push (i.e., geoprobe) equipment. The SOP for conducting soil borings is included in Attachment B.

Similar to soil borings, test pits are installed in order to obtain information regarding subsurface conditions. The use of test pits allows for examination of larger areas than soil borings and hence may provide more thorough characterization, but with commensurately greater disturbance. Soil test pits are installed using mechanical excavation equipment. The SOP for installing soil test pits is included in Attachment B.

Piezometers and monitoring wells serve as points to collect groundwater hydrology data – primarily water level and groundwater quality information. Piezometers and monitoring wells also may serve as points from which to monitor volatile gas concentrations. Piezometers and monitoring wells are constructed within borehole openings typically created by rotary or direct-push, mechanical apparatus. The SOP for installing piezometers and monitoring wells is included in Attachment B.

The groundwater remedial management strategy includes the use of chemical and biological treatment supplements that stimulate and/or accelerate degradation of groundwater contaminants through oxidation processes. Chemical and biological supplements are injected as liquid slurries; injections are performed using specialized apparatus installed with direct-push equipment in sets of temporary borings. Treatment effectiveness is monitored and based on status and trends, additional injection events may be warranted. The use of remedial injection treatments is authorized pursuant to a permit-by-rule discharge to groundwater (DGW) instrument; the DGW

authorization is open-ended to accommodate the remediation end-point. The SOP for conducting treatment slurry injections is included in Attachment B.

Methane gas surveys are conducted in order to assess whether a common landfill by-product (i.e., methane) is present at a specific landfill in amounts that warrant a management strategy. To date, existing groundwater well headspace monitoring for methane and other organic vapors indicates that gas production/accumulation within the network of landfills at Fort Monmouth is negligible. Notwithstanding past wellhead monitoring, methane gas survey activities are planned in order to confirm that methane migration at/near the landfill boundaries is not occurring. A methane soil gas survey is conducted by driving a narrow steel point two to three feet into the soil with a manual slide hammer or equivalent device and inserting a Flame Ionization Detector (FID) wand into the soil cavity. The FID has an internal air pump that draws air through a flame chamber in order to combust the air sample and analyze the resultant ignition spectrum relative to a calibration standard for the presence of specific organic vapors, including methane. An SOP for conducting methane gas surveys will be provided at a later date. Methane gas surveys will not commence until such time an SOP is submitted to the NJDEP-Bureau of Landfill & Hazardous Waste Permitting for review and approval.

Cover

Except for test pits, planned minor landfill disruption activities will not result in more than minimal disturbance to existing landfill cover materials. Test pits will be installed using a backhoe to an approximate depth of eight (8) feet below ground surface (bgs). Each test pit will be approximately three (3) feet wide and ten (10) feet long. Upon completion of field investigation activities, each test pit will be backfilled and the area restored with top soil, seeded, and mulched with hay.

Waste Removal

Although waste removal is not a target of this set of activities, errant landfill items, if encountered, will be removed from settings as encountered and disposed lawfully.

Odor and Gas Control

Odor and gas control management activities are not anticipated as the result of this project which does not involve disruption of waste bed settings, rather it encompasses primarily landfill margins. However, during implementation, if objectionable odor levels become problematic (i.e., are perceived to be especially strong, unusual, or persistent, or if odors trigger complaints), then activities will be halted and the project supervisor will notify the designated Fort Monmouth point-of-contact (Directorate of Public Works) in order to formulate an appropriate management strategy.

Rodent, Insect, Fire, Dust, and Litter Control Measures

No food items will be discarded at the site; all food-stuff and similar garbage refuse generated on-site by project crews will be placed in plastic bags, secured, and disposed of in proper locations. Errant landfill debris/items, if encountered, will be stockpiled, covered, and/or containerized (as needed – refer below) to minimize exposure, avoid spread as dust/aerosol, and limit nuisance intrusion by rodent, insect, or other biota. Potential fire hazards will be addressed as part of the Site-Specific Health and Safety Plan (refer below).

Health and Safety

A Site-Specific Health and Safety Plan is provided in Attachment C.

Discovery of Hazardous Waste

Encountering hazardous materials is not anticipated as the result of this project which does not involve disruption of waste bed settings; rather it encompasses primarily landfill margins associated with the confirmation of existing landfill boundary delineation surveys. However, if hazardous materials are observed within a test pit or recovered during soil boring/well installation operations, then such activities will be terminated immediately, the project supervisor will notify the designated Fort Monmouth point-of-contact (Directorate of Public Works) and the affected area will be isolated in order to formulate/implement an appropriate management strategy.

COMPLIANCE STATEMENT

The Landfill Disruption Approval application was prepared in accordance with the rules set forth in NJAC 7:26-2A(j), "Bureau of Landfill and Recycling Management" and application materials provided herein were based on requirements contained in NJAC 7:26-2A.8(j).

POLICIES AND TECHNICAL GUIDANCE CHECKLIST

A. Pre-Application Meeting.

An onsite pre-application meeting regarding specific minor landfill disruption activities proposed herein was performed on 27 April 2010 and attended by representatives of Fort Monmouth including certain subcontractors, as well as representatives of NJDEP – SRP and NJDEP – Bureau of Landfill & Hazardous Waste Permitting. Moreover, discussions with NJDEP staff from the Bureau of Landfill and Hazardous Waste Permitting, Division of Land Use Regulation (DLUR), and the Bureau of Investigation, Design and Construction (i.e., Site Remediation) have been on-going for years.

The salient points discussed during the 27 April 2010 on-site meeting emphasized the types of activities and purposes for which the minor landfill disruption approval was sought and the tenure and means for which the Department could authorize minor landfill disruption at Fort Monmouth.

Additionally, the on-site meeting included a walking tour of the majority of landfill areas at Fort Monmouth.

B. Application Forms.

Attachment A includes a copy of the completed NJDEP Solid Waste Facility Application Form for disruption of inactive landfills identified as: CW-3A, M2, M3, M4, M-5, M8, M12, M-14, and M-18 located at Fort Monmouth.

D. Extent of Operations.

The intent of activities encompassed by this minor landfill disruption approval application is to facilitate the refinement of existing boundary delineation surveys and to perform activities pursuant to on-going groundwater monitoring and/or remediation programs. Refer to the Figures section of this application to see locations of each area within Fort Monmouth and details including configuration of each area.

E. Purpose of Disruption.

The purpose of this landfill disruption involves nine (9) landfill areas. Proposed activities consist of the following: (1) soil borings; (2) test pits; (3) piezometer and monitoring well installation; (4) injection of chemical and biological oxidation stimulants for groundwater remediation; and, (5) methane gas surveys. Attachment B contains SOP guidelines for each proposed activity.

H. Cover.

Except for test pits, planned minor landfill disruption activities will not result in more than minimal disturbance to existing landfill cover materials. Test pits will be installed using a backhoe to an approximate depth of eight (8) feet below ground surface (bgs). Each test pit will be approximately three (3) feet wide and ten (10) feet long. Upon completion of field investigation activities, each test pit will be backfilled and the area restored with top soil, seeded, and mulched with hay.

I. Removal of Waste.

Although waste removal is not a target of this set of activities, errant landfill items, if encountered, will be removed from settings as encountered and disposed lawfully. In the event that a hazardous substance container is discovered during test pit installation procedures, then the container will be recovered from the excavation and managed for proper disposal pursuant to Fort Monmouth's hazardous waste management program.

Moreover, Fort Monmouth is a regulated large quantity hazardous waste generator site with a designated USEPA generator identification number. Should hazardous waste be generated during

this project, such material will be managed according to the facility's hazardous waste management program.

M. Odor Control.

Odor control management activities are not anticipated as the result of this project which does not involve disruption of waste bed settings; rather it encompasses primarily landfill margins and small diameter borings. However, during implementation of test pits or other activities, if objectionable odor levels become problematic (i.e., are perceived to be especially strong, unusual, or persistent, or if odors trigger complaints), then activities will be halted and the project supervisor will notify the designated Fort Monmouth point-of-contact (Directorate of Public Works) in order to formulate an appropriate management strategy.

N. Gas Control.

Gas control management activities are not anticipated as the result of this project which does not involve disruption of waste bed settings; rather it encompasses primarily landfill margins and small diameter borings. However, during implementation of test pits or other activities, if gas levels become problematic (i.e., are perceived by odor or if waste bed materials are encountered), then activities will be halted and the project supervisor will notify the designated Fort Monmouth point-of-contact (Directorate of Public Works) in order to formulate an appropriate management strategy.

O. Rodent, Insect, Fire, Dust, and Litter Controls.

No food items will be discarded at the site; all food-stuff and similar garbage refuse generated on-site by project crews will be placed in plastic bags, secured, and disposed of in proper locations.

Errant landfill debris/items, if encountered, will be stockpiled, covered, and/or containerized (as needed – refer below) to minimize exposure, avoid spread as dust/aerosol, and limit nuisance intrusion by rodent, insect, or other biota. Potential fire hazards will be addressed as part of the Site-Specific Health and Safety Plan (refer below).

P. Health and Safety.

A Site-Specific Health and Safety Plan is provided in Attachment C.

Q. Discovery of Hazardous Waste.

Encountering hazardous materials is not anticipated as the result of this project which does not involve disruption of waste bed settings, rather it encompasses primarily landfill margins associated with the confirmation of existing landfill boundary delineation surveys. However, if hazardous materials are observed within a test pit or recovered during soil boring/well installation operations, then such activities will be terminated immediately, the project supervisor will notify

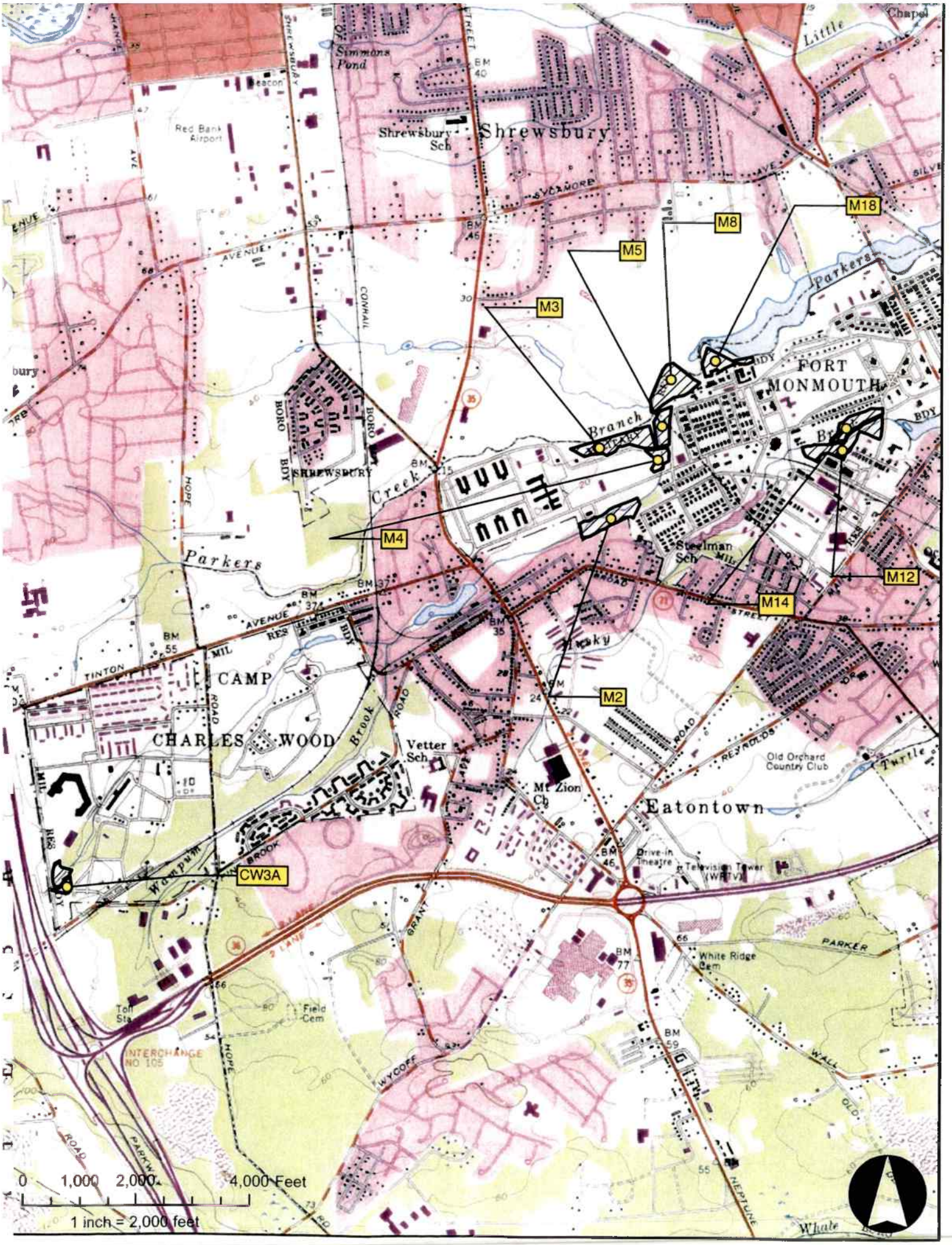
the designated Fort Monmouth point-of-contact (Directorate of Public Works) and the affected area will be isolated in order to formulate/implement an appropriate management strategy.

V. Schedule of Activities.

Prior to commencement of minor landfill disruption activities [(1) soil borings; (2) test pits; (3) piezometer and monitoring well installation; (4) injection of chemical and biological oxidation stimulants for groundwater remediation; and, (5) methane gas surveys], the Directorate of Public Works, U.S. Army Garrison Fort Monmouth, will provide email notification to the NJDEP-Bureau of Landfill & Hazardous Waste Permitting and the NJDEP–Site Remediation Program of all planned minor disruption activities as referenced above. A schedule of work activities will also be provided at such time.

FIGURES

Site Location Map – Portion of the USGS Topographic Map titled Long Branch, NJ


M18
M8
M5
M3
M4
M12
M14
M2
CW3A
Shrewsbury
FORT MONMOUTH
CAMP CHARLES WOOD
Eatontown
Parkers Creek Branch
Simmons Pond
Red Bank Airport
Shrewsbury Sch
Steelman Sch
Vetter Sch
Mt Zion Ch
Old Orchard Country Club
Drive-in Theatre
Television Tower (WRTV)
White Ridge Cem
Field Cem
Toll Sta
INTERCHANGE NO 105
0 1,000 2,000 4,000 Feet
1 inch = 2,000 feet

ATTACHMENT A

Forms

NJDEP Solid Waste Facility Application Form

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
SOLID AND HAZARDOUS WASTE MANAGEMENT PROGRAM
P.O. BOX 414 401 E. STATE STREET
TRENTON, NEW JERSEY 08625-0414
TELEPHONE: 609-984-6985 TELECOPIER: 609-633-9839
http://www.state.nj.us/dep/dshw

SOLID WASTE FACILITY APPLICATION FORM

PLEASE PRINT OR TYPE

1A. **Applicant/Owner:** US Army Garrison - Fort Monmouth Telephone: 732-532-6223

Permanent Legal Address: Directorate of Public Works - Attn: Joseph Fallon

City: Fort Monmouth State: NJ Zip Code: 07703

Federal Tax I.D #: NA

1B. **Applicant/Operator:** NA Telephone: _____

Permanent Legal Address: _____

City: _____ State: _____ Zip Code: _____

1C. **Co-permittee:** NA Telephone: _____

Permanent Legal Address: _____

City: _____ State: _____ Zip Code: _____

2. **Location of Work:**

Name of Facility: Main Post Landfills M2, M3, M4, M5, M8, M12, M14, M18 and Charles Wood Landfill CW3A

Address (Street/Road): _____

Lot #: _____

Block #: _____

Municipality: Tinton Falls, Eatontown & Oceanport Boroughs County: Monmouth

NJEMS Preferred ID #: _____

SW Facility ID #: _____

EPA ID #: NJ3210020597

3. **Professional Engineer:**

Name: Jacob E. Helminiak N.J. License P.E. #: 24GE04696700

Name of Firm: Princeton Hydro, LLC

Address: 1108 Old York Road

City: Ringoes State: NJ Zip Code: 08551

Telephone: 908-237-5660

4. **Application Type:** (Circle applicable letter)

A. Initial Solid Waste Facility (SWF) Permit
B. Existing SWF Annual Update
C. SWF Permit Modification (check here ____ if expansion)
D. SWF Permit Renewal
E. SWF Transfer of Ownership
F. Closure/Post-Closure Plan
G. Disruption Approval (X MINOR)
H. Other - describe here _____

5. **Facility Type:** (Circle all that apply)

A. Sanitary Landfill (X)
B. Incinerator/Resource Recovery Facility
C. Transfer Station
D. Transfer Station/Materials Recovery Facility
E. Intermodal Container Facility
F. Compost
G. Other - describe here _____

6. **Waste Types:** (Circle all types of waste requested for acceptance at this facility by numbers.)

