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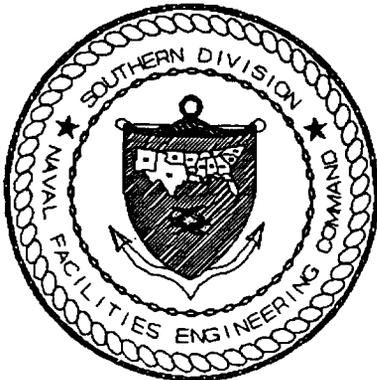
BEST MANAGEMENT PRACTICES PLAN DEFENSE FUEL SUPPLY POINT (DFSP) CNC
CHARLESTON SC
12/01/1991
NAVFAC SOUTHERN



BEST MANAGEMENT PRACTICES PLAN

**DEFENSE FUEL SUPPLY POINT
CHARLESTON, SOUTH CAROLINA**

DECEMBER 1991



**Southern Division
Naval Facilities Engineering Command
Charleston, South Carolina 29411-0068**

**BEST MANAGEMENT
PRACTICES PLAN**

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EXECUTIVE SUMMARY

An estimated 83,000 gallons of JP-4 was lost in 1975 from a bottom leak in Tank 1 at Defense Fuel Supply Point (DFSP) Charleston. Past remedial action attempts to recover the lost product had limited success.

In 1988, site parameters for biological degradation of the fuel contamination was investigated and found to be appropriate for insitu biological treatment. Schematic designs were prepared for the bioremediation system and NPDES and construction permits were obtained in March and October of 1989. This Best Management Practices (BMP) Plan has been prepared to comply with one of the special conditions of the construction permit issued by South Carolina Department of Health and Environmental Control (SCDHEC).

The purpose of this BMP Plan is to identify potential spill sources associated with the bioremediation system and to propose countermeasures to control or reduce the potential for discharge of significant amounts of oil and hazardous substances (OHS). DFSP operations that are not directly associated with the bioremediation system will not be addressed in the Plan.

Specific requirements that will be addressed in this plan to control pollution are:

- BMP Committee
- Risk Identification and Assessment
- Recommended Countermeasures
- Procedures for Reporting BMP Incidents
- Material Compatibility
- Good Housekeeping Protocol
- Preventive Maintenance
- Inspection and Records
- Security
- Employee Training

The operation and maintenance of the bioremediation system will require daily monitoring by technical personnel familiar with the design of the system and will be provided by offsite contracted sources. The Terminal Manager, however, will still maintain overall responsibility for implementation of the BMP procedures.

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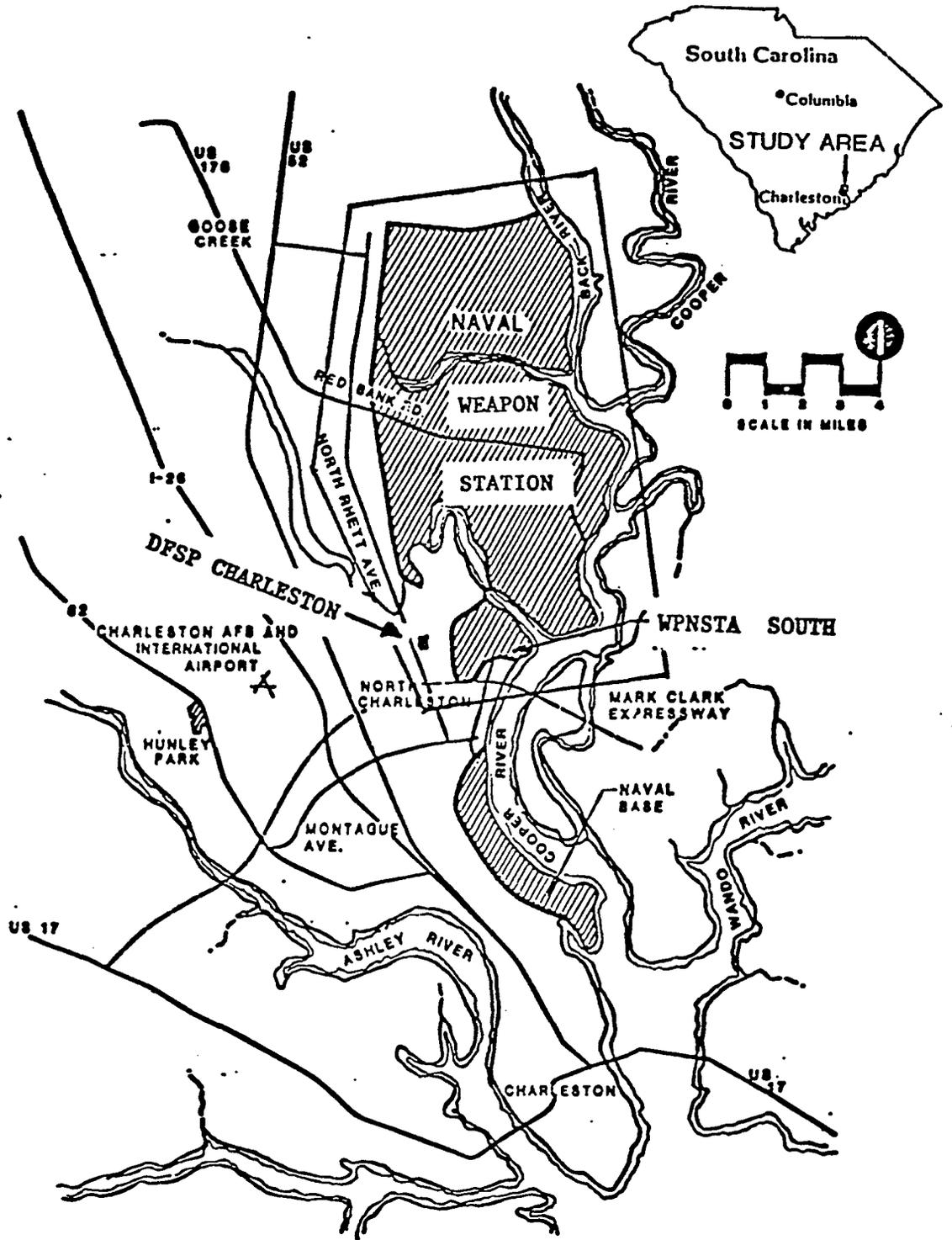
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B NPDES Permit 0024783



VICINITY MAP

CERTIFICATION

I hereby certify that I have examined the Bioremediation Project designed for DFSP Charleston and being familiar with the facility and the provisions of the Clean Water Act and the National Pollutant Discharge Elimination System, attest that this Best Management Practices Plan has been prepared in accordance with good engineering practices.

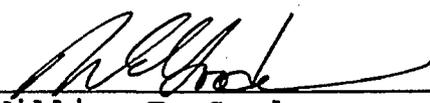
Daryle L. Fontenot
Daryle L. Fontenot, P.E.
Louisiana P.E. No. 22255

Date: 16 December 1991



MANAGEMENT APPROVAL

I hereby certify that I have reviewed this Best Management Practices (BMP) Plan and agree to implement the procedures herein outlined.



