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EXECUTION PLAN FOR OXYGEN RELEASING COMPOUND DEMONSTRATION AT SOLID  
WASTE MANAGEMENT UNIT 14 NS MAYPORT FL  
8/1/1998  
BECHTEL ENVIRONMENTAL

EXECUTION PLAN

For

OXYGEN RELEASING COMPOUND DEMONSTRATION

at

SOLID WASTE MANAGEMENT UNIT 14

NAVAL STATION MAYPORT, FLORIDA

Prepared for

DEPARTMENT OF THE NAVY  
SOUTHERN DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
Under Contract No. N62467-93-D-0936

Prepared by

BECHTEL ENVIRONMENTAL, INC.  
OAK RIDGE, TENNESSEE

AUGUST 1998

Bechtel Job No. 22567

Approved:

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Project Engineer

8/24/98  
Date

Approved:

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9-14-98  
Date

Approved:

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Navy Contracting Officer

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Date

**Solid Waste Management Unit 14  
Oxygen Releasing Compound  
Execution Plan**

**1.0 Purpose**

The Naval Station Mayport Partnering Team has requested a demonstration of an Oxygen Releasing Compound (ORC) technology at Solid Waste Management Unit (SWMU) 14 to evaluate its impact on the natural attenuation of semi-volatile organic materials. This demonstration is an interim measure.

SWMU 14 is also called the mercury/waste oil spill area. It is located in the northeast area of Naval Station Mayport, in the vicinity of the Fleet Training Center (FTC) which consists of drains connected to an oil-water separator, a storm water collection system, a petroleum storage area, and an area that reportedly was used for storage of mercuric nitrates. Activities at FTC include classroom instruction, as well as outdoor live fire fighting demonstrations. The Fire Fighting Training Facility at FTC Mayport currently uses environmentally friendly propane to simulate aircraft and shipboard fires; however, in the past the training facility used open pit oil burning for fire training.

The contamination of the area was from the over-flowing of the oil-water separator. This overflow allowed wastewater to flow into an open stormwater drainage ditch. Also, in 1986 two USTs were removed from the area. While no documentation was found detailing the condition of the tanks, it is possible the tanks leaked. The area of concern at the site is a 50 ft by 30 ft area near an abandoned concrete fire mat. Monitoring well samples have indicated high concentrations of naphthalene, phenanthrene, 2-methylnaphthalene and total organic carbon.

It is anticipated that the ORC technology will enhance the natural attenuation of the contaminants of concern at SWMU 14. The increased oxygen injected into the subsurface is expected to increase the mass destruction rates by maximizing the microbial metabolism.

The actions described in this Execution Plan are being implemented to:

- Oversee all construction and installation activities,
- Conduct scheduled sampling and monitoring events,
- Evaluate sampling and monitoring analyses, and
- Prepare a Technology Demonstration Report.

## **2.0 Pre-Construction Activities**

Bechtel and a subcontractor will mobilize a work force, support equipment, and materials necessary to complete the work. Initial mobilization involves securing an equipment staging area, and establishing lay down and decontamination areas.

Bechtel will locate and mark the anticipated 42 injection points for the ORC Slurry. Bechtel will then perform utility location surveys using active/passive field utility detection equipment. Potential interferences will be marked on the ground surface using pin flags or paint, as appropriate. No drilling will be initiated until this clearance procedure is completed. Bechtel will obtain and provide the required compound injection permits to comply with state and federal regulations.

One week prior to the implementation of this action, a baseline sampling event will be conducted by Bechtel. This event will consist of field measurements to determine soil and groundwater parameters. In addition, groundwater samples will be collected from the seven monitoring wells using bailers, bottled appropriately, and sent to a laboratory for evaluation. Results of these initial samples provide a baseline to gauge the success of the ORC technology demonstration.

## **3.0 Construction Activities**

A subcontractor, mobilized on site, will be responsible for providing a Geoprobe unit, Geoprobe operator, and other equipment necessary to create 42 injection points spaced at 6 ft centers, inject the ORC slurry, and seal the injection points. Bechtel will provide oversight of all subcontractor activities.

Ground water has been encountered at the site at depths ranging from 2 to 3.5 feet below land surface. Depth to ground water will be verified in the field by the subcontractor prior to ORC installation. Verification will be conducted using, at a minimum, two existing groundwater monitoring wells.

Based on groundwater velocity, total organic carbon concentration, thickness of saturated treatment zone, and soil porosity, roughly 2500 lbs. (dry weight) of ORC will be required. An estimated 59 lbs. of ORC and 16.5 gal of water will be required per injection point. Water required to mix the ORC will be obtained from the Fleet Training Center.