10. Municipal Waste (X)	**27. Dry Industrial Waste (X)**
12. Dry Sewage Sludge	**27A. Asbestos Containing Waste**
13. Bulky Waste	**27I. Incinerator Ash/Ash Containing Waste**
13C. Construction and Demolition Waste (X)	72. Bulk Liquid and Semi-Liquid
23. Vegetative Waste (X)	73. Septic Tank Clean-Out Wastes
25. Animal and Food Processing Waste	74. Liquid Sewage Sludge
Treated Regulated Medical Waste	Untreated Regulated Medical Waste

7. **Facility Life and Capacity:**

	YEARS	TONS	CUBIC YDS
A. Currently Permitted/Authorized	NA		
B. Proposed in this Application	NA		

8. **Utility Regulation:**

A. Is (will) this facility (be) Public or Sole Source? (circle one)

B. Certificate of Public Convenience & Necessity (CPCN) #

USE ADDITIONAL PAPER, IF REQUIRED, IN ORDER TO GIVE FULL AND COMPLETE DISCLOSURES TO THE FOLLOWING ITEMS.

9. **Type of Organization:** (Circle appropriate letter.)

A. Proprietorship
B. Partnership
C. Corporation
D. Municipal Government
E. County Government
F. State Government
G. Authority
H. Federal (X)
X. Other

10. **Organization Data:**

A. PARTNERSHIP DATA - State the name and address of each partner, including silent or limited, and their interest:

NAME	ADDRESS	PORTION OF INTEREST
NA		

Registered in State: _____ County: _____

Date of Filing: _____

Agent's Name: _____

Street Address: _____ Telephone: _____

City: _____ State: _____ Zip Code: _____

B. CORPORATE DATA

Date of Incorporation: NA

Agent's Name: _____

Street Address: _____ Telephone: _____

City: _____ State: _____ Zip Code: _____

Corporate Officers:

OFFICIAL TITLE	NAME	BUSINESS ADDRESS
NA		

Directors:

NAME	RESIDENCE	TERM OF OFFICE
NA		

Identify below any individual, corporation or other business organization having ownership or a controlling interest in the applicant. If applicable, the chain of ownership or control should be traced to the main parent company.

NAME: NA

ADDRESS: _____

NATURE OF CONTROL: _____

Principal Security Holders and Voting Power. Identify owner(s) of all securities in the applicant corporation having more than ten (10) percent of value.

NAME	ADDRESS	TYPE OF SECURITIES*	NUMBER OF VOTES
NA			

*(Common stock, Preferred stock, etc.)

11. **Other Permits Applied for or Obtained**

PERMIT TYPE: (Use additional sheets if necessary)	N.A.	APPLICATION STATUS Pending	APPLICATION STATUS Approved	Date Applied for or Project Number
A. CAFRA	X			
B. Waterfront Development				
C. Tidal or Coastal Wetlands	X			
D. Freshwater Wetlands Permit			X/GP4	1311-06-0003.2 FWW080001
E. Freshwater Wetlands Transitional Area Waiver (after July 1, 1989)	X			
F. Stream Encroachment			X/FHA	1311-06-0003.2 FHA080001
G. Water Quality Certificate (Section 401)	X			
H. Open Water Fill	X			
I. Tidelands (Riparian) Grant, Lease or License	X			
J. Divert Surface Waters for Private Use	X			
K. Temporary Water Lowering	X			
L. Sewer Systems: Collectors, Pump Station, etc	X			
M. Underground Storage Tanks	X			
N. Hazardous Waste Permits Specify: _____	X			

PERMIT TYPE: (Use additional sheets if necessary)	N.A.	APPLICATION STATUS Pending	APPLICATION STATUS Approved	Date Applied for or Project Number
O. Air Quality Permits	X			
P. Delaware and Raritan Canal Review Zone "Certificate of Approval"	X			
Q. Pinelands Certificate	X			
R. Green Acres Program Review	X			
S. Other State Agencies' Permit				

Type of Permit: Well; NJPDES-Discharge to Groundwater permit by rule NJDEP Monitoring

T. Federal Permit — X — NAN-2008-01593-EJE

Type of Permit: USACE NWP38

Brief Description of the Proposed Project and Intended Use:

Facilitate on-going and future landfill boundary delineation and groundwater monitoring and remediation programs

12. **Certifications:**

A. APPLICANT'S CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments, and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. I understand that, in addition to criminal penalties, I may be liable for a civil administrative penalty pursuant to N.J.A.C. 7:26-5 and that submitting false information may be grounds for denial, revocation or termination of any solid waste facility permit or vehicle registration for which I may be seeking approval or now hold.

Joseph Fallon
Print/Type Applicant/Owner Name

Joseph Fallon
Signature of Applicant/Owner

5/13/10
Date

Chief, Environmental Division
Title

Print/Type App./Operator Name

Signature of Applicant/Operator

Date

Title

Print/Type Co-Applicant Name

Signature of Co-Applicant

Date

Title

B. PROPERTY OWNER'S CERTIFICATION

I hereby certify that US Army Garrison, Fort Monmouth
Property Owner's Name
is the owner of the property upon which the proposed work is to be done. This endorsement is certification that the owner grants permission for the conduct of the proposed activity and authorizes that staff of DEP may conduct on-site inspections as necessary for the review of this application.

In addition, the aforementioned property owner shall certify:

1. Whether any work is to be done within an easement -

   Yes _____ (Initial) No JF (Initial)

2. Whether any part of the entire project will be located within property belonging to the State of New Jersey -

   Yes _____ (Initial) No JF (Initial)

3. Whether any part of the entire project will be located within property belonging to a municipality or county -

   Yes _____ (Initial) No JF (Initial)

_____

_____

_____
Type or Print Name and Address of Owner
if different from Item 1 on Page 1

5/13/10
Date

Joseph Fallon
Signature of Owner

C. APPLICANT'S AGENT

I, Joseph Fallon (Applicant/Owner) and/or _____ (App./Operator or Co-Permittee), authorize to act as my agent/representative in all matters pertaining to my application the following person:

Name: Jacob E. Helminiak, P.E., CFM

Title: Senior Hydraulic Engineer

Firm: Princeton Hydro, LLC

Address: 1108 Old York Road

City: Ringoes State: NJ Zip Code: 08551

Telephone: 908-237-5660

Occupation/Profession: NJ-Licensed Professional Engineer

Joseph Fallon
(Signature of Applicant/Owner)

_____
(Signature of Applicant/Operator)

_____
(Signature of Co-permittee)*

AGENT'S CERTIFICATION

Sworn before me
this 17 day of
May 2010

Gail A Skupien
Notary Public

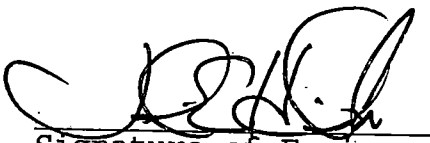
I agree to serve as agent for the above-mentioned applicant

_____
(Signature of Agent)

GAIL A. SKUPIEN
NOTARY PUBLIC OF NEW JERSEY
My Commission Expires July 25, 2014

D. STATEMENT OF PREPARER OF PLANS, SPECIFICATIONS, SURVEYOR'S OR ENGINEER'S REPORT

I hereby certify that the engineering plans, specifications and engineer's reports applicable to this project comply with the current rules and regulations of the State Department of Environmental Protection with the exceptions as noted.



Signature of Engineer

Jacob E. Helminiak, P.E., CFM
Print or Type Name

NJ-Licensed Professional Engineer
Position

Princeton Hydro, LLC
Name of Firm

17 May 2010
Date

PROFESSIONAL ENGINEER'S/ARCHITECT'S EMBOSSED SEAL

Doc: SWF App Form 10/08

ATTACHMENT B

Standard Operating Procedures

STANDARD OPERATING PROCEDURE

CATEGORY: Sample Handling
TITLE: Geoprobe® Sampling Methods

1 PURPOSE:
1.1 To document the current procedures for sample collection with a Geoprobe®.

2 RESPONSIBILITY:
2.1 It is the responsibility of designated field samplers who have been properly instructed and trained in field sampling protocol and techniques.

3 SAMPLE COLLECTION, PRESERVATION AND HANDLING:
3.1 For sample collection, preservation and handling, please refer to SOP No. SAM-0200.

4 REFERENCES:
4.1 Field Sampling Procedures Manual, August 2005, New Jersey Department of Environmental Protection.
4.2 Geoprobe® Tools and Equipment Catalog 2002/2003.

5 SUMMARY:
5.1 This SOP represents the general field sampling requirements as required by the NJDEP. It specifically addresses the proper use of protective equipment, collection of QA/QC samples, field documentation procedures, proper documentation of all field activities, collection of samples into proper containers (with the proper preservation) and the techniques for collecting each type of sample.

6 DEFINITIONS:
6.1 PETG: Glycolised Polyester.
6.2 FID: Flame Ionization Detector.
6.3 PID: Photo Ionization Detector.
6.4 ORC/HRC: Oxygen Releasing Compounds/Hydrogen Releasing Compounds.

7 SAFETY:
7.1 For safety, please refer to the CTSC Fort Monmouth, NJ Health and Safety Plan (HASP).

Prepared By: George T. Boyce Date: 3/29/10
Laboratory Director: [signature] Date: 3/29/10
QA/QC Manager: [signature] Date 3/29/10

7.2 Employees must use personal protective equipment (PPE) for adequate protection and to limit the level of exposure on site. The equipment selected must be appropriate to protect against all known and potential hazards. All field personnel are required to be familiar with the potential hazards that may be encountered on site prior to entry.

7.3 At a minimum, all field personnel are required to have work boots (steel toe construction), safety glasses or goggles, a hard hat and gloves available for all sampling activities. Standard latex surgical gloves will be worn at all times when samples are collected or handled.

8 EQUIPMENT AND MATERIALS:

8.1 Geoprobe ® Model 5400 Vehicle.
8.2 Geoprobe ® Macro Core Sampler.
8.3 Geoprobe ® Large Bore Sampler.
8.4 Geoprobe ® DT-21 Dual Tube Sampler.
8.5 Geoprobe ® GP-15 Groundwater Sampler.
8.6 Bedrock Brand 1" PVC .10 Slot Screen and Riser.
8.7 R.E. Rupe ORC/HRC Injection Pump.
8.8 Cole Palmer Peristaltic Pump.
8.9 Methanol Extraction Kit.
8.10 Depth to Water Indicator.
8.11 Small Diameter Bailer.
8.12 Food Grade Polyethylene Bailer.
8.13 Foxboro TVA 100B Dual FID/PID Gas Analyzer.
8.14 Hnu PID Gas Analyzer.

9 STANDARDS/REAGENTS:

9.1 Methanol Extraction Solvent.
9.2 Deionized Water.
9.3 Potable Tap Water.
9.4 Isobutylene Calibration Gas.
9.5 Methane Calibration Gas.
9.6 Zero Air Calibration Gas.

10 QUALITY CONTROL:

10.1 QA/QC samples are intended to provide control over the collection of environmental measurements and subsequent validation, review and interpretation of generated analytical data.

10.2 The Trip Blanks are used exclusively for volatile organic analysis. For aqueous sampling, 2 40-ml vials are filled with deionized water and preserved with HCl. For soil samples, a 2-ounce soil jar is filled with 25-ml methanol and surrogates. The

purpose of the Trip Blank is to measure any possible cross contamination during shipping to and from the site. It is never opened and it travels to the site with the empty sample bottles and back from the site with the collected samples. Contaminated Trip Blanks may also indicate that the bottle cleaning procedure or the blank water is of questionable quality. Trip Blanks must be included at the rate of one per sample shipment (not to exceed two consecutive field days).

10.3 The purpose of a Field Blank is to place a mechanism of control on sampling equipment, handling, preparation, storage and shipment. The Field Blank travels and is stored with the sample bottles. It is a representative of the bottle shipment effects on sample quality. Field Blanks are collected in the following manner:

10.3.1 Two identical sets of bottles are prepared.

10.3.1.1 One set is filled with laboratory demonstrated analyte free water (the same water used for the Trip and Method Blanks).

10.3.2 The filled bottles are shipped with all of the empty bottles.

10.3.3 At the field location, in an area where contamination is suspected, the water is passed from the full set of like-bottles through the dedicated or field decontaminated sampling device and into the empty set of like-bottles.

10.3.4 Field Blanks are collected and analyzed for all of the same parameters as the collected samples.

10.4 Field Duplicate samples may be required on a contract or site-specific basis. For aqueous samples, Duplicates are taken by alternating filling the containers from the same sampling device for each of the required parameters. For non-aqueous matrices, obtaining duplicates requires homogenization of the sample aliquot prior to filling the sample containers. If this cannot be performed in the field, the aliquot is returned to the laboratory and the homogenization is performed there. Regardless, volatile organic samples must always be taken from discrete locations or intervals without compositing or mixing.

10.5 The laboratory must be supplied with field designated Matrix Spike/Matrix Spike Duplicate (MS/MSD) samples every twenty locations. Triple volume must be collected for aqueous samples.

11 CALIBRATION:

11.1 The TVA 1000B and the Hnu Instruments are calibrated when used according to the manufacturers' specifications. The instruments are sent to the various manufacturers or an authorized representative for a factory calibration on an annual basis.

12 PROCEDURE:

12.1 Geoprobe® Sampling for Soils:

12.1.1 Sampling with the Macro Core Sampler:

12.1.1.1 The Macro Core Sampler is a steel tube that measures two inches in diameter by forty-eight inches in length. The complete assembly consists of the tube, a cutter shoe, a liner tube and a drive head that is connected to a drill rod and advanced into the soil strata. The liner is manufactured of PETG material as well as other materials. The liner is one and a half inches in diameter and forty-six inches long. It can hold up to approximately thirteen hundred milliliters of soil when full recovery is obtained. The device is decontaminated, put together and introduced into the soil from zero grade and is driven to the desired depth. The tool is meant to be used mainly as an open advanced borehole system. Other devices available to the operator allow this device to be advanced in minimally sloughed material. The sampler is pushed or percussion hammered into the soil, extracted out of the soil and opened up.