William E. Goode
DFSC Chief of Environmental
Quality Division

Date: 23 DECEMBER 1991

CHAPTER 1. INTRODUCTION

1.1 GENERAL INFORMATION

Defense Fuel Support Point (DFSP) Charleston is located in Berkeley County at 5862 N. Rhett Boulevard in Hanahan, SC (32-54-22N/79-57-15E). Terminal Facilities include:

- 7-80,000 bbl AG Steel Bulk Tanks with floating roofs
- 6-Small Slop Tanks (various sizes)
- 3-Truck Loading Stands (600 GPM)
- 2-Railcar Loading Stands
- 1-Pumping Station (8000 bbl/hr receipt, 500 gpm issue)
- 2-Oil-water separators (750 gpm & 50 gpm)

The terminal's bulk tanks are filled at the rate of 9,000 bbl/hr from barges located at the Naval Weapons Station fueling wharf located off Remount Road in N. Charleston. The fuel is pumped from the Wharf to the Terminal via twin 18 pipelines, a distance of approximately 3 miles.

The terminal's main customer, Charleston AFB, is located approximately 12 miles to the west and is fed by an 8" underground pipeline at 1599 bbl/hr. The terminal's offsite customers are supplied either by rail, tanker car, or barge. Monthly throughput averages 8 million gallons of JP-4.

1.2 DFSP CHARLESTON MISSION

DFSP's sole mission is to supply JP-4 to its Air Force customers in Charleston and surrounding areas. The Plant operation is contracted to Continental Services Company. The Terminal Manager (superintendent) is Mr. Larry D. Verhosek. The plant is manned 24/hours per day. Normal day staffing is 17 persons. After hours staffing is security personnel only.

The responsible government agency is:

Defense Logistics Agency (DLA)
Defense Fuel Supply Center (DFSC)
Cameron Station, VA 22314-6160
ATT: Mr. W.E. Goode
Chief, Environmental Quality Division
Directorate of Facilities Management

DLA's daily onsite Quality Assurance Representative (QAR) is Mr. Donald Matthews.

1.3 BACKGROUND INFORMATION

In October 1975, an 83,000 gallon leak from the bottom of Tank 1 contaminated the shallow water-table aquifer in the vicinity of the tank at DFSP Charleston. Remedial efforts in late 1975 and early

1976 recovered about 29,000 gallons of the lost product. Recent investigations indicate that the plume has migrated north towards the Gold Cup Springs subdivision. The migration of the plume raises a concern that the contaminants may pose a health risk to the inhabitants of the residential neighborhood.

Starting in early 1987, RMT, Inc., working with the U.S. Geological Survey, designed an in-situ bioremediation system to remove the organic constituents and hydrocarbons from the soil and groundwater.

1.4 BMP POLICY AND OBJECTIVES

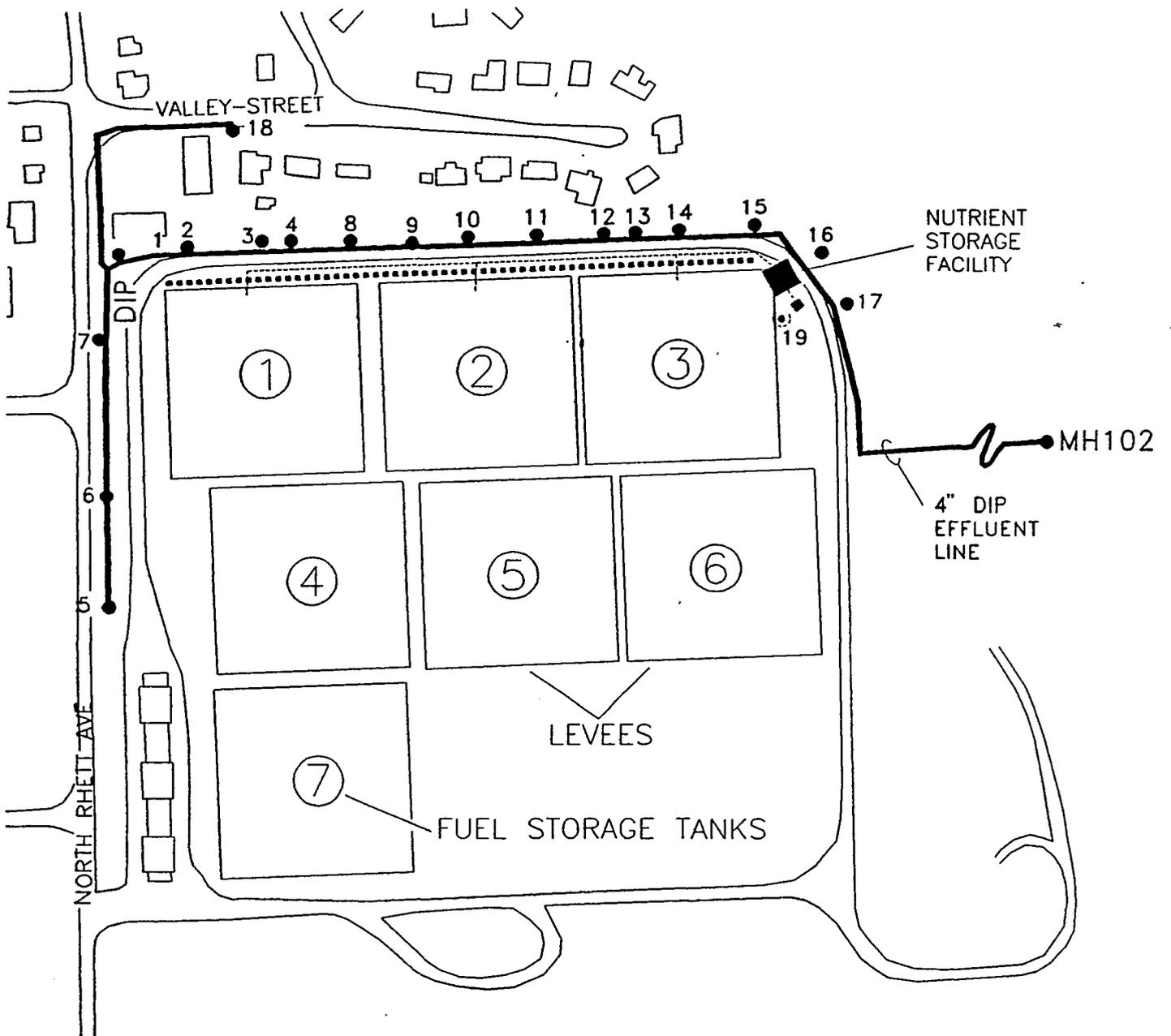
DFSP Charleston fully supports DOD's goal of being "first" in federal agency compliance with environmental regulations and initiatives. DFSP will take whatever actions necessary to reduce the risk of environmental contamination and health hazards resulting from the operation and maintenance of the groundwater remediation project addressed in this plan.

This BMP Plan has been prepared specifically to meet Special Condition No. 2 of South Carolina Department Health and Environmental Control (DHEC) Construction Permit No. 15,707 (Appendix A) and NPDES Permit No. SC 0024783 (Appendix B) for the construction of a groundwater remediation system and the discharge of effluent to the North Charleston Sewer District sanitary sewer.