The subcontractor will drill or core through the concrete. The subcontractor will then inject ORC slurry into the 42 injection points utilizing a Geoprobe unit. The Geoprobe unit will push to a depth of approximately 10 feet below the water table and inject the slurry. The Geoprobe will then slowly be removed while the slurry continues to be injected. The subcontractor will ensure an ORC solids content of 30% prior to injection, that 59 lbs. (dry weight) of ORC are being injected into each injection point, and that ORC injection depth is 10 ft below the water table.

The ORC installation process will be conducted in accordance with the following procedure:

- A. Set up the Geoprobe unit over each specific point, following the manufacturer's recommended procedures.
- B. Penetrate surface pavement following standard Geoprobe procedures. Once concrete surface has been removed, use a hand auger for the first 3 feet to ensure the location is free of unknown objects/utilities.
- C. Drive the 1 ½ - inch pre-probe with the expendable tip to the desired maximum depth. Standard 1-inch drive rods should be used, after the pre-probe.
- D. Disconnect the drive rods from the expendable tip, following standard Geoprobe procedures.
- E. Mix the appropriate quantity of ORC slurry for the current drive point.
- F. Set up and operate an appropriate slurry pump according to manufacturer's directions. Connect the pump to the probe grout pull cap via a 1-inch diameter delivery hose. Attach hose to the 1-inch drive rod with its quick connector fitting. Upon confirmation of all connections, add the ORC slurry to the pump hopper/tank.
- G. While slowly withdrawing the pre-probe and drive stem, pump the predetermined amount of ORC slurry into the aquifer.
- H. Pump the predetermined quantity of ORC slurry 10 ft below the water table. Observe pump pressure levels for indications of slurry dispersion or refusal into the aquifer.
- I. Remove 1-inch drive rod. The drive rod will contain slurry. This slurry may be returned to the ORC slurry container for reuse.
- J. Install an appropriate seal above the ORC slurry through the entire vadose zone. Remove and decontaminate (as needed) the drive rods and pre-probe.
- K. Finish the probe hole at surface with concrete patch.

Upon completion of the construction phase, all equipment and material will be demobilized from the site. All injection points will be sealed with a cement/bentonite grout. All openings in concrete (or asphalt) created as a result of this work will receive a concrete (or asphalt) patch to restore the surface pavement. The site will be restored to as close to the pre-construction condition to the extent practicable.

#### **4.0 Monitoring, Sampling And Analysis**

There are 19 biweekly field measurement events and 10 monthly sampling events scheduled for this demonstration (includes initial baseline event). Monthly groundwater sampling will be scheduled to occur on the day of biweekly field monitoring when appropriate. The table below identifies the monitoring wells to be sampled and parameters to be identified.

Well ID	Biweekly Field Measurements	Monthly Laboratory Analysis
MPT-14-MW-09S MPT-14-MW-18S MPT-14-MW-17S MPT-14-MW-07S MPT-14-MW-16S MW20S MW19S	<i>Soil Gas:</i> Total hydrocarbons, Oxygen, Carbon Dioxide, Methane  <i>Groundwater:</i> Water level, pH, Temperature, Conductivity, Dissolved Oxygen	<i>Groundwater Samples:</i> TPH, TOC, COD, BOD, 2,4-Dimethylphenol, 2-Methylnaphthalene, Fluorene, Acenaphthene, Nitrite/Nitrate, Ferrous Iron, Naphthalene, Phenanthrene, bis(2-Ethylhexyl)phthalate, Methane, Sulfide, Sulfate
	<i>Parameters read in field  with field equipment.</i>	<i>Collected samples sent to a  lab.</i>

Bechtel's approved Comprehensive Quality Assurance Plan (CompQAP #940316) is presently on file with the FDEP. Bechtel Navy RAC project procedures based on EPA Region IV sample collection guidelines will be used throughout the data collection phase of this project. Samples identified in this section will be collected in accordance with project procedures. Analysis of these samples will be in accordance with the EPA criteria for the defined method or by the procedure identified as appropriate. Nitrile surgical gloves, hard hat, and safety glasses will be worn while purging and sampling the wells.

### 5.0 Waste Management

All wastes generated during slurry injection, field measurements, and well sampling will be managed in accordance with applicable federal and state laws and regulations, as well as the *Environmental Response Action Contract Waste Management Plan (WMP) (BEI 1995)*.

Several non-hazardous wastes, such as general construction waste and decontaminated personal protective equipment (PPE), will be generated during this project. PPE that has been decontaminated will be disposed of by placing the materials in double plastic garbage bags. Non-hazardous solid waste that is generated as a result of construction activities at the site will be properly disposed of at a Subtitle D or construction rubble landfill as appropriate, or as directed by the Navy. Non-hazardous construction waste generated during construction phase will be collected and properly disposed of by the subcontractor. Bechtel will be overall responsible for the disposal of all non-hazardous wastes related to this project.