12.1.2 Sampling with the Large Bore Soil Sampler:

12.1.2.1 The Large Bore sampler is a solid barrel, piston sealed, direct pushed device for collecting discrete interval samples of unconsolidated materials at depth. The sampler is one and a half inches in diameter and thirty inches in length. The complete assembly consists of the tube, a cutter shoe, a piston assembly, a liner and a drive head that is connected to a drill rod and advanced into the soil strata to discreet sample depths. A lock pin is backed out inside the drill rod, the tool is advanced two additional feet pushing the piston point into the sampler allowing soil to be introduced into the device. The sampler is extracted out of the soil and opened up.

12.1.3 Sampling Procedures:

12.1.3.1 After the sampler is extracted out of the borehole, the liner is removed, cut open and screened with a PID and/or FID device (Hnu/OVA). If a volatile sample is to be taken, the sample should be taken as soon as possible so that the soil will not volatilize. Depending upon the sampling plan, additional organic samples may be required for sections with detectable readings. Field notes will be written as to note soil structure, colors and any other materials in field notebooks. Odors and any other factors regarding the sample shall also be noted.

12.2 Geoprobe® Sampling for Groundwater:

12.2.1 Groundwater Sampling with the use of a Passively Placed Narrow Diameter Point (PPNDP). A narrow diameter point (PPNDP) is a small diameter («-1 inch outer diameter, OD) screened casing passively placed in a borehole. Schedule forty PVC is used for collection of groundwater samples. No filter or gravel pack is used in the installation. Installation is for temporary use (less than 48

hours). A solid push rod (bull point0 is used to create a narrow diameter hole to a depth below the water table. This can be performed by hand or with a rotary hammer. A piece of schedule 40 PVC screen with 0.010-inch slots and an end cap is placed to the bottom of the hole.

12.2.2 Installation: Pre-drill a borehole with a diameter slightly larger than the casing using a bull point drive rod. The hole should be made to a depth of 1-3 feet below the water table. The screened section of PVC is placed into the borehole so the screened section is across the groundwater table. Prior to installation of any PPNDP, knowledge of the depth to water should be known by previous site data for proper placement of the probe. Caution should be used when using the passively placed slotted PVC casing in areas of contaminated soil. Possible cross contamination may be introduced to the casing as it passes through the zone of contamination. Installation of the tool is required to comply with all permit, license, sealing and grouting requirements. Any tool left in the ground longer than 48 hours is considered a monitor well and therefore must comply with the permit, installation and license requirements for monitor wells.

12.2.3 Sampling Procedure: Three to five volumes of the standing water in the PPNDP must be purged. This is due to the potential for cross contamination of the screen from upper soil horizons. This can be accomplished utilizing a peristaltic pump, inertial pump or a small centrifugal pump. The tubing used for the well purging is food grade polyethylene and silicon surgical tubing that is discarded after each well. Disposable Teflon ™ bailers are used to extract the sample for volatile organics and base neutrals. Other aqueous samples can be taken out of the pump tubing at a low flow rate. The acquisition of samples and water level measurements must be performed by one of several recommended methodologies described in the August 2005 edition of the NJDEP Field Sampling Procedures Manual.

12.2.4 Quality Assurance/Quality Control: The PPNDP and associated equipment (bull point, riser pipe, etc.) must be decontaminated between borings using the following procedure:

12.2.4.1 Remove all adherent soil material.

12.2.4.2 Wash with a laboratory grade glassware detergent.

12.2.4.3 Rinse with potable water and/or steam clean.

12.2.4.4 Rinse with distilled and deionized ASTM Type II water.

12.2.4.5 Field Blanks must be obtained in the same manner as the sample. The blank water must pass through the sample device and PPNDP prior to installation and then into the sample container. The parameters and frequency for Field Blanks are designated in the August 2005 edition of the NJDEP Field Sampling Procedures Manual.

12.2.5 Groundwater sampling with the use of a Small Diameter Direct Push Point (SDDPP): A small diameter direct push point (SDDPP) is a «-1 inch outer diameter, OD casing (slotted or blank) which can be driven or pushed through the soil into the groundwater. It is used for the collection of a groundwater sample or estimating piezometeric data. The casing can be constructed of stainless steel or carbon steel. No filter or gravel pack is used in the installation. Installation is for temporary use (less than 48 hours).

12.2.6 Installation: SDDPPs constructed of blank stainless steel or carbon steel casing with a sacrificial tip or a telescoping screen with a sacrificial tip is employed by driving the point to the desired depth with hydraulics or a rotary hammer. The probe is placed a minimum of 2 feet below the water table. Once at depth, the casing is pulled back leaving the point in place and exposing the telescoping screen. Groundwater fills the screen for sample acquisition.

12.2.7 Sampling Procedures: Purging for slotted SDDPPs, three to five volumes of the standing water must be purged. This can be accomplished utilizing a peristaltic pump, inertial pump or a small centrifugal pump. Purging is not required for SDDPPs that are sealed until they are opened at the target depth for sample acquisition. Sampling due to the small diameter of a SDDPP, the sampling tools are limited. The acquisition of samples and water level measurements must be performed by one of several recommended groundwater-sampling methodologies described in the August 2005 edition of the NJDEP Field Sampling Procedures Manual.

12.2.8 Quality Assurance/Quality Control: The SDDPP and associated equipment (points, casing, etc.) must be decontaminated between borings using the following procedure:

12.2.8.1 Remove all adherent soil material.

12.2.8.2 Wash with a laboratory grade detergent.

12.2.8.3 Rinse with potable water and/or steam clean.

12.2.8.4 Rinse with distilled and deionized ASTM Type II water.

12.2.8.5 Field Blanks must be obtained in the same manner as the sample. The blank water must pass through the sample device and SDDPP prior to installation and then into the sample container. The parameters and frequency for Field Blanks are designated in the August 2005 edition of the NJDEP Field Sampling Procedures Manual.

12.2.8.6 Rod sealing is important when using the SDDPP below the water table. The drive rod/casing joints must be sealed. This will prevent fluid from entering the rods and potentially contaminating the sample. The rods are sealed with O-rings at the threads for sealing and the tool also has O-rings that seal off fluids in the borehole. These all must be removed and changed out with new O-rings before starting a new borehole.

13 POLLUTION PREVENTION:

13.1 A spill prevention kit is available on the Geoprobe® Unit. For further information, please refer to SOP No. SAM-0222.

14 WASTE MANAGEMENT:

14.1 For sample disposal, please refer to SOP No. SAM-0220.

STANDARD OPERATING PROCEDURE

SOP No.: SAM-0224
Revision No.: 4
Date Revised: 03/29/10

CATEGORY: Sample Handling
TITLE: ORC/HRC Injection

1 PURPOSE: To document the current procedures for injecting ORC/HRC chemicals into the subsurface.

2 RESPONSIBILITY: Designated field personnel that have been trained in the use of equipment and the safe handling of high pressure pump equipment.

3 SAMPLE COLLECTION, PRESERVATION AND HANDLING:
3.1 For sample collection, preservation and handling, please refer to SOP No. SAM-0200.

4 REFERENCES:
4.1 Field Sampling Procedures Manual, August 2005,New Jersey Department of Environmental Protection.
4.2 Regenesis® Corporation web site: www.regenesis.com.

5 SUMMARY:
5.1 This SOP represents ORC/HRC injection procedures.
5.1.1 Employees must use personal protective equipment (PPE) for adequate protection and to limit the level of exposure on site. The equipment selected must be appropriate to protect against all known and potential hazards. All field personnel are required to be familiar with the potential hazards. All field personnel are required to be familiar with the potential hazards that may be encountered with any of the injection materials (MSDS sheets).
5.1.2 At a minimum, all field personnel will wear latex surgical gloves to be worn at all times when handling injection chemicals. If a material or substance is in question, the material should be researched and the correct personal protective equipment should be selected. Splash proof safety eyewear should always be worn when handling liquids.
5.1.3 Operators of the Geoprobe® soil boring equipment as well as the Rupe® ORC/HRC model injection pump should be field trained by a competent person as to the operation and handling of the above mentioned equipment.

Prepared By: George T. Boyce Date: 3/29/10
Technical Supervisor: [signature] Date: 3/29/10
QA/QC Supervisor: [signature] Date: 3/29/10

6 DEFINITIONS:

6.1 ORC: Oxygen Release Compound.
6.2 HRC: Hydrogen Release Compound.
6.3 MSDS: Material Safety Data Sheets.

7 SAFETY:

7.1 For safety, please refer to CTSC Fort Monmouth, NJ Health and Safety Plan (HASP).
7.2 Pure ORC is shipped as a fine powder rated at –325 mesh (passes through a 44 micron screen). It is considered to be a mild oxidizer and as such should be handled with care while in the field. Field personnel should work upwind of the product as well as use appropriate safety equipment. These would include eye and respiratory protection, gloves as deemed appropriate by exposure duration and field conditions (see MSDS sheets).
7.3 Although HRC is manufactured as a food grade material that is safe to ingest, field personnel should take precautions while handling and applying HRC. Field personnel should use appropriate safety equipment, including eye protection. The low pH, when dissolved in water and the products viscosity make eye protection mandatory. Gloves should be used as appropriate based on the exposure duration and field conditions. A Material Safety Data Sheet is provided with each shipment. Personnel who operate field equipment during the installation process should have appropriate training, supervision and experience.

8 EQUIPMENT AND MATERIALS:

8.1 Geoprobe® brand soil boring truck mounted equipment (please refer to SOP No. SAM-0204).
8.2 Rupe ORC/HRC injection pump (Model #9-1500 trailer mounted).
8.3 Regenesis® ORC material (30# bucket).
8.4 Regenesis® HRC material (30# bucket).

9 PROCEDURE:

9.1 ORC Mixing Procedure:
9.1.1 Open a 5-gallon bucket and remove a pre-measured bag of ORC.
9.1.2 Measure and pour water into the 5-gallon bucket according to the mixing table.
9.1.3 Add the appropriate ORC quantity to the water. Check the weight of each bucket (see label). The 5-gallon shipping bucket weighs 2 pounds. An additional 4 pounds of ORC would require one additional quart of water, at the 65% solids level.
9.1.4 Use an appropriate mixing device to thoroughly mix the ORC and water. A hand held drill with a "jiffy mixer" or a stucco mixer on it may be used in

conjunction with a small paddle to scrape the bottom and sides of the container. Standard environmental slurry mixers may also be used, following the equipment instructions for operation. For small quantities a usable slurry can be mixed by hand, if care is taken to blend all lumps into the mixture thoroughly. **CAUTION:** ORC MAY SETTLE OUT OF SLURRY IF LEFT STANDING. ALSO, ORC EVENTUALLY HARDENS INTO A CEMENT-LIKE COMPOUND AND CANNOT BE RE-MIXED AFTER THAT HAS HAPPENED.

9.1.5 Mix immediately before using. Do not let stand more than 30 minutes and remix immediately before use to be sure the mixture has not settled out. If a mechanical slurry mixer attached to a pump is being used, the material may be cycled back through the mixer to maintain slurry suspension and consistency.

9.1.6 Check slurry consistency for pourability. Add water if necessary (In 1 cup increments) to achieve the correct consistency.

9.2 ORC Injection:

9.2.1 ORC may be installed in the contaminated saturated zone in the ground utilizing hand augered holes, Geoprobe® type hydraulic punch equipment or hollow stem augers. This set of instructions is specific for Geoprobe® equipment. Alternate instructions may be obtained from the Regenesis® Technical Support Department. For optimum results the ORC slurry installation should span the entire vertical contaminated saturated thickness, including the capillary fringe and "smear zone".

9.2.2 Two general installation approaches are available. The first is to backfill only the probe hole with slurry. This is the simple approach, in that it is easy, straightforward and the location of the ORC slurry is precisely known after installation. However, this method requires significantly more probe holes than the alternative and may take more time for the completion of the remediation process. A separate set of instructions for this method utilizing Geoprobe® equipment is available form Regenesis®.

9.2.3 The second method is to inject the slurry through the probe holes into the contaminated saturated zone. This method requires fewer probe holes, is less disruptive to the site and aids in the spread of oxygen by spreading the ORC source material. However, it may be difficult to know the exact, final disposition of the ORC installed with this method. This is the method described in the instructions.

9.2.4 It is important that the installation method and specific ORC slurry point location be established prior to the field installation. It is also important that the ORC slurry volume and solids content for each drive point be predetermined. The Regenesis® Technical Service Department is available to discuss these issues and Helpful Hints at the end of these instructions offers relevant

information. Regenesis® also has available Technical Bulletins covering source treatments with ORC.

9.3 Specific Installation Procedures:

9.3.1 Identify the location of all underground structures, including utilities, tanks, distribution piping, sewers, drains and landscape irrigation systems.

9.3.2 Identify surface and aerial impediments.

9.3.3 Adjust planned installation locations for all impediments and obstacles.

9.3.4 Pre-mark the installation grid point locations, noting any that have special depth requirements.

9.3.5 Set up the Geoprobe® unit over each specific point, following manufacturer recommended procedures. Care should be taken to assure approximate vertical probe holes.

9.3.6 Penetrate the surface pavement, if necessary, following standard Geoprobe® procedures.

9.3.7 Drive the 1 ½" pre-probe (Geoprobe® part #AT-148B) with the expendable tip (Geoprobe® part #AT-142B) to the desired maximum depth. Standard 1" drive rods (Geoprobe® part #AT-104B) should be used, after the pre-probe. Pre-counted drive rods should be positioned prior to the installation driving procedure to assure the desired depth is reached.

9.3.8 Disconnect the drive rods from the expendable tip, following standard Geoprobe® procedures.

9.3.9 Mix the appropriate quantity of ORC slurry for the current drive point (see separate "Directions for ORC Slurry Mixing" and Helpful hints). **Note:** Do not mix more slurry than will be used within a 30 minute period.

9.3.10 Set up and operate an appropriate slurry pump according to manufacturer's directions. Based on our experience, a Geoprobe® model GS-1000 pump is recommended. Connect the pump to the probe grout pull cap (GS-1054) via a 1-inch diameter delivery hose. The hose is then attached to the 1" drive rod with its quick connector fitting. Upon confirmation of all connections, add the ORC slurry to the pump hopper/tank.

9.3.11 Withdraw the pre-probe and drive stem four feet.

9.3.12 Optional pretreatment step. Pump one to two gallons of tap water into the aquifer to enhance dispersion pathways from the probe hole.

9.3.13 Pump the predetermined quantity of ORC slurry for the depth interval being injected. Observe the pump pressure levels for indications of slurry dispersion or refusal into the aquifer (increasing pressure indicates reduced acceptance of material by the aquifer).

9.3.14 Remove one 4' section of the 1" drive rod. The drive rod will contain slurry. This slurry should be returned to the ORC bucket for reuse.

9.3.15 Repeat steps 9.3.11, 9.3.13 and 9.3.14 until treatment of the entire affected thickness has been achieved. It is generally recommended that the procedure extend to the top of the capillary fringe/smear zone.

9.3.16 Install an appropriate seal, such as bentonite, above the ORC slurry through the entire vadose zone. This helps assure that the slurry stays in place and prevents contaminant migration from the surface. Depending on soil conditions and local regulations, a bentonite seal can be pumped through the slurry pump or added via chips or pellets after the probe removal.