The management practices presented in this Plan have been coordinated with cognizant DOD, DFSP Charleston, and remediation system operation and maintenance (O&M) personnel to ensure that spill prevention and containment will have the highest priority. Daily O&M and technical monitoring of the remediation system is outside the scope of Terminal employees' expertise and will therefore be contracted to outside specialists. However, overall responsibility for implementation of the Plan's spill prevention objectives will remain with the Terminal Manager. Problems will be immediately brought to the attention of the BMP Committee for prompt review and resolution.

1.5 REMEDIATION SYSTEM

Due to the technical nature of the remediation system, an understanding of the basic design concept and system components is necessary in order for procedures outlined in this Plan to be effective. The treatment system is composed of three basic systems: (1) Groundwater Extraction, (2) Bioremediation, and (3) Off-site Disposal. The Operations and Maintenance Manual, prepared by RMT, Inc., should be reviewed for a more indepth coverage of the items summarized below. See Figure 1.1 for a schematic layout of the entire system.



LEGEND

- 17 EXTRACTION WELL
- INFILTRATION TRENCH
- VALVE PIT
- 19 4" EXTRACTION WELL (Approx. 275' depth)

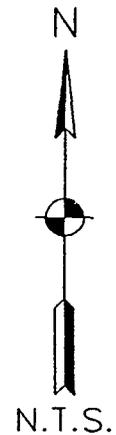
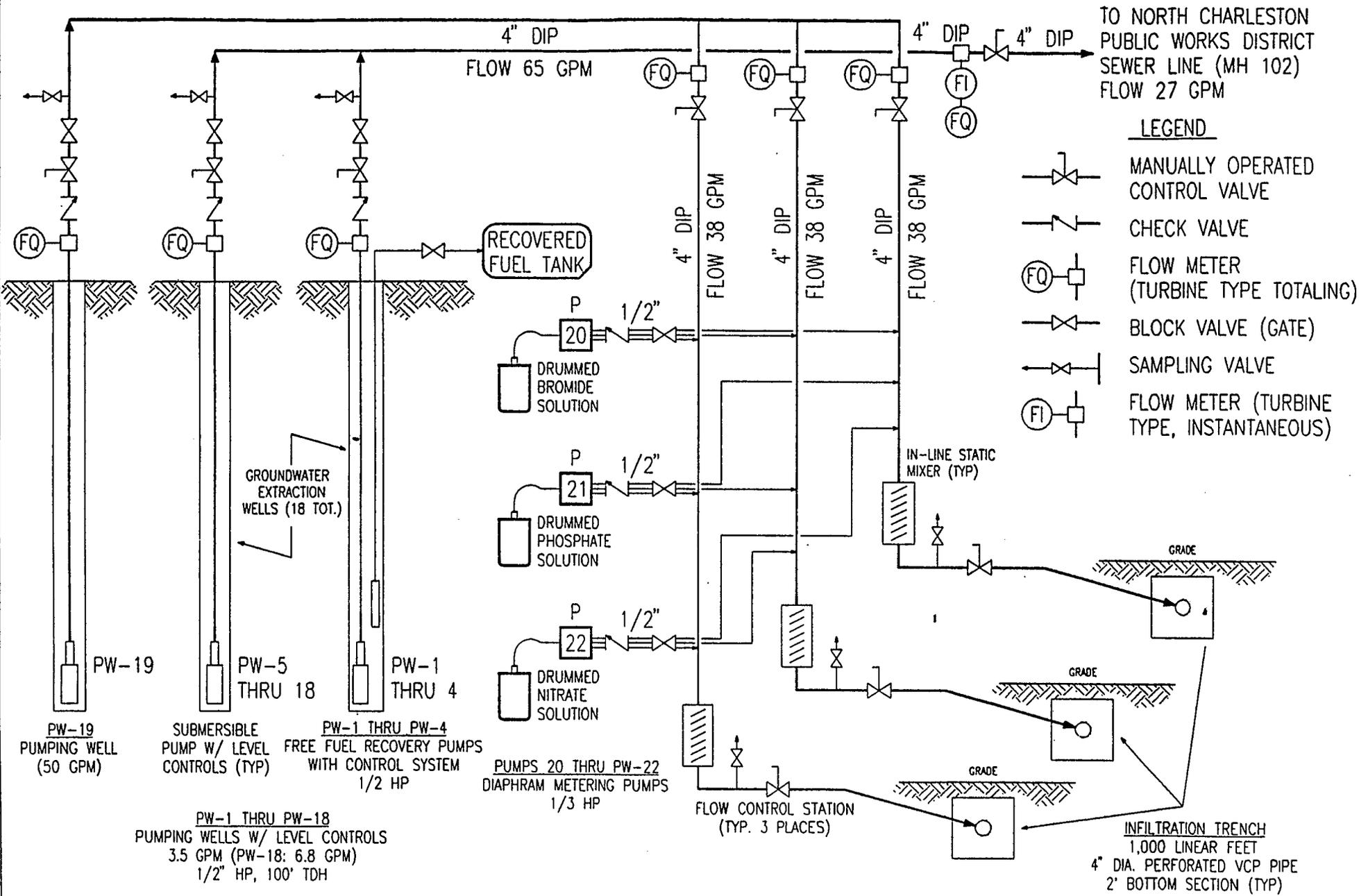


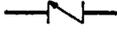
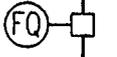
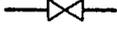
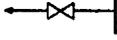
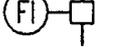
FIGURE 1-1
GENERAL LAYOUT
(3)

E 1-2
SCHMATIC REMEDIATION SYSTEM LAYOUT
 N.T.S.



TO NORTH CHARLESTON
 PUBLIC WORKS DISTRICT
 SEWER LINE (MH 102)
 FLOW 27 GPM

LEGEND

-  MANUALLY OPERATED CONTROL VALVE
-  CHECK VALVE
-  FLOW METER (TURBINE TYPE TOTALING)
-  BLOCK VALVE (GATE)
-  SAMPLING VALVE
-  FLOW METER (TURBINE TYPE, INSTANTANEOUS)

PW-19
 PUMPING WELL
 (50 GPM)

PW-5
 THRU 18
 SUBMERSIBLE
 PUMP W/ LEVEL
 CONTROLS (TYP)

PW-1 THRU PW-4
 FREE FUEL RECOVERY PUMPS
 WITH CONTROL SYSTEM
 1/2 HP

PUMPS 20 THRU PW-22
 DIAPHRAM METERING PUMPS
 1/3 HP

PW-1 THRU PW-18
 PUMPING WELLS W/ LEVEL CONTROLS
 3.5 GPM (PW-18: 6.8 GPM)
 1/2" HP, 100' TDH

INFILTRATION TRENCH
 1,000 LINEAR FEET
 4" DIA. PERFORATED VCP PIPE
 2' BOTTOM SECTION (TYP)

GROUNDWATER EXTRACTION SYSTEM: Seventeen groundwater extraction wells (PW-1 through 17) have been installed along the northern perimeter of the Terminal to remove the contaminated groundwater and develop a cone of depression to retard further migration of the plume. Each well is provided with a 1/2-HP/3.5 gpm submersible pump with automatic level controls. An additional well (PW-18) is located in the Gold Cup Springs subdivision just north of the Terminal and will be pumped at 6.8 gpm.