All personnel equipment will be decontaminated on site using sealable tubs or 5-gallon buckets. The volume of water generated during decontamination activities is anticipated to be small. The decontamination water will be generated primarily during cleaning of equipment involved with the slurry injection and monitoring phases. Any generated decontamination water will be

collected in a 55-gallon drum. Under no circumstances will excess cleaning solutions which are not contaminated or spent be added to decontamination water. In addition, no solvents that could generate a hazardous waste will be used or discharged at this site. All unused decontamination solutions will be removed from the site at the time of demobilization. Sampling requirements for the disposal of well purge water will be coordinated with PWC.

It is not anticipated that hazardous wastes will be generated during the activities described in this Execution Plan. However, if hazardous wastes are generated or identified, they will be managed in accordance with RCRA (40 CFR Part 260) and related federal and state regulations. Unless decontamination procedures and subsequent analytical results can demonstrate non-hazardous characteristics, all wastes that have been in contact with potentially hazardous wastes generated on this project will be classified as potentially hazardous.

For any hazardous wastes that are generated or discovered during this technology demonstration, Bechtel will provide all information necessary for the Hazardous Waste Manager at Naval Station Mayport to characterize the wastes. The selected disposal facility's permit constraints will determine the analyses required for characterization and approval prior to disposal. Samples for each waste stream will be collected by Bechtel in accordance with Navy RAC project procedures and the results will be forwarded to the Hazardous Waste Manager. The Hazardous Waste Manager will then complete characterization of the wastes.

Bechtel will coordinate disposal of hazardous wastes with PWC. Disposal manifesting and record keeping of hazardous wastes will be performed by the Navy, including notification to the EPA Region IV off-site coordinator if required. Bechtel will conduct weekly inspections of on-site accumulations of hazardous wastes and will submit inspection reports to the Hazardous Waste Manager, Naval Station Mayport.

## **6.0 Safety and Health**

A Program Safety and Health Plan (PSHP) defines the policies for the Navy RAC project. Medical surveillance and project training requirements are contained in the PSHP. No special medical testing is required for this activity. Before starting work, each worker assigned to perform tasks under this task will receive an initial safety and health orientation training from the Site Safety and Health Representative (SSHR). Workers outside the regulated areas with no potential for exposure are exempt from the HAZWOPER training program. This exemption is determined on a case-by-case basis.

The chemical hazard for installation of the wells and slurry injection is low. Chemical hazards for the tasks defined in this Execution Plan include carcinogen, toxic organic chemicals, contact exposure, skin absorption, and neurotoxin. The SSHR will implement an air monitoring program to confirm that chemical hazards are not present on a daily basis during the construction phase. If monitoring results indicate airborne concentrations which exceed applicable exposure limits, engineering controls, appropriate work practices, and personal protective equipment (PPE) will be implemented to reduce exposure. The SSHR will specify the PPE requirements.

A Site Safety and Health Plan (SSHP) has been prepared for each of the Navy RAC bases. Emergency response and notification procedures are specified in the Mayport SSHP. From the site, call 911 for police, rescue, fire department or ambulance. An addendum to the SSHP, which will be provided separately to the Navy for approval, will define additional task-specific requirements for the demonstration activities at SWMU 14 that are described in this Execution Plan.

## **7.0 Quality Control**

Appropriate Quality Control (QC) criteria are developed and included in the site-specific addendum to the Quality Control Program Plan (QCP). This site-specific plan, called the Quality Control Program Plan Addendum (QCPA), is based on the Navy-approved QCP for the basic contract. The QCPA will be issued under separate cover to the Navy for approval. Bechtel will implement, maintain, and comply with the Navy-approved basic contract QCP and the site-specific QCPA, and will provide a trained, qualified Quality Assurance (QA) Representative to perform the function of QA.

## **8.0 Submittals**

BEI will provide to Southern Division addenda to the Site Safety and Health Plan and Quality Control Plan for the SWMU 14 ORC Technology demonstration, and a Technology Demonstration Report summarizing the findings and conclusions of this demonstration.

# Bechtel

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September 30, 1998

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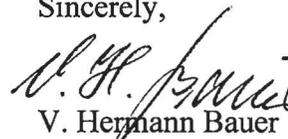
SUBJECT: Bechtel Job No. 22567  
Department of the Navy Contract No. N62467-93-D-0936  
**DO 0110: EXECUTION PLAN FOR OXYGEN RELEASING  
COMPOUND DEMONSTRATION AT SOLID WASTE  
MANAGEMENT UNIT 14, NAVAL STATION MAYPORT, FLORIDA**  
Subject Code: 5320

Dear Mr. Lesesne:

Enclosed for your information is the Execution Plan for Oxygen Releasing Compound at Solid Waste Management Unit 14, Naval Station Mayport.

If there are any questions or comments, please feel free to contact Dale Obenauer or myself at (904) 779-8900.

Sincerely,

  
V. Hermann Bauer  
Project Manager

VHB/let  
Enclosure: As stated



**Bechtel Environmental, Inc.**