9.3.17 Remove and decontaminate the drive rods and pre-probe.

9.3.18 Finish the probe hole at the surface as appropriate (concrete or asphalt cap, if necessary).

9.4 HRC Injection:

9.4.1 The best method to deliver HRC into the subsurface is to inject the material through direct push rods using hydraulic equipment. This approach increases the spreading and mixing of HRC into the aquifer. The following is specific to direct push equipment.

9.4.2 The installation of HRC should span the entire vertical contaminated saturated thickness. If the vertical extent of HRC application is confined to a limited interval, then the HRC material should be placed across a vertical zone extending a minimum of 2 feet above and below the screened interval of monitoring wells to be used to evaluate the performance of the bioremediation project.

9.4.3 HRC is shipped in 4.25-gallon buckets and each bucket has a gross weight of approximately 32 pounds (net weight of HRC is 30 pounds). At room temperature the HRC is a sticky gel with a viscosity of approximately 20,000 centipoise (roughly equivalent to cold honey). The HRC material has a nominal density of 1.3 grams/cubic centimeter or approximately 10.8 pounds per gallon. The viscosity is observed with large changes in product temperature. It should be noted that the temperature/viscosity relationship is not linear.

9.4.4 For ease of installation, HRC should be stored in a warm, dry place that is protected from direct sunlight. It is common for stored HRC to settle somewhat in a container. Care should be taken to mix the HRC into a relatively uniform fluid prior to installation. Product uniformity is most easily achieved by pre-heating HRC before pouring it into the hopper. Care should be taken to scrape any separated material from the bottom of each bucket. Do not use any "rocky material" in the bottom of the bucket because it could potentially clog the check valves in the machine. Use the Rupe pump's mixing and recirculation features to homogenize the HRC. Pre-heating HRC make it easier to pour and remix the separated material.

9.5 Specific Installation Procedures:

9.5.1 Prior to the installation of HRC, any surface or overhead impediments should be identified as well as the location of all underground structures. Underground structures include but are not limited to:

9.5.1.1 Utility lines.
9.5.1.2 Tanks.
9.5.1.3 Distribution piping.
9.5.1.4 Sewers.
9.5.1.5 Drains
9.5.1.6 Landscape irrigation systems.

9.5.2 The planned installation locations should be adjusted to account for all impediments and obstacles.

9.5.3 Regenesis® recommends pre-heating HRC in a hot water bath. Place unopened buckets of HRC into an empty water tank. A Rubbermaid Fiberglass Farm Trough Stock Tank (Model 4242-00-GRAY) is typically used for this application and can hold up to 16 buckets of HRC. Hot water (approximately 130-170°F or 54-77°C) should be added to the tank after the buckets of HRC have been placed inside. When the HRC reaches a minimum temperature of 95°F or 35°C (approximately 20-30 minutes), it is ready to be poured into the pump hopper.

9.5.4 Pre-mark the installation locations, noting any points that may have different vertical application requirements or total depth.

9.5.5 Set up the direct push unit over each specific point and follow the manufacturers Standard Operating Procedure (SOP) for the direct push equipment. Care should be taken to assure that probe holes remain in the vertical.

9.5.6 For most applications, Regenesis® suggests using 1.25-inch O.D./0.625-inch I.D. Geoprobe® brand drive rods. However, some applications may require the use of 2.125-inch O.D./1.5-inch I.D. drive rods.

9.5.7 Advance drive rods through the surface pavement, as necessary, following SOP.

9.5.8 Push the drive rod assembly with an expendable tip to the desired maximum depth. Regenesis® suggests pre-counting the number of drive rods needed to reach the depth prior to starting injection activities.

9.5.9 To prevent injection of air into the aquifer during HRC application, fill the drive rods with water. If water does not remain in the rods due to seepage, glycerin may be substituted.

9.5.10 Pour the pre-heated HRC into the pump hopper (up to 40 gallons). Remove the separated HRC from the bucket bottom by tipping the bucket into the hopper and scraping out the smooth residual material. Use the pumps mixing and recirculation features to create a uniform consistency. This typically requires recirculation of approximately one hopper volume. **Note:** Do not attempt to mix

HRC with water or other liquids to thin or decrease the viscosity of the material. This may adversely affect HRC longevity.

9.5.11 A volume check should be performed prior to injecting HRC. Determining the volume displaced per pump stroke can be accomplished in two easy steps.

9.5.11.1 Determine the number of pump strokes needed to deliver 3 gallons of HRC (use marked bucket to determine counts per gallon).

9.5.11.2 Divide 3 gallons by the results from the first step to determine the number of gallons of HRC delivered by each pump stroke.

9.5.12 Connect the 1.25-inch O.D., 1-inch I.D. delivery hose to the pump outlet and the provided HRC delivery sub-assembly. Circulate HRC through the hose and the delivery sub-assembly to displace air in the hose.

9.5.13 Connect the HRC sub-assembly to the drive rod. After confirming that all of the connections are secure, pump the HRC through the delivery system to displace the water/fluid in the rods. **Note:** Prior to pumping HRC into the aquifer, close the pump recirculation valve, failure to do so will allow material to short-circuit into the hopper and change in the volume of HRC delivered per pump stroke.

9.5.14 The pump engine RPM and hydraulic settings should remain constant throughout the day. However, if the hydraulic system starts to "squeal", the pump speed should be decreased until the noise is mitigated.

9.5.15 Use the pump's stroke counter and the provided volume/weight conversions to apply the appropriate HRC volume per injection location (and per vertical foot of contaminated saturated zone). The Calculation section shows typical HRC delivery information followed by an example calculation.

9.5.16 Slowly withdraw the drive rods using Geoprobe® Rod Grip or Pull Plate Assembly (part AT-1222 for 1.25-inch drive rods). While slowly withdrawing single lengths of drive rod (3 or 4 feet), pump the pre-determined volume of HRC into the aquifer across the desired treatment interval (9.5.13). Use the stroke counter and pump on/off switch to control volume of injection.

9.5.17 Remove one section of the drive rod. The drive rod may contain some residual HRC. Place the HRC-filled rod in a clean, empty bucket and allow the HRC to drain. Eventually, the HRC should be returned to the HRC pump hopper for reuse.

9.5.18 Observe any indications of aquifer refusal. This is typically indicated by a high-pitched squeal in the pump's hydraulic system or (in the case of shallow applications) HRC "surfacing" around the injection rods or previously installed injection points. If aquifer acceptance appears to be low, allow enough time for the aquifer to equilibrate prior to removing the drive rod.

9.5.19 Repeat steps 9.5.15 through 9.5.20 until treatment of the entire contaminated vertical zone has been achieved.

9.5.20 Install an appropriate seal, such as bentonite, above the HRC material through the entire vadose zone. Depending on soil conditions and local regulations, use a bentonite seal via chips or pellets after the probe rods have been removed. This assures that the HRC remains properly placed and prevents contaminant migration from the surface. If HRC continues to "surface", up the direct push borehole, an appropriately sized (oversized) disposable drive tip or wood plug/stake can be used to plug the hole until the aquifer equilibrates and the HRC stops surfacing.

9.5.21 Remove and clean drive rods as necessary.

9.5.22 Finish the borehole at the surface as appropriate (concrete or asphalt cap, if necessary).

9.5.23 Periodically compare the pre and post injection volumes of HRC in the pump hopper using the pre-marked volume levels. Volume level indicators are not on all pump hoppers. In this case, volume level markings can be temporarily added using known amounts of water and a carpenter's grease pencil (Kiel crayon). We suggest marking the water levels in 3-gallon increments.

10 CALCULATIONS:

10.1 Pump Volume Calculation:

Pump Stroke Volume (gallons)	Number of Pump Strokes	HRC Per Stroke (pounds/stroke)
3.0	14	2.4
0.2	1	2.4

10.1.1 Example: For each injection location, install 60 pounds of HRC across 10 vertical feet of aquifer (6 pounds per vertical foot HRC dosing rate).

10.1.2 Solution: 60 pounds/10.8 pounds per gallon = 5.6 gallons for the injection location.

10.1.2.1 5.6 gallons/0.2 gallons per stroke = 28 pump strokes for the injection location.

10.1.2.2 28 pump strokes/10 vertical feet = 2.8 strokes per vertical foot.

10.1.2.3 2.8 strokes per vertical foot = 8.4 strokes per 3 foot drive rod.

10.1.2.4 2.8 strokes per vertical foot = 11.2 strokes per 4 foot drive rod.

11 POLLUTION PREVENTION:

11.1 For pollution prevention, please refer to SOP No. SAM-0222.

12 WASTE MANAGEMENT:

12.1 For sample disposal, please refer to SOP No. SAM-0220.

12.2 ORC/HRC material comes in plastic buckets that are washed out and reused throughout the facility for various other trades, etc.

13 TABLES AND DIAGRAMS:

13.1 ORC Mixing Table:

65% Solids Slurry	Mix 0.63 gallons of water per 10 pounds of ORC powder	
	Example:	Mix 20 pounds of ORC with 1.26 gallons of water
		Mix 30 pounds of ORC with 1.89 gallons of water
60 % Solids Slurry	Mix 0.79 gallons of water per 10 pounds of ORC powder	
	Example:	Mix 20 pounds of ORC with 1.58 gallons of water
		Mix 30 pounds of ORC with 2.37 gallons of water
50% Solids Slurry	Mix 1.19 gallons of water per 10 pounds of ORC powder	
	Example:	Mix 20 pounds of ORC with 2.38 gallons of water
		Mix 30 pounds of ORC with 3.57 gallons of water
25% Solids Slurry	Mix 3.57 gallons of water per 10 pounds of ORC powder	
	Example:	Mix 10 pounds of ORC with 3.57 gallons of water

13.2 HRC Physical Characteristics:

Density	1.3 g/cc or 10.8 lbs./gal.
Viscosity	Approx. 20,000 centipoise

13.3 Equipment Volume and HRC Weight per Length:

Equipment	**Volume**	**HRC weight**
1 inch OD; 0.625 ID hose (10 feet long)	0.2 gallon	1.8 lbs.
1.25 inch OD; 0.625 inch ID drive rod (3 feet length)	0.05 gallon	0.5 lbs.
1.25 inch OD; 0.625 inch ID drive rod (4 feet length)	0.06 gallon	0.7 lbs.

TECOM-Vinnell Services (TVS)

166 Riverside Avenue Fort Monmouth, NJ 07703-0060

STANDARD OPERATING PROCEDURE

SUBJECT: Delineation of Historic Sanitary Landfills

DATE: April 8, 2010

1.0 PURPOSE

1.1 To ensure safe and effective delineation of the historic sanitary landfills located on Fort Monmouth.

2.0 GENERAL

2.1 This procedure shall apply to all employees or non-employees present during delineation activities.

2.2 The New Jersey Department of Environmental Protection (NJDEP) noted that based on an RI report, Fort Monmouth initially delineated the boundaries of the landfills using only geophysical surveys. The NJDEP suggested using test pits to verify the geophysical results. The Directorate of Public Works (DPW) agreed to confirm the boundaries of all nine solid waste landfills (M-2, M-3, M-4, M-5, M-8, M-12, M-14, M-18, AND CW-3A) though a series of test pits and borings.

3.0 RESPONSIBILITIES

3.1 Supervisor/Subsurface Evaluator: Ensure employees are properly informed of hazards associated with job tasks, monitor work practice for compliance with this procedure, revise the procedure when necessary and provide updated training as needed. Screen, photograph, and log the soils and landfill debris in test pits and borings. Determine test pit location. Assist with site restoration and survey completed test pits.

3.2 Equipment Operator: Review and follow the standard operating procedure associated with the process of landfill delineation. This includes using a back hoe to excavate and back fill the proposed test pits. Also assist with site restoration activities.

3.3 Health and Safety Office: Prepare a Site Specific Health and safety Plan, conduct periodic inspection of the work areas, assist with selection of personal protective equipment (PPE) and provide guidance and support to supervisor.

4.0 PROCESS

4.1 Delineate the landfills by installing excavations or borings at approximately 100 foot intervals.

4.2 Survey the locations of the completed test pits and borings.

4.3 Prepare a map showing the landfill boundaries. The map will be useful as a reference if it is required to cap the landfills in the future.

5.0 PROCEDURES

5.1 The following PPE shall be worn while conducting landfill delineation work:

- Hard hat
- Safety Glasses
- Steel toe work boots
- Leather work gloves
- Reflective vest

5.2 Test pit and boring locations will be determined based on existing Geophysical data.

5.3 A back hoe will be utilized to excavate the test pit to an approximate depth of 8 feet, 3 feet in width, and 10 feet in length. If a back hoe cannot be used in an area because of limited space, a Geoprobe or hand auger will be used to advance a boring to a depth of 8 feet.

5.4 While the test pit or boring is being installed the subsurface evaluator will screen the soil both visually and using a MultiRae air monitor equipped with a photoionization detector. The observations will be used to determine if landfill material or natural material is present. The findings will be noted on the attached Landfill Delineation Project Log.

5.5 In the event that landfill debris is observed in one of the test pits or borings, a new location will be selected in order to properly define the boundaries of each landfill. If landfill debris is observed within a test pit, the debris will be immediately covered with excavated soils. In the event a hazardous substance container is observed within one of the test pits, the container will be recovered for proper disposal.

5.6 Once the test pit or boring is complete it will be photographed and located by means of GPS coordinates. The area will be backfilled and the site will be restored with top soil, grass seed, and hay.

6.0 REFERENCES

6.1 Chenega Technology Services Corporation Fort Monmouth, NJ Health and Safety Plan

6.2 Letter dated July 29, 2008 from the Fort Monmouth DPW to The NJDEP, Subject: Landfill Delineation Project

4-9-10

Gary D. Ramsey
Manager
Facility Engineering
TECOM-Vinnell Services

LANDFILL DELINEATION PROJECT LOG

SUBSURFACE EVALUATOR: _____
EQUIPMENT OPERATOR: _____
DATE: _____
LANDFILL: _____ EXCAVATION ID: _____

EXCAVATION DESCRIPTION

LANDFILL MATERIAL PRESENT: YES NO
DESCRIBE: _____
_____

NATURAL MATERIAL PRESENT: YES NO
DESCRIBE: _____
_____

GPS POSITIONS
BEGINNING OF EXCAVATION
Y COORDINATE (NORTHING): _____ X COORDINATE (EASTING): _____

END OF EXCAVATION
Y COORDINATE (NORTHING): _____ X COORDINATE (EASTING): _____

EXCAVATION PHOTOGRAPHED: YES NO

PHOTOGRAPH INDENTIFICATION: _____

NOTES: _____
_____
_____
_____
_____
_____

SUBSURFACE EVALUATOR SIGNATURE: _____

ATTACHMENT C

Health and Safety Plan

CTSC/TVS SITE SPECIFIC HEALTH AND SAFETY PLAN

For

ORC-HRC
(Oxygen Release Compound-Hydrogen Release Compound)
Injection
Fort Monmouth, NJ

Date: May 4, 2010

Prepared By:

Lisa DeBenedetto
Industrial Hygienist
CTSC Quality Control & Safety Department

** Table of Contents **

1.0 INTRODUCTION

This section of the Site Health and Safety Plan (HASP) document defines general applicability and general responsibilities with respect to compliance with Health and Safety programs.

1.1 Scope and Applicability of the Site Health and Safety Plan

The purpose of this Site Health and Safety Plan is to define the requirements and designate protocols to be followed at the Site during investigation activities. Applicability extends to all Government employees, contractors, subcontractors, and visitors.