Four of the extraction wells (PW-1 through 4) are equipped with oil skimmer pumps (1/2 HP/3.5 gpm) to remove floating product. Collected fuel will be pumped via a common pipeline to a skid mounted holding tank positioned inside the bulk tank secondary containment facility.

A new 4" extraction well (PW-19) will be installed to approximately 340' depth. This well will be equipped with a submersible pump to supply up to 50 gpm of clean groundwater which is low in iron. This well will provide the infiltration water source, will be plumbed into the existing valve box near the nutrient storage facility, and will be fitted with a totalizing flow meter and an adjustable valve.

BIOREMEDIATION (RECHARGE) SYSTEM: Extraction wells (PW-1 through 18) are connected to sanitary sewer MH 102 located on the adjacent Naval Weapons Station property. Water from extraction well PW-19 is mixed with nitrates and phosphates to enhance biological degradation of the hydrocarbons and recharged into the soil via a 2000 sf infiltration trench. Bromide is added prior to injection as a tracer to monitor flow characteristics.

EFFLUENT DISCHARGE: A 4" ductile iron pipe, routed under the railroad tracks on the east side of the tank farm, is used to transfer the untreated effluent to the North Charleston Sewer District's line located on the adjacent Weapon Station property to the east. A flow meter is provided in the splitter pit to provide documentation of daily flows for compliance with the NPDES discharge permit.

1.6 TECHNICAL OVERSIGHT/DAILY MONITORING AND ADJUSTMENT

The U.S. Geological Survey (USGS) has been contracted to provide technical oversight and overall management of the remediation system. Trident Labs will provide a certified operator to perform daily O&M checks, adjustments, and data collection. All test results will be sent to the Geological Survey for interpretation. Contacts are listed below:

USGS: Don Vroblesky, Hydrologist
US Dept. of Interior
Geological Survey, Water Resources Division
Stephenson Center, Suite 129
720 Gracern Road
Columbia, SC 29210-7651
(803) 750-6115

TRIDENT LABS: Ms. Melinda Lewis, Sr. Analyst
Trident Labs, Inc.
125 Wagon Trail Road
Ladson, SC 29456
(803) 871-4999

CHAPTER 2. SPECIFIC REQUIREMENTS

2.1 BMP COMMITTEE

The BMP Committee is a group of individuals assigned responsibility for assisting plant management with the implementation of the spill prevention and control measures outlined in the BMP Plan and making recommendations for improvements or changes as the need arises. The following personnel are recommended for membership on the committee:

- 1 - Mr. William E. Goode, DFSC Chief of Environmental Quality Division (BMP Chairman)
- 2 - Mr. Donald Matthews, QSR (Liaison with DFSC)
- 3 - Mr. Larry Verhosek, Terminal Manager (Spill, Security and Safety Rep for the Terminal)
- 4 - Mr. Don Vroblecky, USGS Project Manager (Technical Rep)
- 5 - Ms. Melinda Lewis, Senior Analyst (Daily Oversight)
- 6 - SCDHEC, Trident District (Regulatory Advisor)

Due to the relatively static nature of the project and the limited spill risks associated with the remediation system, it is not anticipated that a major effort will be required by the committee to implement the plan. Table 2.1 provides phone numbers for committee members and alternates.

The responsibilities of a BMP committee normally include the following:

- 1 -Identification of toxic and hazardous substances
- 2 -Identification of potential spill sources
- 3 -Establishment of incident reporting system
- 4 -Development of Inspection Records and procedures
- 5 -Reviewing spill incidents
- 6 -Coordination of spill response and cleanup efforts
- 7 -Spill Reporting
- 8 -Establishing BMP training for plant personnel
- 9 -Reviewing proposed plant construction for impacts on BMP
- 10 -Evaluate overall effectiveness of BMP Plan

Since this Plan only addresses best management practices relative to the bioremediation system, not all responsibilities will be applicable to this project. Chemical inventories should remain static throughout the life of the project. However, periodic reviews by the committee should address all aspects of the plan due to the possibility of changes over time. Offsite committee members may not be assigned all responsibilities. Listed below are the specific committee member assignments:

COMMITTEE CHAIRMAN (DFSC Chief of Environmental Quality Division)

- Overall responsibility for implementation of the BMP policies and procedures

- Review Terminal construction projects for potential negative impacts on the remediation project and BMP procedures

DFSC LIAISON REPRESENTATIVE (QSR)

- Perform periodic checks to ensure that established BMP procedures are properly implemented
- Inform DLA of committee decisions concerning changes needed in the BMP

SPILL, SAFETY, AND SECURITY REPRESENTATIVE (Terminal Manager)

- Take immediate action in case of a spill. Implement procedures outlined in the plan and those of the Terminal-wide response plan
- Ensure security personnel have received the specified BMP training, to be provided by Trident Labs, in a timely manner
- Advise DFSC via the BMP committee Liaison of any spill incidents or changes needed in the plan

TECHNICAL REPRESENTATIVE (USGS)

- Assist committee with any technical matters related to the project or Plan
- Inform members of any changes in the operation of the system that may impact the spill potential or related health hazards

DAILY OVERSIGHT (TRIDENT LABS)

- Inform Terminal Manager of operation procedures that warrant closer monitoring as a result of experience gained as the system comes on line
- Observe plant policies/procedures for possible negative impacts on the remediation project's spill potential
- Trident Labs will train/familiarize the terminal management and security employees on inspection and notification procedures as specified in the BMP

COLLECTIVE COMMITTEE DUTIES (All members)

- Meet at request of any member to resolve identified problems with the Plan. Out-of-town members may provide input via phone unless onsite review is deemed necessary
- Meet after every spill incident (where BMP procedures failed) to evaluate corrective measures, additional training, modification to plant equipment, etc.
- Meet at least semiannually to review the Plan. Review should evaluate need for any modifications to employee training, security, spill response/reporting procedures, DFSP/DLA/Lab/USGS coordination, changes in toxic or hazardous chemical inventories, etc.

TABLE 2.1
BMP COMMITTEE MEMBERSHIP

<u>MEMBER</u>	<u>COMMITTEE POSITION</u>	<u>TITLE</u>	<u>WORK PHONE</u>	<u>HOME PHONE</u>
William Goode	Chairman	DFSC Chief of Environmental Quality Division	(703) 274-6989	-
Don Matthews (D. Fontenot)*	DFSC Liaison	Terminal QSR SOUTHDIV EIC	(803) 744-6393 (803) 743-0607	(803) 552-7888 (803) 572-4337
Don Vroblesky	Tech Rep	Hydrologist USGS	(803) 750-6115	-
Melinda Lewis	Oversight	Sr. Analyst Trident Labs	(803) 871-4999	(803) 873-0709
Larry Verhosek (Ron Embry)*	Spill, Security, and Safety Representatives	Terminal Mgr. Assist. Mgr.	(803) 744-3834 (803) 744-3834	(803) 552-2269 (803) 871-0393

* Names in () are alternate members. Committee chairman is responsible for maintaining an up-to-date list of current membership and phone numbers.

2.2 RISK IDENTIFICATION AND ASSESSMENT

AREAS SUBJECT TO BMP PLAN: The only areas subject to the BMP requirements of this Plan are those associated with the operation and maintenance of the groundwater remediation system. The Terminal's regular mission work is not addressed in this Plan unless it impacts, or is impacted by, the remediation system project.

POTENTIAL SPILL RISKS: The potential spill volume for this project is relatively low. The spill risk, however, is much higher due to the continuous automatic operation of the system. The following five areas were identified as potential spill risks:

- 1- Infiltration gallery
- 2- Waste fuel tank
- 3- Effluent discharge line
- 4- Nutrient storage area
- 5- Offsite extraction well

INFILTRATION GALLERY: The 2000 sf infiltration trench is fed by a 340' deep extraction well (PW-19) at a rate of roughly 57,600 gpd. During periods of extended heavy rains there is a possibility that the loading rate will exceed the soil's absorption capacity.

Since pumping well PW-19 pumps clean groundwater continuously, if trench failure should occur, contaminated groundwater from the contaminated soil could be discharged to the ground surface and discharge into adjacent drainage ditches that flow into Gold Springs Cup Lake. If the failure condition went unnoticed for an extended period of time, contaminated water could be released into the environment.

The injection of the nitrate (sodium nitrate or potassium nitrate) will not result in CERCLA reportable quantities even if trench failure would occur.

WASTE FUEL TANK: Wells PW-1 through PW-4 are designed to automatically pump free product into a 1000 gallon storage tank. If the float switches were to malfunction during a period when the water table was high and rising, the pumps could overflow the tank, releasing fuel and contaminated groundwater.

The tank will be located inside the bulk tank diked area which will prevent any release from reaching navigable or surface waters. However, the spilled product could soak into the soil inside the containment facility, resulting in costly soil remediation efforts.

EFFLUENT DISCHARGE LINE: Extracted groundwater will be pumped via a 4" ductile iron pipe to sanitary sewer MH 102 located on Naval Weapon Station property to the east of the Terminal. If a pipe leak or rupture should occur and go unnoticed, a substantial volume of contaminated groundwater could be released back into the environment. Depending on the size and location of the leak or failure, the spill could migrate down to the water table or,

surface and discharge into Gold Cup Springs Lake via surface runoff.

NUTRIENT STORAGE AREA: The chemicals that will be used to provide nutrients to enhance the biodegradation of the organic constituents in the soil and groundwater (NH₄OH, P₂O₅, NaBr) pose very little spill risk. The nutrients are basically fertilizers and will be stored in small containers (12 to 15, 55-gallon drums) on a covered concrete slab. However, in sufficient quantities, a release could cause a fish kill or destroy aquatic vegetation. Aqua Ammonia is classified as a hazardous substance and a release to surface waters would be a violation of the Clean Water Act.

A ruptured drum or even minor operational spills that are not promptly cleaned up could result in surface runoff into adjacent surface waters during periods of heavy rains.

OFFSITE EXTRACTION WELL: Well PW-18 is located off Terminal property and is therefore subject to an increased risk of vandalism. If someone were to remove the well cover and dump solvents or other hazardous or toxic substances into the well, the material would directly impact the aquifer, resulting in a problem worse than the one we are trying to remediate.

2.3 EXISTING CONTAINMENT MEASURES

INFILTRATION GALLERY: The Trident Lab operator will visit the site daily but cannot shut the system down except when onsite. It would be difficult for Terminal employees to verify system failure during darkness and heavy rains.

WASTE FUEL TANK: The bulk fuel tank secondary containment system will prevent overfills from reaching navigable or surface waters, but will not prevent any spills from being absorbed into the soil.

NUTRIENT STORAGE AREA: The storage facility consists of a concrete slab with a metal roof. Sidewalls will be provided.

OFFSITE EXTRACTION WELL: The well is provided with a lockable cover and will be periodically inspected by the Trident Lab operator.

2.4 RECOMMENDED COUNTERMEASURES

The following recommendations are considered "best engineering practice" to reduce the risk spills.

INFILTRATION GALLERY: Should the ground be saturated due to the combined effects of heavy rains and water from extraction well PW-19, or for any other reason, security personnel shall inform the terminal manager. The terminal manager will proceed to implement the appropriate spill response procedures and will inform the system operator, Trident Labs, to respond to the incident and take the appropriate action to correct the problem. The terminal

manager will assist with his assets if spill containment and cleanup is required, however, the system operator is responsible to be on-call and available to respond immediately when notified of an incident.

WASTE FUEL TANK: Establish procedure to gage tank daily to ensure that adequate freeboard is maintained in the tank. Maintain a gaging log as part of the standard operating procedure. Fuel in the tank will be removed when the tank is 67 percent full.

Install a high-level shut-off switch in the tank to shut down the skimmer pumps in wells PW-1 through PW-4 whenever fuel in the tank reaches a preset level. Maintain a gauging log as part of the standard operating procedure.

EFFLUENT DISCHARGE LINE: Install a dual check-valve assembly on the discharge line downstream of the flow meter to prevent back flow of raw sewage into the remediation system.

Perform annual line pressure test to check for small leaks.

OFFSITE EXTRACTION WELL: Establish a daily check procedure of the well cap to ensure that closure integrity has not been breached. If evidence of tampering, turn off pump, sample and test well for contamination prior to restart. If tampering becomes a problem, install an automatic shutdown switch inside the casing that will shut the pump down immediately when the cap is opened and wire for manual restart only.

2.5 SPILL POTENTIAL OF FUTURE MATERIALS

There are no plans at the present time for any changes to the quantities or types of hazardous substances to be used or stored at the remediation site. The BMP Committee should be aware that if future changes do occur, the changes must be addressed in an amendment to this Plan.

2.6 SPILL REPORTING

A spill reporting system has been established for the Terminal and is documented in the facility's Emergency Response Plan. Any bioremediation project spills should be reported as outlined in the Response Plan except as modified in this Section.

The concentration of contaminants of the extracted groundwater is expected to be so low that it will be highly unlikely to sustain a spill with sufficient volume to exceed the reportable quantities established in CERCLA. Even if the spill quantity does not exceed the established RQs, any spill reaching navigable waters (as defined in 40 CFR 110) which causes an oil sheen must be reported immediately to the National Response Center at 1-800-424-6802.

Table 2.2 lists the Reportable Quantities (RQs) for the priority pollutants that are known contaminants of the aquifer beneath DFSP Charleston along with that of one of the nutrients that will be

stored onsite.