All personnel on site, contractors and subcontractors included, shall be informed of the site emergency response procedures, any potential fire, explosion, health, or safety hazards of the operation. This HASP summarizes those hazards in section 3.0 and defines protective measures planned for the site.

This plan must be reviewed and an agreement to comply with the requirements must be signed by all personnel prior to entering the exclusion zone or contamination reduction zone.

During development of this plan consideration was given to current safety standards as defined by EPA/OSHA/NIOSH, health effects and standards for known hazards, and procedures designed to account for the potential for exposure to unknown substances. Specifically, the following reference sources have been consulted:

- OSHA 29 CFR 1910.120 and EPA 40 CFR 311
- U.S. EPA, OERR ERT Standard Operating Safety Guides
- NIOSH/OSHA/USCG/EPA Occ. Health and Safety Guidelines
- OSHA 29 CFR 1926

1.2 Visitors

All visitors wishing to enter the Site will be required to read and verify compliance with the provisions of this HASP. In addition, visitors will be expected to comply with relevant OSHA requirements such as medical monitoring (Sec. 6.0), training (Sec. 4.0), and respiratory protection (if applicable). Visitors will also be expected to provide their own protective equipment.

In the event that a visitor does not adhere to the provisions of the HASP, he/she will be required to leave the work area. All nonconformance incidents will be recorded in the site log and reported to the project manager.

2.0 KEY PERSONNEL/IDENTIFICATION OF HEALTH AND SAFETY

2.1 Key Personnel

The following personnel and organizations are critical to the planned activities at the Site. The organizational structure will be reviewed and updated periodically by the site supervisor.

CTSC/TVS

George Boyce, Geoprobe Operator

2.2 Site Specific Health and Safety Personnel

The Site Health and Safety Officer (HSO) has total responsibility for ensuring that the provisions of this HASP are adequate and implemented in the field. Changing field conditions may require decisions to be made concerning adequate protection programs. Therefore, it is vital that personnel assigned as HSO be experienced and meet the additional training requirements specified by OSHA in 29 CFR 1910.120 (see Section 4.0 of this HASP). The HSO is also responsible for conducting site inspections on a regular basis in order to ensure the effectiveness of this plan.

The HSO at the site is Lisa DeBenedetto.

2.3 Organizational Responsibility

The Environmental Dept at Fort Monmouth has overall responsibility for all activities taking place at this site: Joseph Fallon.

3.0 SAFETY AND HEALTH RISK ANALYSIS

3.1 Hazard Assessment

The following subsections describe each task/operation in terms of the specific hazards associated with it. In addition, the protective measures to be implemented during completion of those operations are also identified.

3.2 Chemical Hazards

Chemical	Concentration	TWA/PEL	OSHA Carcinogen	Routes of Exposure
Regenesis ORC material	varies	Check with MSDS		
Regenesis HRC material	varies	Check with MSDS		

3.3 Physical Hazards

__x__ Slip, Trip, Fall Hazards
__x__ Thermal Stresses
__x__ Mechanical Hazards
_____ Confined Space Hazards
_____ Excavation Hazards
__x__ Head Hazards
__x__ Foot Hazards
__x__ Electrical Hazards
__x__ Heavy Equipment
__x__ Material Handling
__x__ Eye Hazards
_____ Pressure/Vibration
__x__ Noise

4.0 OVERVIEW OF WORK ACTIVITIES

The ORC-HRC (Oxygen Release Compound-Hydrogen Release Compound) material is first mixed with water to create a slurry. This slurry is then injected into holes that were previously made by the Geoprobe. Once complete, the hole is covered with an appropriate seal.

4.1 Equipment

- Geoprobe Model 5400 Soil Boring truck mounted equipment
- R.E. Rupe ORC/HRC Injection Pump

5.0 PERSONAL PROTECTIVE EQUIPMENT

This section describes the general requirements of the EPA designated Levels of Protection (A-D), and the specific levels of protection required for each task at the Site.

5.1 Levels of Protection

Personnel shall wear protective equipment when activities involve known or suspected atmospheric contamination vapors, gases, or particulates may be generated by site activities, or when direct contact with skin-affecting substances may occur. Full facepiece respirators protect lungs gastrointestinal tract, and eyes against airborne toxicants. Chemical-resistant clothing protects the skin from contact with skin-destructive and absorbable chemicals.

The specific levels of protection and necessary components for each have been divided into four categories according to the degrees of protection afforded:

Level A: Should be worn when the highest level of respiratory, skin, and eye protection is needed.

Level B: Should be worn when the highest level of respiratory protection is needed, but a lesser level of skin protection. Level B is the primary level of choice when encountering unknown environments.

Level C: Should be worn when the criteria for using air-purifying respirators are met, and a lesser level of skin protection is needed.

Level D: Should be worn only as a work uniform and not in any area with respiratory or skin hazards. It provides minimal protection against chemical hazards.

Modifications of these levels are permitted, and routinely employed during site work activities to maximize efficiency. For example, Level C respiratory protection and Level D skin protection may be required for a given task. Likewise the type of chemical protective ensemble (i.e., material, format) will depend upon contaminants and degrees of contact.

The Level of Protection selected is based upon the following:

- Type and measured concentration of the chemical substance in the ambient atmosphere and its toxicity.
- Potential for exposure to substances in air, liquids, or other direct contact with material due to work being done.
- Knowledge of chemicals on-site along with properties such as their toxicity, routes of exposure, and contaminant matrix.

In situations where the type of chemical, concentration, and possibilities of contact are not known, the appropriate Level of Protection must be selected based on professional experience and judgment until the hazards can be better identified.

The level of protection for employees working at this site work is the following:

Level D for all Personnel Protective Equipment:

- Nitrile Gloves
- Boots/shoes, leather or chemical-resistant, steel toe and shank
- Safety glasses/ Goggles
- Hardhats

5.2 Reassessment of Protection Program

The Level of Protection provided by PPE selection shall be upgraded or downgraded based upon a change in site conditions or findings of investigations.
When a significant change occurs, the hazards should be reassessed. Some indicators of the need for reassessment are:

- Commencement of a new work phase, such as the start or work that begins on a different portion of the site
- Change in job tasks during a work phase.
- Change of season/weather.
- When temperature extremes or individual medical considerations limit the effectiveness of PPE.
- Contaminants other than those previously identified are encountered.
- Change in ambient levels of contaminants.
- Change in work scope which affects the degree of contact with contaminants.

While work is being done at the site, at the least **SAFETY SHOES** and **SAFETY EYEWEAR** shall be **WORN** at **ALL TIMES.**

6.0 PERSONNEL TRAINING REQUIREMENTS

At a minimum all personnel are required to be trained to recognize the hazards on-site, the provisions of this HASP, and the responsible personnel.

6.1 Training and Briefing Topics

The following items will be discussed by a qualified individual at the site pre-entry briefing(s) or periodic site briefings.

Training	Frequency
Chemical hazards, Table 3.2	Daily
Engineering controls and work practices	Daily
Personnel protective equipment, Sec. 5.0	Daily
Physical hazards, Table 3.2	Daily
Symptoms of overexposure to hazards	Periodic

7.0 MEDICAL SURVEILLANCE REQUIREMENTS

Medical monitoring programs are designed to track the physical condition of employees on a regular basis as well as survey pre-employment or baseline conditions prior to potential exposure. The medical surveillance program is a part of each employers Health and Safety program.

7.1 Baseline or Preassignment Monitoring

Prior to being assigned to a hazardous or a potentially hazardous activity involving exposure to toxic materials employee must receive a preassignment or baseline physical. The contents of the physical are to be determined by the employer's medical consultant. As suggested by NIOSH/OSHA/USCG/EPA's Occupational Safety & Health Guidance Manual for Hazardous Waste Site Activities, the minimum medical monitoring requirements for work at the Site are as follows:

- Complete medical and work histories.
- Physical examination.
- Pulmonary function tests (FVC and FEV1).
- Eye examination and visual acuity.
- Audiometry.
- Urinalysis.
- Blood chemistry and heavy metals toxicology.

The pre-assignment physical should categorize employees as fit-for-duty and able to wear respiratory protection when needed. The medical requirements for work at this job site are:

- Complete medical and work histories.
- Physical examination.
- Pulmonary function tests (FVC and FEV1).
- Eye examination and visual acuity.
- Audiometry.
- Urinalysis.
- Blood chemistry and heavy metals toxicology.

7.2 Periodic Monitoring

In addition to a baseline physical, all employees require a periodic physical within the last 12 months unless the advising physician believes a shorter interval is appropriate or an occupational exposure dictates. The employers' medical consultant should prescribe an adequate medical which fulfills OSHA 29 CFR 1910.120 requirements. The pre-assigned medical outlined above may be applicable.

7.3 Exposure/Injury/Medical Support

As a follow-up to an injury or possible exposure above established exposure limits, all employees are entitled to and encouraged to seek medical attention and physical testing. Depending upon the type of exposure, it is critical to perform follow-up testing within 24-48 hours. It will be up to the employers' medical consultant to advise the type of test required to accurately monitor for exposure effects.

8.0 INDUSTRIAL HYGIENE MONITORING

Industrial hygiene may be performed during the course of operation. Frequency of monitoring depends on the job task at hand. For additional information, refer to CTSC Health and Safety Plan for Air Monitoring.

Direct Reading:

____ LEL/Oxygen Meter	Frequency: N/A
____ PID	Frequency: N/A
____ Detector/ Colorimetric Tubes	Frequency: N/A

Personal Monitoring:

If applicable, the following type of personal monitoring will be performed:
SKC Personal Sampling Pump*

9.0 SITE CONTROL MEASURES

The following section defines measures and procedures for maintaining site control. Site control is an essential component in the implementation of the site health and safety program.

9.1 Buddy System

During all activities or when some conditions present a risk to personnel, the implementation of a buddy system is mandatory. A buddy system requires at least two people who work as a team; each looking out for each other. For example, B operations generally require three people.

9.2 Site Communications Plan

Successful communications between field teams and contact with personnel in the support zone is essential. The following communications systems will be available during activities at the Site.

- Cellular Phone
- Intrinsically safe radio
- Hand Signals

NOTE: Beepers are not intrinsically safe and will NOT be allowed in flammable work zones.

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

9.3 Nearest Medical Assistance

A map of the route to the nearest medical facility which can provide emergency care for individuals who may experience an injury or exposure on-site shall be onsite. The route to the hospital should be verified by the HSO, and should be familiar to all site personnel.

10.0 DECONTAMINATION PLAN

Consistent with the levels of protection required, the decontamination figure provides a step by step representation of the personnel decontamination process for level A, B, or C. These procedures should be modified to suit site conditions and protective ensembles in use.

10.1 Standard Operating Procedures

Decontamination involves the orderly controlled removal of contaminants. Standard decontamination is to wash any affected after PPE is removed.

10.2 Disposition of Decontamination Wastes

All equipment and solvents used for decontamination shall be decontaminated or disposed of properly. Commercial laundries or cleaning establishments that decontaminate protective clothing or equipment shall be informed of the potentially harmful effects of exposures.

10.3 Equipment Decontamination

Sampling equipment will be decontaminated in accordance with procedures as defined in the work plan, Review the sequence of decontamination steps required for sampling equipment.

FIGURE 10.1
LEVEL A DECONTAMINATION STEPS

Step 1 Segregated equipment drop
Step 2 Boot cover and glove wash
Step 3 Boot cover and glove rinse
Step 4 Tape removal - boot and glove
Step 5 Boot cover removal
Step 6 Outer glove removal
Step 7 Suit/safety boot wash
Step 8 Suit/safety boot rinse
Step 9 Safety boot removal
Step10 Fully encapsulating suit and hard hat removal
Step11 SCBA backpack removal
Step12 Inner glove wash
Step13 Inner glove rinse
Step14 Face piece removal
Step15 Inner glove removal
Step16 Inner clothing removal
Step17 Field wash
Step18 Redress

FIGURE 10.2
LEVEL B DECONTAMINATION STEPS

Step 1 Segregated equipment drop
Step 2 Boot cover and glove wash
Step 3 Boot cover and glove rinse
Step 4 Tape removal - outer glove and boot
Step 5 Boot cover removal
Step 6 Outer glove removal
Step 7 Suit/safety boot wash
Step 8 Suit/SCBA/boot/glove rinse
Step 9 Safety boot removal
Step10 SCBA backpack removal
Step11 Splash suit removal
Step12 Inner glove wash
Step13 Inner glove rinse
Step14 Face piece removal
Step15 Inner glove removal
Step16 Inner clothing removal
Step17 Field wash
Step18 Redress

FIGURE 10.3
LEVEL C DECONTAMINATION STEPS

Step 1 Segregated equipment drop
Step 2 Boot cover and glove wash
Step 3 Boot cover and glove rinse
Step 4 Tape removal
Step 5 Boot cover removal
Step 6 Outer glove removal
Step 7 Suit/safety boot wash
Step 8 Suit/safety boot rinse
Step 9 Safety boot removal
Step10 Splash suit removal
Step11 Inner glove wash
Step12 Inner glove rinse
Step13 Face piece removal
Step14 Inner glove removal
Step15 Inner clothing removal
Step16 Field wash
Step17 Redress

FIGURE 10.4
LEVEL D DECONTAMINATION STEPS

Step 1 Remove outer garments (i.e., coveralls)
Step 2 Remove gloves

Step 3 Wash hands and face

The Decontamination Steps required at this site are Level D.

11.0 EMERGENCY RESPONSE/CONTINGENCY PLAN

This section describes contingencies and emergency planning procedures to be implemented at the Site. This plan is compatible with local, state and federal disaster and emergency management plans as appropriate.

11.1 Pre-Emergency Planning

During the site briefings held periodically/daily, all employees will be trained in and reminded of provisions of the emergency response plan, communication systems, and evacuation routes. The plan will be reviewed and revised if necessary, on a regular basis by the HSO.

11.2 Personnel Roles and Lines of Authority

The Site Supervisor has primary responsibility for responding to and correcting emergency situations. This includes taking appropriate measure to ensure the safety of site personnel and the public. Possible actions may involve evacuation of personnel from the site area, and evacuation of adjacent residents. He/she is additionally responsible for ensuring that corrective measures have been implemented, appropriate authorities notified, and follow-up reports completed. The HSO may be called upon to act on the behalf of the site supervisor, and will direct responses to any medical emergency.

The Site Supervisor: Dean Tardiff

11.3 Emergency Recognition/Prevention

Sections 3.2 and 3.3 provide a listing of chemical and physical hazards onsite. Personnel will be familiar with techniques of hazard recognition training and site-specific briefings. The HSO is responsible for ensuring that prevention devices or equipment is available to personnel.

11.4 Evacuation Routes/Procedures

In the event of an emergency which necessitates an evacuation of the site, the following alarm procedures will be implemented:

Evacuation alarm notification should be made using three short blasts on the air horn or vehicle horn, supplemented using the hand held radios. All personnel should evacuate upwind of any activities. Insure that a predetermined location is identified off-site in case of an emergency, so that all personnel can be accounted for. Personnel will be expected to proceed to the closest exit, and mobilize to the safe distance area associated with the evacuation route. Personnel will remain at that area until the re-entry alarm is sounded or an authorized individual provides further instructions.

11.5 Emergency Contact/Notification System

The following list provides names and telephone numbers for emergency contact personnel. In the event of a medical emergency, personnel will take direction from the HSO and notify the appropriate emergency organization. In the event of a fire or spill, the site supervisor will notify the appropriate local, state, and federal agencies.