As a matter of BMP policy, any extracted groundwater spill escaping the confines of the Terminal property shall be treated as a reportable spill and reported to the Terminal Manager. The Terminal Manager shall make the necessary calculations to determine if a reportable quantity has been released. Spills exceeding RQs shall be reported immediately by voice communication to the NRC followed up with an after action report as outlined in the SPCCP and ISCP for DFSP Charleston. Listed below is the Emergency Response Notification List for a BMP spill:

National Response Center.....	(800)	424-8802
Coast Guard Captain of the Port.....	(803)	724-7687
Hanahan Fire Department.....	(803)	744-4073
Charleston AFB Fire Department.....	(803)	566-3113
Oil Spill Coop.....	(803)	552-8306
(Liquid Spillage Control Committee)		
Hanahan Police.....	(803)	747-5711 or 911
Charleston AFB Security Police.....	(803)	566-3624
Superintendent.....	(803)	552-2269
Assistant Superintendent.....	(803)	553-5678
QSR (Don Matthews).....	(803)	552-7888
Defense Fuel Region South.....	(713)	750-1883
ACO (Cameron Station).....	(703)	274-7433
DFSC - Environmental Quality Division.....	(703)	274-6579/6989
(DFSC-FQ)		
DFSC - Command Control Center (ESOC).....	(703)	274-8105
U.S. EPA (Atlanta).....	(404)	881-4062
State of South Carolina (DHEC).....	(803)	758-5331
State of South Carolina.....	(803)	554-5533
(DHEC Trident Area)		
Naval Weapons Station (South Annex).....	(803)	743-1767

Terminal employees shall report all spills to the Terminal Manager immediately. The Terminal Manager shall be responsible for making the notifications to the regulators as noted above. If a spill should occur in the absence of the Manager or alternate, then the duty officer shall perform the spill duties of the Terminal Manager until relieved. Do not wait until the Terminal Manager arrives to make the notification call to the NRC if a spill escapes Terminal property.

Small operational type spills less than 25 gallons that are readily absorbed into the soil within the confines of Terminal property and do not reach surface waters, need not be reported to the regulators but should be logged and investigated by the BMP Committee.

It is very important that written spill records and reports be maintained for the life of the remediation project. Small spills or events viewed alone may not highlight a potential major problem in equipment or procedure that a long term record could highlight. Any spills, regardless of size, shall be investigated by the

TABLE 2.2
CERCLA REPORTABLE QUANTITIES

<u>CONTAINMENT</u>	<u>CASRN</u>	<u>RO (lbs)</u>
Benzene	71432	1,000
Ethylbenzene	100414	1,000
Toluene	108883	1,000
Xylene	1330207	1,000
Arsenic	7440382	1
Beryllium	7440417	1
Chromium	7440473	1
Cyanide	57125	1
Lead	74399921	1
Zinc	7440666	1

Terminal Manager and an after action report prepared that meets the following minimum requirements:

- Provides date and time of discharge
- Provides weather related data
- Provides staffing information immediately prior and during spill event
- Spilled material and volume
- Spill duration
- Cause of spill and response procedures used
- Method of cleanup
- Environmental damage
- Cost of cleanup
- Notifications made
- Recommended revisions if appropriate to the BMP Plan

The Terminal Manager shall be responsible for developing the report and convening the BMP Committee to review the spill incident.

2.7 MATERIALS COMPATIBILITY

Materials compatibility considerations include the following three elements:

- Compatibility of chemicals with container
- Compatibility of mixed chemicals within container
- Compatibility of container with environment

The only chemicals that will be used in the remediation project are nitrates, phosphates, and a tracer, Sodium Bromide. Free product, JP-4, will be skimmed and pumped to an onsite aboveground tank.

CONTAINER COMPATIBILITY: Nitrates and phosphates are basically farm fertilizers and are corrosive to metals. Sodium bromide (similar to table salt) is also corrosive to mild steel.

Nitrates which are formed from nitrogen in the air are extremely explosive in dry form (Sodium Nitrate, potassium nitrate, ammonia nitrate). Storage of any dry form of nitrogen containing compound is not recommended for this project due to the proximity of the bulk JP-4 tanks.

The liquid form of nitrate proposed for this project, ammonia hydroxide or aqua ammonia, is stable and should pose no container compatibility problems other than corrosion.

Phosphates are derived from phosphate rock and are available in either liquid or dry form. Phosphoric acid is the most common farm industry source of phosphate in liquid form. Phosphates in either dry or liquid form should pose no container compatibility problems other than corrosion.

Sodium Bromide poses no container compatibility problem except for corrosion of mild steel.

JP-4 is highly flammable and can be stored in either steel or fiberglass tanks which are properly vented. All sources of ignition should be kept at least 50 feet away from the storage tank.

Since the "nutrient" chemicals will be fed a relative low rate, drum storage time onsite could be sufficiently long to promote corrosion. Drums should be checked daily for signs of deterioration and replaced at the first sign of distress.

COMPATIBILITY OF MIXED CHEMICALS: There are no known compatibility problems associated with mixing the nutrients with the extracted groundwater.

In order to prevent possible compatibility problems or aquifer contamination due to mislabeling of drum contents at the factory, the operator should establish a sampling and testing procedure to visually verify contents prior to hookup to the mixing pumps.

CONTAINER COMPATIBILITY WITH THE ENVIRONMENT: The low country is famous for its high humidity. Drums, pipelines, tanks, pumps, equipment - anything containing steel - is subject to "environmental attack".

All underground piping will be PVC or ductile iron and should pose no corrosion problems. Steel drums, however, will be attacked from within due to the corrosive nutrients and from without due to oxidation. Poly drums for any liquid corrosive is highly recommended. Corrosives in dry form do not pose as much of a spill threat and can be more safely stored in steel containers.

2.8 GOOD HOUSEKEEPING

Good housekeeping is essentially the maintenance of a clean, orderly work environment which contributes to the overall safety and environmental protection effort. The following "Good Housekeeping" elements will be required for the DFSP remediation project:

- Neat and orderly storage of chemicals
- Prompt removal of spillage
- Proper pathways, walkways
- Proper chemical unloading/transfer areas
- Stimulation of employee interest

Due to the limited scope of this project, good housekeeping will be limited primarily to the nutrient storage area. Since the remediation project basically takes chemicals from the storage area, mixes them, and injects the mixture directly into the surface aquifer, it is mandatory that the storage area be maintained as clean and sanitary as possible. The nutrient storage area should not be used for other than chemical storage.

All pathways, walkways, and work areas shall be maintained sufficiently clear and uncluttered to enable the safe and efficient operation of the facility.

The drum unloading area shall be maintained to provide a firm, level surface for the operation of unloading equipment. Ruts or other evidence of subgrade instability shall be reason for prompt remedial action. It is the intent of DLA to maintain the remediation project in a model condition for all interested parties to examine.

A poly spill drum should be placed adjacent to the nutrient storage area for immediate collection of spilled chemicals. A second poly drum labeled "spill drum" should be placed adjacent to the nutrient storage facility and contain a shovel, dust pan, and sufficient sorbent pads and boom to quickly contain and recover up to a 55 gallon spill.

2.9 PREVENTIVE MAINTENANCE

An effective preventive maintenance (PM) program is recognized as an integral part of preventing BMP incidents. However, it would be redundant and beyond the scope of a BMP Plan to include specific PM procedures within the Plan. Instead, the objective is to highlight the requirements for qualified plant personnel (BMP committee and any needed consultants) to evaluate the proposed PM Plan and recommend any changes needed to address BMP requirements. The BMP Committee is also tasked with oversight of the agreed to PM procedures to ensure proper implementation.

The BMP Committee should recognize the elements of a good PM Plan:

- Identification of equipment or systems subject to the PM Plan
- Periodic inspections or tests of identified equipment or systems
- Appropriate adjustment, repair or replacement of equipment
- Maintenance of complete PM records for the life of the remediation project

One of the first taskings of the BMP Committee is to ensure that management provides a professionally prepared PM Plan prior to startup of the system. Upon receipt of the PM Plan, the BMP Committee should ensure that the remediation project operator (Trident Lab employee) is fully trained, qualified, and certified by the state to operate the biological treatment system.

2.10 INSPECTIONS AND RECORDS

The objective of an inspections and records system is to detect actual or potential BMP incidents. Plant security will be assigned some nontechnical tasks and the plant operator (Trident Labs Operator) will complete the remainder. The BMP Committee should also consider inviting an outside audit team to annually inspect the facility for compliance with this plan in its entirety. This section will establish minimum inspections and inspection records

for those areas identified in the "Risk Assessment" section of this Plan.

INFILTRATION GALLERY

1- Inspection Required: During dry weather, check for surface wetness or actual seepage of water in the vicinity of the gallery. During wet weather or rain, check for bubbling up of water or an excessive surface runoff from the infiltration trench area.

Frequency: Daily

By: Roving Security Personnel on normal rounds and daily by operator

If system overloading is observed, notify the terminal manager using the BMP spill notification format. The terminal manager will alert the project operator, on-call, to report to shut down the system.

WASTE FUEL TANK

1- Inspection Required: Gauge tank

Frequency: Daily

By: Project operator

Depending on the inflow rate to the tank, the tank will have to be periodically pumped to remove collected free product. The tank should never be allowed to fill over 67 % of its capacity prior to pumping.

2- Inspection Required: General condition of tank, supports, and piping

Frequency: Daily

By: Project operator

EFFLUENT DISCHARGE LINE

1- Inspection Required: Check operation of dual check-valve assembly

Frequency: Annually

By: Certified backflow specialist

2- Inspection Required: Perform line pressure test

Frequency: Annually

By: Consultant or EFD specialist

3- Inspection required: Compare flow leaving site with that entering MH 102

Frequency: Daily

By: Project operator

Action: If significant deviations are observed shut down the system and check for leaks or rupture

NUTRIENT STORAGE AREA

1- Inspection Required: Check all drums, pumps, piping, fittings, etc., for leaks, spills, corrosion, deterioration of supports, or other signs of distress.

Frequency: Daily
By: Project operator

OFFSITE EXTRACTION WELL

1- Inspection Required: Check well cap for closure integrity

Frequency: Daily
By: Project operator

Action: If tampering is evident, immediately shut down the well pump, sample and test for contamination prior to restart.

RECORDS: An inspection log should be developed for each of the required inspections. The logs shall be maintained for the life of the remediation project. Each log shall be denoted with the inspector's initials, date, time, and follow-up action taken or recommended.

TRACKING: The QSR shall maintain a master log of all identified deficiencies discovered during the inspections, date and time discovered, assign a cure date, and track the project to ensure that the corrective action is completed in a timely fashion.

INSPECTION OF TRANSFER OPERATIONS: It is a matter of record that spills frequently occur during transfer operations. There are only two transfer operations associated with the remediation project, other than the continuous pumping operations: delivery of nutrients by truck and removing waste fuel from the storage tank.

The Terminal Manager should ensure that adequate response personnel are onboard prior to commencing either of the transfer operations. Transfer operations should not be conducted after hours.

2.11 SECURITY

Existing security is adequate to protect the remediation project with the exceptions outlined in the "Inspections and Records" section of this Plan.

Terminal security personnel must be trained to make the additional inspections outlined in Section 2.10 and make the appropriate report or response to system failure or warning.

Since the remediation system uses a system of adjustment valves to control both infiltration and offbase flow, it is imperative that only qualified personnel be permitted to make adjustments to the system. This project will probably receive a lot of attention, both Navy and regulatory, and security personnel must ensure that visitors do not tamper with the adjustment valves.

2.12 EMPLOYEE TRAINING

Training relative to the bioremediation project shall be described and documented as an annex to the DFSP Charleston SPCCP and ISCP.

Initially, each employee should be given a copy of the BMP Plan and Operations Manual to read. Next, with the assistance of the remediation project operator (Trident Labs), a hands-on review of each part of the project should be conducted with all employees. Finally, employees should be provided with instructions on how to shut down the affected part of the system.

Initial start-up training should include time allotted for familiarization with the health risks associated with the chemicals used in the remediation project.

All master switches and shutoff valves should be numbered and coded to the Operations Manual and the Inspection Logs, which are to be developed under Section 2.10 of this Plan.

Spill drills should be conducted semiannually to ensure that employees are fully familiar with all BMP procedures outlined in this Plan. Quarterly spill briefings should be conducted to keep safety and spill prevention in the forefront of every employee's daily operations.

The project operator (Trident Labs) is responsible for verifying that the contractor personnel assigned to operate the remediation system are qualified Class III Biological Treatment Plant operators and are familiar with the operation of the bioremediation system and all BMP countermeasures. The project operator shall provide verification to the DFSC Chief of Environmental Quality Division (BMP Committee Chairman).

CHAPTER 3. PLAN REVIEW AND UPDATE

3.1 BMP PLAN REVIEW AND UPDATE

The BMP Committee shall meet at least semiannually to review this Plan and evaluate the need for any modifications to the Plan or procedures used. The BMP Committee shall prepare a "Review Report" and provide to DLA for action. Since this is an "Engineered Document", changes must be made by a professional engineer familiar with the remediation project, NPDES discharge permit requirements, and BMP procedures and standards.

3.2 DLA FUNDING AND IMPLEMENTATION RESPONSIBILITY

DLA must take the necessary measures to ensure that funding and or personnel are provided to amend the plan as recommended by the BMP Committee. If countermeasures outlined in this plan require contract modification, additional funding, or changes to the remediation project, DLA shall be the responsible agency for those changes or modifications.

3.3 PERIODIC REVIEWS

The Terminal Manager or other BMP Committee member has the obligation to call for a "professional" review at any time when changes in procedures, Terminal construction, personnel, chemicals used, or other factors affect the spill risks sufficiently to warrant additional attention to the plan.

3.4 EMPLOYEE PARTICIPATION

Terminal employees are encouraged to bring any concerns or proposed improvements to the BMP Plan to the attention of the Terminal Manager. Spill prevention is a team effort and only works when everyone works together as a team.

A P P E N D I X A



DEFENSE LOGISTICS AGENCY
DEFENSE FUEL SUPPLY CENTER
CAMERON STATION
ALEXANDRIA, VIRGINIA 22304-6160

IN REPLY
REFER TO DFSC-FQ

- APPENDIX A -

18 NOV 1989

SUBJECT: Spill Prevention Control and Countermeasure (SPCC) Plan for
Defense Fuel Support Point (DFSP) Charleston

TO: Mr. Glen Bradley
Environmental Branch, Code: 115
SODIVNAVFACENCOM
Charleston, SC 29411-5000

1. References:

- a. SPCC Plan for DFSP Charleston.
- b. South Carolina Department of Health and Environmental Control (SCDHEC) Construction Permit Number 15707 with special conditions (enclosed).
- c. Telephone conversation between Steve Wilson and Irene Sailer, 7 November 1989, subject as above.