Organization	Contact	Telephone
Ambulance:		911
Police:		911
Fire:		911
Hospital 1: Monmouth Medical Center		732-225-5200
Hospital 2: Jersey Shore Medical Center		732-776-4316
CTSC/TVS: Dean Tardiff		732-532-6352
EPA Emergency Response Team		908-321-6660
State Authority:		609-292-7172
National Response Center		800-424-8802
Centers for Disease Control and Prevention		404-488-4100
Chemtrec		800-424-9555

The SSO must be notified immediately after calling for emergency assistance or may be called first if the emergency is NOT life threatening. The SSO will then notify all other applicable personnel.

See attachment for hospital route maps.

11.6 Emergency Medical Treatment Procedures

Any person who becomes ill or injured should be removed from the site. First aid should be administered while awaiting an ambulance or paramedics. All injuries and illnesses must immediately be reported to the project manager. The following employees at this site are First Aid/ CPR trained: Harold Hornung.

11.7 Fire or Explosion

In the event of a fire or explosion, the local fire department should be summoned immediately. Upon their arrival, the project manager or designated alternate will advise the fire commander of the location, nature, and identification of the hazardous materials onsite.

If it is safe to do so, site personnel may:

- Use fire fighting equipment available onsite to control or extinguish the fire; and,
- Remove or isolate flammable or other hazardous materials which may contribute to the fire.

12.0 HAZARD COMMUNICATION

In order to comply with 29 CFR 1910.1200, Hazard Communication, the following written Hazard Communication Program has been established. All employees will be briefed on this program, and have a written copy for review.

A. CONTAINER LABELING

All containers received on site will be inspected to ensure the following: (1) all containers will be clearly labeled as to the contents; (2) the appropriate hazard warnings will be noted; and (3) the name and address of the manufacturer will be listed.

All secondary containers will be labeled with either an extra copy of the original manufacturer's label or with generic labels which have a block for identify and blocks for the hazard warning.

B. MATERIAL SAFETY DATA SHEETS (MSDSs)

Copies of MSDSs for all hazardous chemicals known or suspected on site will be maintained in the work area. MSDSs will be available to all employees for review during each work shift.

C. EMPLOYEE TRAINING AND INFORMATION

Prior to starting work, each employee will attend a health and safety orientation and will receive information and training on the following:

(1) an overview of the requirements contained in the Hazard Communication Standard, 29 CFR 1910.1200;

(2) chemicals present in their workplace operations;

(3) location and availability of a written hazard program;

(4) physical and health effects of the hazardous chemicals;

(5) methods and observation techniques used to determine the presence or release of hazardous chemicals;

(6) how to lessen or prevent exposure to these hazardous chemicals through usage of control/work practices and personal protective equipment;

(7) emergency procedures to follow if they are exposed to these chemicals;

(8) how to read labels and review MSDSs to obtain appropriate hazard information;

(9) location of MSDS file and location of hazardous chemical list.

ATTACHMENT A

CONTINGENCY PLAN AND HEALTH AND SAFETY PLAN REVIEW

All site personnel (CTSC/TVS Employees, contractors, leased employees, visitors) have reviewed the enclosed documentation including:

Site overview/Introduction
Potential physical and health hazards on site
Personal protective equipment requirements
Emergency response procedures
Site decontamination control

I have reviewed and understand the contents of the enclosed document:

Print name:	Signature:	Date:	Contractor:

ATTACHMENT B

HASP REVIEW AND APPROVAL

Based on the information provided, this plan has been reviewed and certified in accordance with 29 CFR 1910.120 "Hazardous Waste Operations and Emergency Response, 29 CFR 1910.132 "Personal Protective Equipment" and 29 CFR 1910.1200 "Hazard Communication".

L. DeBenedetto — 5/5/10

Lisa DeBenedetto, CTSC Industrial Hygienist — Date

Dean Tardiff — 5/5/10

Dean Tardiff, Environmental Lab Supervisor — Date

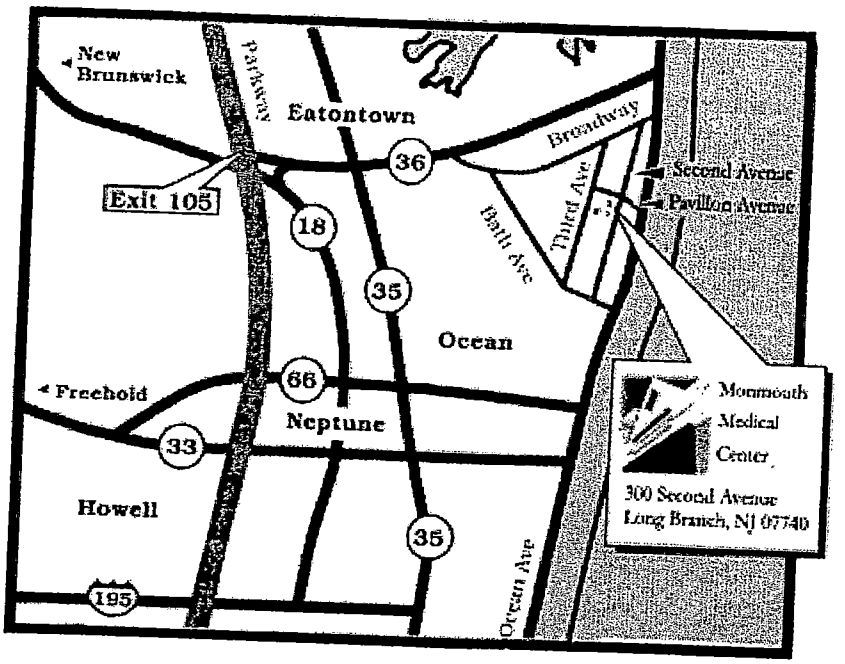
ATTACHMENT C

PERSONAL PROTECTIVE EQUIPMENT USE LOG (Daily)

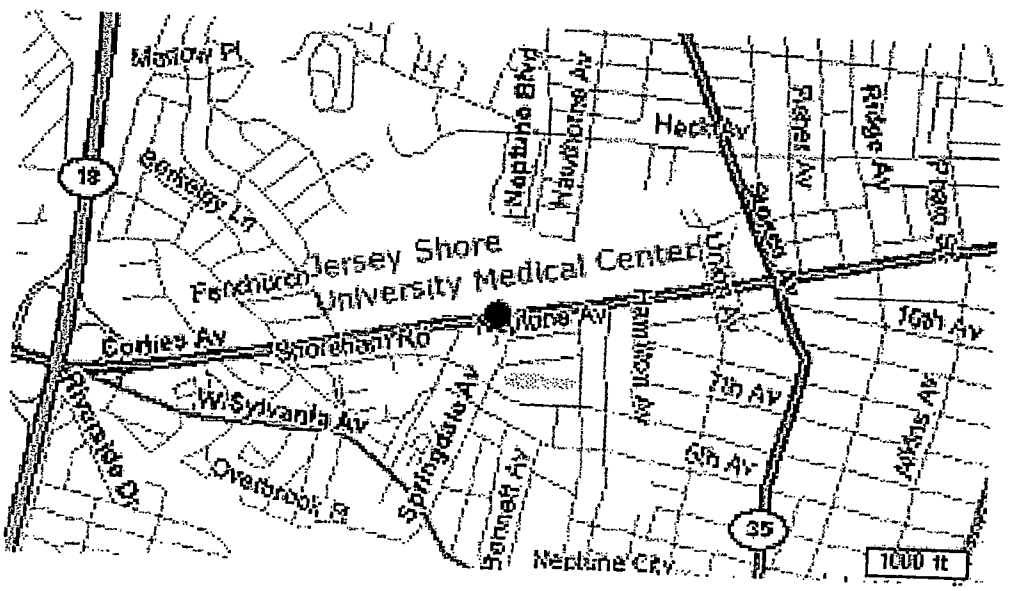
Date	Location	Task	Name	Type of PPE Worn

ATTACHMENT D

Monmouth Medical Center



Jersey Shore University Medical Center



CTSC/TVS SITE SPECIFIC HEALTH AND SAFETY PLAN

For

Soil Boring Activities by Hand and Geo-Probe
Fort Monmouth, NJ

Date: April 28, 2010

Prepared By:

Lisa DeBenedetto
Industrial Hygienist
CTSC Quality Control & Safety Department

** Table of Contents **

1.0 INTRODUCTION

This section of the Site Health and Safety Plan (HASP) document defines general applicability and general responsibilities with respect to compliance with Health and Safety programs.

1.1 Scope and Applicability of the Site Health and Safety Plan

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All personnel on site, contractors and subcontractors included, shall be informed of the site emergency response procedures, any potential fire, explosion, health, or safety hazards of the operation. This HASP summarizes those hazards in section 3.0 and defines protective measures planned for the site.

This plan must be reviewed and an agreement to comply with the requirements must be signed by all personnel prior to entering the exclusion zone or contamination reduction zone.

During development of this plan consideration was given to current safety standards as defined by EPA/OSHA/NIOSH, health effects and standards for known hazards, and procedures designed to account for the potential for exposure to unknown substances. Specifically, the following reference sources have been consulted:

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- U.S. EPA, OERR ERT Standard Operating Safety Guides
- NIOSH/OSHA/USCG/EPA Occ. Health and Safety Guidelines
- OSHA 29 CFR 1926

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All visitors wishing to enter the Site will be required to read and verify compliance with the provisions of this HASP. In addition, visitors will be expected to comply with relevant OSHA requirements such as medical monitoring (Sec. 6.0), training (Sec. 4.0), and respiratory protection (if applicable). Visitors will also be expected to provide their own protective equipment.

In the event that a visitor does not adhere to the provisions of the HASP, he/she will be required to leave the work area. All nonconformance incidents will be recorded in the site log and reported to the project manager.

2.0 KEY PERSONNEL/IDENTIFICATION OF HEALTH AND SAFETY

2.1 Key Personnel

The following personnel and organizations are critical to the planned activities at the Site. The organizational structure will be reviewed and updated periodically by the site supervisor.

CTSC/TVS

George Boyce, Geo-Probe Operator
Walter Funk, Environmental Field Sampler

2.2 Site Specific Health and Safety Personnel

The Site Health and Safety Officer (HSO) has total responsibility for ensuring that the provisions of this HASP are adequate and implemented in the field. Changing field conditions may require decisions to be made concerning adequate protection programs. Therefore, it is vital that personnel assigned as HSO be experienced and meet the additional training requirements specified by OSHA in 29 CFR 1910.120 (see Section 4.0 of this HASP). The HSO is also responsible for conducting site inspections on a regular basis in order to ensure the effectiveness of this plan.

The HSO at the site is Lisa DeBenedetto.

2.3 Organizational Responsibility

The Environmental Dept at Fort Monmouth has overall responsibility for all activities taking place at this site: Joseph Fallon.

3.0 SAFETY AND HEALTH RISK ANALYSIS

3.1 Hazard Assessment

The following subsections describe each task/operation in terms of the specific hazards associated with it. In addition, the protective measures to be implemented during completion of those operations are also identified.

3.2 Chemical Hazards

Chemical	Concentration	TWA/PEL	OSHA Carcinogen	Routes of Exposure
Nitric Acid (69-70%)	varies	2ppm	Yes	Inhalation & Absorption
Sulfuric Acid (50%)	varies	0.2 mg/m^3	Yes	Inhalation & Absorption
Hydrochloric Acid	varies	7mg/m^3	Yes	Inhalation & Absorption

3.3 Physical Hazards

__x__ Slip, Trip, Fall Hazards
__x__ Thermal Stresses
__x__ Mechanical Hazards
_____ Confined Space Hazards
_____ Excavation Hazards
__x__ Head Hazards
__x__ Foot Hazards
__x__ Electrical Hazards
__x__ Heavy Equipment
__x__ Material Handling
__x__ Eye Hazards
_____ Pressure/Vibration
__x__ Noise

4.0 OVERVIEW OF WORK ACTIVITIES

Samples are to be collected by hand or using a Geoprobe and brought back to the environmental laboratory for analysis. When done by hand, the samples are collected using a scope or hand auger. When using the Geoprobe samplers for soil collection, the samples are collected in a solid barrel, the liner is removed and cut open. Samples are first scanned and then collected at varying depths for analysis. For groundwater sampling, a solid push rod is used to create a narrow diameter hole to a depth below the water table. The groundwater is then drawn up using a peristaltic pump.

4.1 Equipment

- Sludge judge
- Geoprobe Macro Core Sampler
- Geoprobe Model 5400 Vehicle
- Geoprobe Large Bore Sampler
- Geoprobe DT-21 Dual Tube Sampler
- Geoprobe GP-15 Groundwater Sampler
- R.E. Rupe ORC/HRC Injection Pump
- Cole Palmer Peristaltic Pump
- Foxboro TVA 100B Dual FID/PID Gas Analyzer
- Hnu PID Gas Analyzer

5.0 PERSONAL PROTECTIVE EQUIPMENT

This section describes the general requirements of the EPA designated Levels of Protection (A-D), and the specific levels of protection required for each task at the Site.

5.1 Levels of Protection

Personnel shall wear protective equipment when activities involve known or suspected atmospheric contamination vapors, gases, or particulates may be generated by site activities, or when direct contact with skin-affecting substances may occur. Full facepiece respirators protect lungs gastrointestinal tract, and eyes against airborne toxicants. Chemical-resistant clothing protects the skin from contact with skin-destructive and absorbable chemicals.

The specific levels of protection and necessary components for each have been divided into four categories according to the degrees of protection afforded:

Level A: Should be worn when the highest level of respiratory, skin, and eye protection is needed.

Level B: Should be worn when the highest level of respiratory protection is needed, but a lesser level of skin protection. Level B is the primary level of choice when encountering unknown environments.

Level C: Should be worn when the criteria for using air-purifying respirators are met, and a lesser level of skin protection is needed.

Level D: Should be worn only as a work uniform and not in any area with respiratory or skin hazards. It provides minimal protection against chemical hazards.

Modifications of these levels are permitted, and routinely employed during site work activities to maximize efficiency. For example, Level C respiratory protection and Level D skin protection may be required for a given task. Likewise the type of chemical protective ensemble (i.e., material, format) will depend upon contaminants and degrees of contact.

The Level of Protection selected is based upon the following:

- Type and measured concentration of the chemical substance in the ambient atmosphere and its toxicity.
- Potential for exposure to substances in air, liquids, or other direct contact with material due to work being done.
- Knowledge of chemicals on-site along with properties such as their toxicity, routes of exposure, and contaminant matrix.

In situations where the type of chemical, concentration, and possibilities of contact are not known, the appropriate Level of Protection must be selected based on professional experience and judgment until the hazards can be better identified.

The level of protection for employees working at this site work is the following:

Level D for all Personnel Protective Equipment:

- Nitrile Gloves
- Boots/shoes, leather or chemical-resistant, steel toe and shank
- Safety glasses/ Goggles
- Hardhats (when using the Geoprobe)

5.2 Reassessment of Protection Program

The Level of Protection provided by PPE selection shall be upgraded or downgraded based upon a change in site conditions or findings of investigations.
When a significant change occurs, the hazards should be reassessed. Some indicators of the need for reassessment are:

- Commencement of a new work phase, such as the start or work that begins on a different portion of the site
- Change in job tasks during a work phase.
- Change of season/weather.
- When temperature extremes or individual medical considerations limit the effectiveness of PPE.
- Contaminants other than those previously identified are encountered.
- Change in ambient levels of contaminants.
- Change in work scope which affects the degree of contact with contaminants.

While work is being done at the site, at the least **SAFETY SHOES** and **SAFETY EYEWEAR** shall be **WORN** at **ALL TIMES.**

6.0 PERSONNEL TRAINING REQUIREMENTS

At a minimum all personnel are required to be trained to recognize the hazards on-site, the provisions of this HASP, and the responsible personnel.

6.1 Training and Briefing Topics

The following items will be discussed by a qualified individual at the site pre-entry briefing(s) or periodic site briefings.

Training	Frequency
Chemical hazards, Table 3.2	Daily
Engineering controls and work practices	Daily
Personnel protective equipment, Sec. 5.0	Daily
Physical hazards, Table 3.2	Daily
Symptoms of overexposure to hazards	Periodic

7.0 MEDICAL SURVEILLANCE REQUIREMENTS

Medical monitoring programs are designed to track the physical condition of employees on a regular basis as well as survey pre-employment or baseline conditions prior to potential exposure. The medical surveillance program is a part of each employers Health and Safety program.

7.1 Baseline or Preassignment Monitoring

Prior to being assigned to a hazardous or a potentially hazardous activity involving exposure to toxic materials employee must receive a preassignment or baseline physical. The contents of the physical are to be determined by the employer's medical consultant. As suggested by NIOSH/OSHA/USCG/EPA's Occupational Safety & Health Guidance Manual for Hazardous Waste Site Activities, the minimum medical monitoring requirements for work at the Site are as follows:

- Complete medical and work histories.
- Physical examination.
- Pulmonary function tests (FVC and FEV1).
- Eye examination and visual acuity.
- Audiometry.
- Urinalysis.
- Blood chemistry and heavy metals toxicology.

The pre-assignment physical should categorize employees as fit-for-duty and able to wear respiratory protection when needed. The medical requirements for work at this job site are:

- Complete medical and work histories.
- Physical examination.
- Pulmonary function tests (FVC and FEV1).
- Eye examination and visual acuity.
- Audiometry.
- Urinalysis.
- Blood chemistry and heavy metals toxicology.

7.2 Periodic Monitoring

In addition to a baseline physical, all employees require a periodic physical within the last 12 months unless the advising physician believes a shorter interval is appropriate or an occupational exposure dictates. The employers' medical consultant should prescribe an adequate medical which fulfills OSHA 29 CFR 1910.120 requirements. The pre-assigned medical outlined above may be applicable.

7.3 Exposure/Injury/Medical Support

As a follow-up to an injury or possible exposure above established exposure limits, all employees are entitled to and encouraged to seek medical attention and physical testing. Depending upon the type of exposure, it is critical to perform follow-up testing within 24-48 hours. It will be up to the employers' medical consultant to advise the type of test required to accurately monitor for exposure effects.

8.0 INDUSTRIAL HYGIENE MONITORING

Industrial hygiene may be performed during the course of operation. Frequency of monitoring depends on the job task at hand. For additional information, refer to CTSC Health and Safety Plan for Air Monitoring.

Direct Reading:

____ LEL/Oxygen Meter	Frequency: N/A
____ PID	Frequency: N/A
____ Detector/ Colorimetric Tubes	Frequency: N/A

Personal Monitoring:

If applicable, the following type of personal monitoring will be performed:
SKC Personal Sampling Pump*

9.0 SITE CONTROL MEASURES

The following section defines measures and procedures for maintaining site control. Site control is an essential component in the implementation of the site health and safety program.

9.1 Buddy System

During all activities or when some conditions present a risk to personnel, the implementation of a buddy system is mandatory. A buddy system requires at least two people who work as a team; each looking out for each other. For example, B operations generally require three people.

9.2 Site Communications Plan

Successful communications between field teams and contact with personnel in the support zone is essential. The following communications systems will be available during activities at the Site.

- Cellular Phone
- Intrinsically safe radio
- Hand Signals

NOTE: Beepers are not intrinsically safe and will NOT be allowed in flammable work zones.

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

9.3 Nearest Medical Assistance

A map of the route to the nearest medical facility which can provide emergency care for individuals who may experience an injury or exposure on-site shall be onsite. The route to the hospital should be verified by the HSO, and should be familiar to all site personnel.

10.0 DECONTAMINATION PLAN

Consistent with the levels of protection required, the decontamination figure provides a step by step representation of the personnel decontamination process for level A, B, or C. These procedures should be modified to suit site conditions and protective ensembles in use.

10.1 Standard Operating Procedures

Decontamination involves the orderly controlled removal of contaminants. Standard decontamination is to wash any affected after PPE is removed.

10.2 Disposition of Decontamination Wastes

All equipment and solvents used for decontamination shall be decontaminated or disposed of properly. Commercial laundries or cleaning establishments that decontaminate protective clothing or equipment shall be informed of the potentially harmful effects of exposures.

10.3 Equipment Decontamination

Sampling equipment will be decontaminated in accordance with procedures as defined in the work plan, Review the sequence of decontamination steps required for sampling equipment.

FIGURE 10.1
LEVEL A DECONTAMINATION STEPS
Step 1 Segregated equipment drop
Step 2 Boot cover and glove wash
Step 3 Boot cover and glove rinse
Step 4 Tape removal - boot and glove
Step 5 Boot cover removal
Step 6 Outer glove removal
Step 7 Suit/safety boot wash
Step 8 Suit/safety boot rinse
Step 9 Safety boot removal
Step10 Fully encapsulating suit and hard hat removal
Step11 SCBA backpack removal
Step12 Inner glove wash
Step13 Inner glove rinse
Step14 Face piece removal
Step15 Inner glove removal
Step16 Inner clothing removal
Step17 Field wash
Step18 Redress

FIGURE 10.2
LEVEL B DECONTAMINATION STEPS
Step 1 Segregated equipment drop
Step 2. Boot cover and glove wash
Step 3 Boot cover and glove rinse
Step 4 Tape removal - outer glove and boot
Step 5 Boot cover removal
Step 6 Outer glove removal
Step 7 Suit/safety boot wash
Step 8 Suit/SCBA/boot/glove rinse
Step 9 Safety boot removal
Step10 SCBA backpack removal
Step11 Splash suit removal
Step12 Inner glove wash
Step13 Inner glove rinse
Step14 Face piece removal
Step15 Inner glove removal
Step16 Inner clothing removal
Step17 Field wash
Step18 Redress

FIGURE 10.3
LEVEL C DECONTAMINATION STEPS
Step 1 Segregated equipment drop
Step 2 Boot cover and glove wash

Step 3 Boot cover and glove rinse
Step 4 Tape removal
Step 5 Boot cover removal
Step 6 Outer glove removal
Step 7 Suit/safety boot wash
Step 8 Suit/safety boot rinse
Step 9 Safety boot removal
Step10 Splash suit removal
Step11 Inner glove wash
Step12 Inner glove rinse
Step13 Face piece removal
Step14 Inner glove removal
Step15 Inner clothing removal
Step16 Field wash
Step17 Redress

FIGURE 10.4
LEVEL D DECONTAMINATION STEPS
Step 1 Remove outer garments (i.e., coveralls)
Step 2 Remove gloves
Step 3 Wash hands and face

The Decontamination Steps required at this site are Level D.

11.0 EMERGENCY RESPONSE/CONTINGENCY PLAN

This section describes contingencies and emergency planning procedures to be implemented at the Site. This plan is compatible with local, state and federal disaster and emergency management plans as appropriate.

11.1 Pre-Emergency Planning

During the site briefings held periodically/daily, all employees will be trained in and reminded of provisions of the emergency response plan, communication systems, and evacuation routes. The plan will be reviewed and revised if necessary, on a regular basis by the HSO.

11.2 Personnel Roles and Lines of Authority

The Site Supervisor has primary responsibility for responding to and correcting emergency situations. This includes taking appropriate measure to ensure the safety of site personnel and the public. Possible actions may involve evacuation of personnel from the site area, and evacuation of adjacent residents. He/she is additionally responsible for ensuring that corrective measures have been implemented, appropriate authorities notified, and follow-up reports completed. The HSO may be called upon to act on the behalf of the site supervisor, and will direct responses to any medical emergency.

The Site Supervisor: Dean Tardiff

11.3 Emergency Recognition/Prevention

Sections 3.2 and 3.3 provide a listing of chemical and physical hazards onsite. Personnel will be familiar with techniques of hazard recognition training and site-specific briefings.

The HSO is responsible for ensuring that prevention devices or equipment is available to personnel.

11.4 Evacuation Routes/Procedures

In the event of an emergency which necessitates an evacuation of the site, the following alarm procedures will be implemented:

Evacuation alarm notification should be made using three short blasts on the air horn or vehicle horn, supplemented using the hand held radios. All personnel should evacuate upwind of any activities. Insure that a predetermined location is identified off-site in case of an emergency, so that all personnel can be accounted for. Personnel will be expected to proceed to the closest exit, and mobilize to the safe distance area associated with the evacuation route. Personnel will remain at that area until the re-entry alarm is sounded or an authorized individual provides further instructions.

11.5 Emergency Contact/Notification System

The following list provides names and telephone numbers for emergency contact personnel. In the event of a medical emergency, personnel will take direction from the HSO and notify the appropriate emergency organization. In the event of a fire or spill, the site supervisor will notify the appropriate local, state, and federal agencies.

Organization	Contact	Telephone
Ambulance:		911
Police:		911
Fire:		911
Hospital 1: Monmouth Medical Center		732-225-5200
Hospital 2: Jersey Shore Medical Center		732-776-4316
CTSC/TVS: Dean Tardiff		732-532-6352
EPA Emergency Response Team		908-321-6660
State Authority:		609-292-7172
National Response Center		800-424-8802
Centers for Disease Control and Prevention		404-488-4100
Chemtrec		800-424-9555

The SSO must be notified immediately after calling for emergency assistance or may be called first if the emergency is NOT life threatening. The SSO will then notify all other applicable personnel.

See attachment for hospital route maps.

11.6 Emergency Medical Treatment Procedures

Any person who becomes ill or injured should be removed from the site. First aid should be administered while awaiting an ambulance or paramedics. All injuries and illnesses must immediately be reported to the project manager. The following employees at this site are First Aid/ CPR trained: Harold Hornung.

11.7 Fire or Explosion

In the event of a fire or explosion, the local fire department should be summoned immediately. Upon their arrival, the project manager or designated alternate will advise the fire commander of the location, nature, and identification of the hazardous materials onsite.

If it is safe to do so, site personnel may:

- Use fire fighting equipment available onsite to control or extinguish the fire; and,
- Remove or isolate flammable or other hazardous materials which may contribute to the fire.

12.0 HAZARD COMMUNICATION

In order to comply with 29 CFR 1910.1200, Hazard Communication, the following written Hazard Communication Program has been established. All employees will be briefed on this program, and have a written copy for review.

A. CONTAINER LABELING

All containers received on site will be inspected to ensure the following: (1) all containers will be clearly labeled as to the contents; (2) the appropriate hazard warnings will be noted; and (3) the name and address of the manufacturer will be listed.
All secondary containers will be labeled with either an extra copy of the original manufacturer's label or with generic labels which have a block for identify and blocks for the hazard warning.

B. MATERIAL SAFETY DATA SHEETS (MSDSs)

Copies of MSDSs for all hazardous chemicals known or suspected on site will be maintained in the work area. MSDSs will be available to all employees for review during each work shift.

C. EMPLOYEE TRAINING AND INFORMATION

Prior to starting work, each employee will attend a health and safety orientation and will receive information and training on the following:
(1) an overview of the requirements contained in the Hazard Communication Standard, 29 CFR 1910.1200;
(2) chemicals present in their workplace operations;
(3) location and availability of a written hazard program;
(4) physical and health effects of the hazardous chemicals;
(5) methods and observation techniques used to determine the presence or release of hazardous chemicals;
(6) how to lessen or prevent exposure to these hazardous chemicals through usage of control/work practices and personal protective equipment;
(7) emergency procedures to follow if they are exposed to these chemicals;
(8) how to read labels and review MSDSs to obtain appropriate hazard information;
(9) location of MSDS file and location of hazardous chemical list.

ATTACHMENT A

CONTINGENCY PLAN AND HEALTH AND SAFETY PLAN REVIEW

All site personnel (CTSC/TVS Employees, contractors, leased employees, visitors) have reviewed the enclosed documentation including:

Site overview/Introduction
Potential physical and health hazards on site
Personal protective equipment requirements
Emergency response procedures
Site decontamination control

I have reviewed and understand the contents of the enclosed document:

Print name:	Signature:	Date:	Contractor:

ATTACHMENT B

HASP REVIEW AND APPROVAL

Based on the information provided, this plan has been reviewed and certified in accordance with 29 CFR 1910.120 "Hazardous Waste Operations and Emergency Response, 29 CFR 1910.132 "Personal Protective Equipment" and 29 CFR 1910.1200 "Hazard Communication".

L. DeBenedetto — 5/5/10

Lisa DeBenedetto, CTSC Industrial Hygienist — Date

Dean Tardiff — 5/5/10

Dean Tardiff, Environmental Lab Supervisor — Date

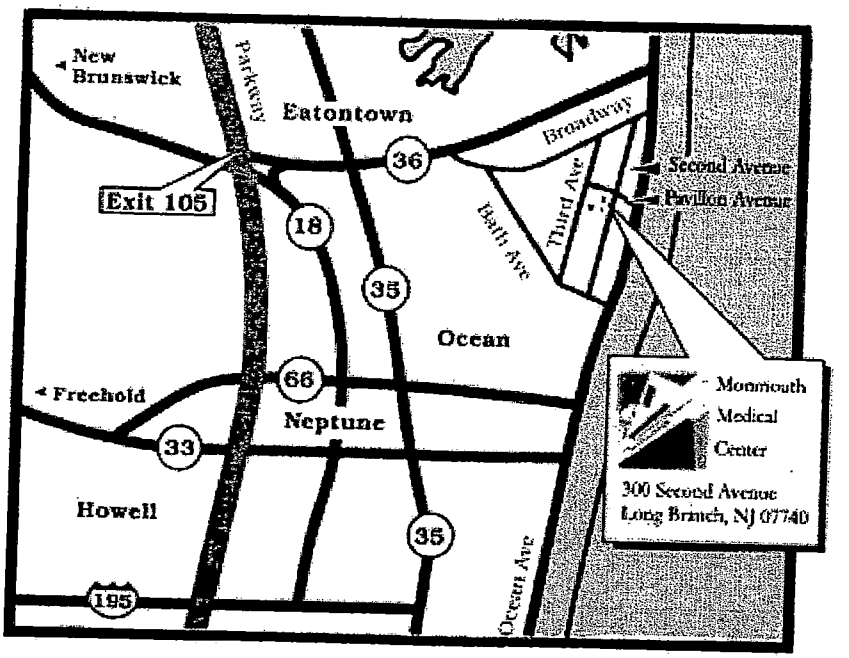
ATTACHMENT C

PERSONAL PROTECTIVE EQUIPMENT USE LOG (Daily)

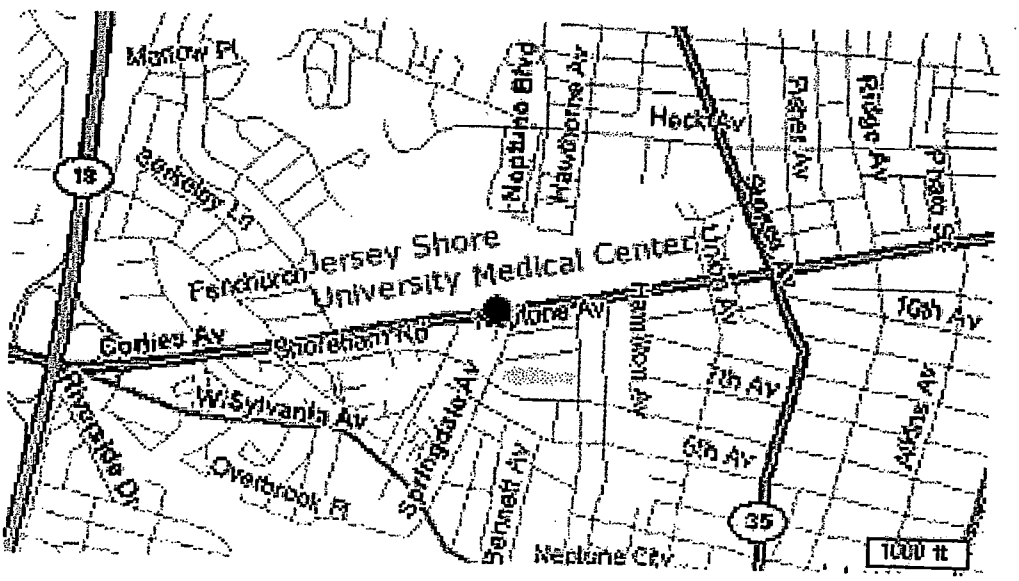
Date	Location	Task	Name	Type of PPE Worn

ATTACHMENT D

Monmouth Medical Center



Jersey Shore University Medical Center



CTSC/TVS SITE SPECIFIC HEALTH AND SAFETY PLAN

For

Delineation of Sanitary Landfill Boundaries
Fort Monmouth, NJ

Date: April 9, 2010

Prepared By:

Lisa DeBenedetto
Industrial Hygienist
CTSC Quality Control & Safety Department

** Table of Contents **

1.0 INTRODUCTION

This section of the Site Health and Safety Plan (HASP) document defines general applicability and general responsibilities with respect to compliance with Health and Safety programs.

1.1 Scope and Applicability of the Site Health and Safety Plan

The purpose of this Site Health and Safety Plan is to define the requirements and designate protocols to be followed at the Site during investigation activities. Applicability extends to all Government employees, contractors, subcontractors, and visitors.

All personnel on site, contractors and subcontractors included, shall be informed of the site emergency response procedures, any potential fire, explosion, health, or safety hazards of the operation. This HASP summarizes those hazards in section 3.0 and defines protective measures planned for the site.

This plan must be reviewed and an agreement to comply with the requirements must be signed by all personnel prior to entering the exclusion zone or contamination reduction zone.

During development of this plan consideration was given to current safety standards as defined by EPA/OSHA/NIOSH, health effects and standards for known hazards, and procedures designed to account for the potential for exposure to unknown substances. Specifically, the following reference sources have been consulted:

- OSHA 29 CFR 1910.120 and EPA 40 CFR 311
- U.S. EPA, OERR ERT Standard Operating Safety Guides
- NIOSH/OSHA/USCG/EPA Occ. Health and Safety Guidelines
- OSHA 29 CFR 1926

1.2 Visitors

All visitors wishing to enter the Site will be required to read and verify compliance with the provisions of this HASP. In addition, visitors will be expected to comply with relevant OSHA requirements such as medical monitoring (Sec. 6.0), training (Sec. 4.0), and respiratory protection (if applicable). Visitors will also be expected to provide their own protective equipment.

In the event that a visitor does not adhere to the provisions of the HASP, he/she will be required to leave the work area. All nonconformance incidents will be recorded in the site log and reported to the project manager.

2.0 KEY PERSONNEL/IDENTIFICATION OF HEALTH AND SAFETY

2.1 Key Personnel

The following personnel and organizations are critical to the planned activities at the Site. The organizational structure will be reviewed and updated periodically by the site supervisor.

CTSC/TVS

Harold Hornung, Environmental Field Supervisor
Ed Crawley, Heavy Equipment Operator

2.2 Site Specific Health and Safety Personnel

The Site Health and Safety Officer (HSO) has total responsibility for ensuring that the provisions of this HASP are adequate and implemented in the field. Changing field conditions may require decisions to be made concerning adequate protection programs. Therefore, it is vital that personnel assigned as HSO be experienced and meet the additional training requirements specified by OSHA in 29 CFR 1910.120 (see Section 4.0 of this HASP). The HSO is also responsible for conducting site inspections on a regular basis in order to ensure the effectiveness of this plan.

The HSO at the site is Harold Hornung.

2.3 Organizational Responsibility

The Environmental Dept at Fort Monmouth has overall responsibility for all activities taking place at this site: Joseph Fallon.

3.0 SAFETY AND HEALTH RISK ANALYSIS

3.1 Hazard Assessment

The following subsections describe each task/operation in terms of the specific hazards associated with it. In addition, the protective measures to be implemented during completion of those operations are also identified.

3.2 Chemical Hazards

Chemical	Concentration	TWA/PEL	OSHA Carcinogen	Routes of Exposure
Benzene(from Petroleum)	varies	0.5mg/m^3	Yes	Absorption
Carbon Monoxide(CO)	varies	25mg/m^3	No	Inhalation
Hydrogen Sulfide(H2S)	varies	1mg/m^3	No	Inhalation

Due the numerous compounds/elements in each category, the most hazardous is listed above and its PEL/TLV will be applied to all in its category.

3.3 Physical Hazards

__x__ Slip, Trip, Fall Hazards
__x__ Thermal Stresses
__x__ Mechanical Hazards
_____ Confined Space Hazards
__x__ Excavation Hazards
__x__ Head Hazards
__x__ Foot Hazards
__x__ Electrical Hazards
__x__ Heavy Equipment
__x__ Material Handling
__x__ Eye Hazards
_____ Pressure/Vibration
__x__ Noise

4.0 OVERVIEW OF WORK ACTIVITIES

A backhoe will be used to excavate trenches 8 feet deep, 3 feet wide, and 10 feet long every 100 feet along the perimeter of the landfills. When the bucket of the backhoe is brought up, the ash will be scanned using a MultiRAE meter. Petroleum products containing benzene, oxygen, carbon monoxide, and hydrogen sulfide concentrations will be measured to ensure safety. The ash will be covered by excavated soil until the trench is complete. Once the trench is excavated, logged and photographed the area will be backfilled, and then covered with top soil and seed.

4.1 Equipment

Work performed will be with a backhoe.

All underground utilities will be located and marked at and around the vicinity of the site.

5.0 PERSONAL PROTECTIVE EQUIPMENT

This section describes the general requirements of the EPA designated Levels of Protection (A-D), and the specific levels of protection required for each task at the Site.

5.1 Levels of Protection

Personnel shall wear protective equipment when activities involve known or suspected atmospheric contamination vapors, gases, or particulates may be generated by site activities, or when direct contact with skin-affecting substances may occur. Full facepiece respirators protect lungs gastrointestinal tract, and eyes against airborne toxicants. Chemical-resistant clothing protects the skin from contact with skin-destructive and absorbable chemicals.

The specific levels of protection and necessary components for each have been divided into four categories according to the degrees of protection afforded:

Level A: Should be worn when the highest level of respiratory, skin, and eye protection is needed.

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Level C: Should be worn when the criteria for using air-purifying respirators are met, and a lesser level of skin protection is needed.

Level D: Should be worn only as a work uniform and not in any area with respiratory or skin hazards. It provides minimal protection against chemical hazards.

Modifications of these levels are permitted, and routinely employed during site work activities to maximize efficiency. For example, Level C respiratory protection and Level D skin protection may be required for a given task. Likewise the type of chemical protective ensemble (i.e., material, format) will depend upon contaminants and degrees of contact.

The Level of Protection selected is based upon the following:

- Type and measured concentration of the chemical substance in the ambient atmosphere and its toxicity.
- Potential for exposure to substances in air, liquids, or other direct contact with material due to work being done.
- Knowledge of chemicals on-site along with properties such as their toxicity, routes of exposure, and contaminant matrix.

In situations where the type of chemical, concentration, and possibilities of contact are not known, the appropriate Level of Protection must be selected based on professional experience and judgment until the hazards can be better identified.

The level of protection for employees working at this site work is the following:

Level D for all Personnel Protective Equipment:

- Leather Work Gloves
- Boots/shoes, leather or chemical-resistant, steel toe and shank
- Safety glasses/ Goggles
- Hardhats

5.2 Reassessment of Protection Program

The Level of Protection provided by PPE selection shall be upgraded or downgraded based upon a change in site conditions or findings of investigations.
When a significant change occurs, the hazards should be reassessed. Some indicators of the need for reassessment are:

- Commencement of a new work phase, such as the start or work that begins on a different portion of the site
- Change in job tasks during a work phase.
- Change of season/weather.
- When temperature extremes or individual medical considerations limit the effectiveness of PPE.
- Contaminants other than those previously identified are encountered.
- Change in ambient levels of contaminants.
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While work is being done at the site, at the least **SAFETY SHOES** and **SAFETY EYEWEAR** shall be **WORN** at **ALL TIMES.**

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- Complete medical and work histories.
- Physical examination.
- Pulmonary function tests (FVC and FEV1).
- Eye examination and visual acuity.
- Audiometry.
- Urinalysis.
- Blood chemistry and heavy metals toxicology.

The pre-assignment physical should categorize employees as fit-for-duty and able to wear respiratory protection when needed. The medical requirements for work at this job site are:

- Complete medical and work histories.
- Physical examination.
- Pulmonary function tests (FVC and FEV1).
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Direct Reading:

____ LEL/Oxygen Meter	Frequency: N/A
____ PID	Frequency: N/A
____ Detector/ Colorimetric Tubes	Frequency: N/A

Personal Monitoring:

If applicable, the following type of personal monitoring will be performed:
SKC Personal Sampling Pump*

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- Cellular Phone
- Intrinsically safe radio
- Hand Signals

NOTE: Beepers are not intrinsically safe and will NOT be allowed in flammable work zones.

Signal	Definition
Hands clutching throat	Out of air/cannot breath
Hands on top of head	Need assistance
Thumbs up	OK/I am all right/I understand
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9.3 Nearest Medical Assistance

A map of the route to the nearest medical facility which can provide emergency care for individuals who may experience an injury or exposure on-site shall be onsite. The route to the hospital should be verified by the HSO, and should be familiar to all site personnel.

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Decontamination involves the orderly controlled removal of contaminants. Standard decontamination is to wash any affected after PPE is removed.

10.2 Disposition of Decontamination Wastes

All equipment and solvents used for decontamination shall be decontaminated or disposed of properly. Commercial laundries or cleaning establishments that decontaminate protective clothing or equipment shall be informed of the potentially harmful effects of exposures.

10.3 Equipment Decontamination

Sampling equipment will be decontaminated in accordance with procedures as defined in the work plan, Review the sequence of decontamination steps required for sampling equipment.

FIGURE 10.1
LEVEL A DECONTAMINATION STEPS

Step 1 Segregated equipment drop
Step 2 Boot cover and glove wash
Step 3 Boot cover and glove rinse
Step 4 Tape removal - boot and glove
Step 5 Boot cover removal
Step 6 Outer glove removal
Step 7 Suit/safety boot wash
Step 8 Suit/safety boot rinse
Step 9 Safety boot removal
Step10 Fully encapsulating suit and hard hat removal
Step11 SCBA backpack removal

Step12 Inner glove wash
Step13 Inner glove rinse
Step14 Face piece removal
Step15 Inner glove removal
Step16 Inner clothing removal
Step17 Field wash
Step18 Redress

FIGURE 10.2
LEVEL B DECONTAMINATION STEPS
Step 1 Segregated equipment drop
Step 2 Boot cover and glove wash
Step 3 Boot cover and glove rinse
Step 4 Tape removal - outer glove and boot
Step 5 Boot cover removal
Step 6 Outer glove removal
Step 7 Suit/safety boot wash
Step 8 Suit/SCBA/boot/glove rinse
Step 9 Safety boot removal
Step10 SCBA backpack removal
Step11 Splash suit removal
Step12 Inner glove wash
Step13 Inner glove rinse
Step14 Face piece removal
Step15 Inner glove removal
Step16 Inner clothing removal
Step17 Field wash
Step18 Redress

FIGURE 10.3
LEVEL C DECONTAMINATION STEPS
Step 1 Segregated equipment drop
Step 2 Boot cover and glove wash
Step 3 Boot cover and glove rinse
Step 4 Tape removal
Step 5 Boot cover removal
Step 6 Outer glove removal
Step 7 Suit/safety boot wash
Step 8 Suit/safety boot rinse
Step 9 Safety boot removal
Step10 Splash suit removal
Step11 Inner glove wash
Step12 Inner glove rinse
Step13 Face piece removal
Step14 Inner glove removal
Step15 Inner clothing removal

A. CONTAINER LABELING

All containers received on site will be inspected to ensure the following: (1) all containers will be clearly labeled as to the contents; (2) the appropriate hazard warnings will be noted; and (3) the name and address of the manufacturer will be listed. All secondary containers will be labeled with either an extra copy of the original manufacturer's label or with generic labels which have a block for identify and blocks for the hazard warning.

B. MATERIAL SAFETY DATA SHEETS (MSDSs)

Copies of MSDSs for all hazardous chemicals known or suspected on site will be maintained in the work area. MSDSs will be available to all employees for review during each work shift.

C. EMPLOYEE TRAINING AND INFORMATION

Prior to starting work, each employee will attend a health and safety orientation and will receive information and training on the following:

(1) an overview of the requirements contained in the Hazard Communication Standard, 29 CFR 1910.1200;
(2) chemicals present in their workplace operations;
(3) location and availability of a written hazard program;
(4) physical and health effects of the hazardous chemicals;
(5) methods and observation techniques used to determine the presence or release of hazardous chemicals;
(6) how to lessen or prevent exposure to these hazardous chemicals through usage of control/work practices and personal protective equipment;
(7) emergency procedures to follow if they are exposed to these chemicals;
(8) how to read labels and review MSDSs to obtain appropriate hazard information;
(9) location of MSDS file and location of hazardous chemical list.

ATTACHMENT A

CONTINGENCY PLAN AND HEALTH AND SAFETY PLAN REVIEW

All site personnel (CTSC/TVS Employees, contractors, leased employees, visitors) have reviewed the enclosed documentation including:

Site overview/Introduction
Potential physical and health hazards on site
Personal protective equipment requirements
Emergency response procedures
Site decontamination control

I have reviewed and understand the contents of the enclosed document:

Print name:	Signature:	Date:	Contractor:

ATTACHMENT B

HASP REVIEW AND APPROVAL

Based on the information provided, this plan has been reviewed and certified in accordance with 29 CFR 1910.120 "Hazardous Waste Operations and Emergency Response, 29 CFR 1910.132 "Personal Protective Equipment" and 29 CFR 1910.1200 "Hazard Communication".

L DeBenedetto

Lisa DeBenedetto, CTSC Industrial Hygienist

4/9/10

Date

Harold Hornung, Environmental Field Supervisor

4/9/10

Date

ATTACHMENT C

PERSONAL PROTECTIVE EQUIPMENT USE LOG (Daily)

Date	Location	Task	Name	Type of PPE Worn

ATTACHMENT D