2. In reference 1.b., SCDHEC issued a permit to Defense Fuel Supply Center (DFSC-FQ) for the construction of monitoring wells, etc. necessary for the bio remediation system at DFSP Charleston. Along with the permit, SCDHEC issued a series of special conditions, more specifically, the requirement of a plan for implementing "Best Management Practices (BMP)" to identify and control the discharge of oils and hazardous and toxic substances (see special conditions, paragraph 2.). Additionally, SCDHEC state that a SPCC plan may be used in lieu of a BMP plan if BMP requirements are satisfied.

3. In reference 1.c., you stated that you were provided a copy of the 1985 SPCC plan (reference 1.a.). This office is in the process of having the 1985 amended SPCC document retyped and will forward a copy to you when it is available. It is understood that you will prepare an amendment to the SPCC plan addressing the bioremediation system. Additionally, you indicated that you would review the SPCC plan and make recommendations necessary to ensure that the special conditions (on this issue) are met.

4. If you need additional information please contact Irene Sailer at AV-284-6989.

FOR THE COMMANDER:

Encl


W. E. GOODE
Chief, Environmental Quality Division
Directorate of Facilities Management

cc:

SODIVNAVFAC (Mr. Ted Campbell)

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CONSTRUCTION PERMIT

Permit is hereby granted to: Defense Fuel Supply Center (DFSC-FQ)
Cameron Station
Alexandria, VA

22304-6160

For the construction of a waste treatment and/or collection system in accordance with construction plans, specifications, engineering report and Construction Permit Application signed by Robert F. Martin
Registered Professional Engineer, S.C. Registration No.: 5928

Project Description: (See Attachment)

(NPDES Permit #SC0024783)

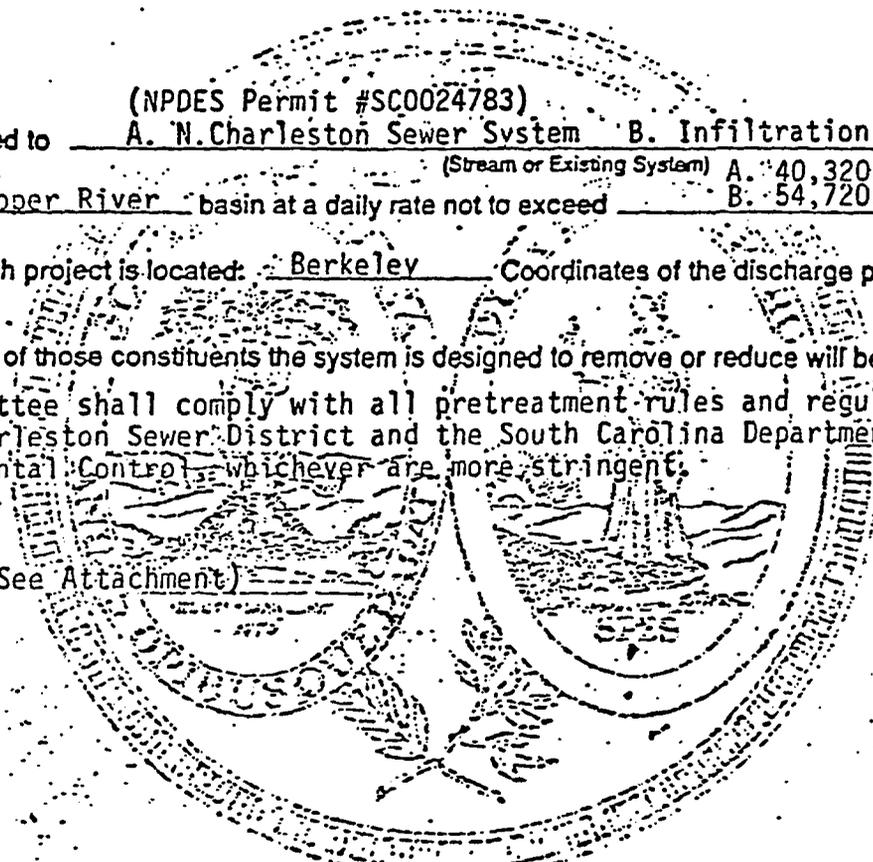
Effluent to be discharged to A. N. Charleston Sewer System B. Infiltration gallery In the
Santee-Cooper River basin at a daily rate not to exceed (Stream or Existing System) A. 40,320 (28 gpm) B. 54,720 (38 gpm) gallons

per day. County in which project is located: Berkeley Coordinates of the discharge point: N/A
(to nearest five seconds)

Effluent concentrations of those constituents the system is designed to remove or reduce will be as follows:

The permittee shall comply with all pretreatment rules and regulations of the North Charleston Sewer District and the South Carolina Department of Health & Environmental Control, whichever are more stringent.

Special Conditions: (See Attachment)



Permit No: 15,707 Date of Issue: October 3, 19 89

Expiration Date: Unless construction is initiated prior to October 3, 1990, it will be necessary to reapply since this permit will no longer be valid.

Treatment Plant Classification: Group III-Biological

In accepting this permit, the owner agrees to the admission of properly authorized persons at all reasonable hours for the purposes of sampling and inspection.

THIS IS A PERMIT FOR CONSTRUCTION ONLY AND DOES NOT CONSTITUTE STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL APPROVAL, TEMPORARY OR OTHERWISE, TO PLACE THIS SYSTEM IN SERVICE.

JBR/CLW/jf

J. Bart Ruder P.E. 7/5
Bureau of Water Pollution Control

SPECIAL CONDITIONS

1. The permittee shall maintain at the permitted facility a complete Operations and Maintenance Manual for the bioremediation system. The manual shall be made available for on-site review during normal working hours. The manual shall contain operation and maintenance instructions for all equipment and appurtenances associated with the bioremediation system. The manual shall contain a general description of the treatment process(es), operating characteristics that will produce maximum treatment efficiency, and corrective action to be taken should operating difficulties be encountered.
 2. The permittee shall develop and implement a Best Management Practices (BMP) Plan to identify and control the discharge of significant amounts of oils and the hazardous and toxic substances listed in 40 CFR Part 117 and Tables II and III of Appendix D to 40 CFR Part 122. The plan shall include a listing of all potential sources of spills or leaks of these materials, a method for containment, a description of training, inspection and security procedures, and emergency response measures to be taken in the event of a discharge to surface waters or plans and/or procedures which constitute an equivalent BMP. Sources of such discharges may include materials storage areas; in-plant transfer, process and material handling areas; loading and unloading operations; plant site runoff; and sludge and waste disposal areas. The BMP plan shall be developed in accordance with good engineering practices, shall be documented in narrative form, and shall include any necessary plot plans, drawings, or maps. The BMP plan shall be developed no later than six months after issuance of the Construction Permit. A Spill Prevention Control and Countermeasure (SPCC) plan may be used in lieu of a BMP plan if BMP requirements are satisfied. The BMP plan or its equivalent shall be maintained at the plant site and shall be available for inspection by Department personnel.
 3. The permittee shall provide for the performance of routine daily inspections of the bioremediation system by a certified operator of the appropriate grade. The inspection shall include, but is not limited to, areas which require a visual observation to determine efficient operations and for which immediate corrective measures can be taken using the O & M manual as a guide. All inspections shall be recorded and shall include the date, time and name of the person making the inspection, corrective measures taken, and routine equipment maintenance, repair, or replacement performed. The permittee shall maintain all records of inspections at the permitted facility and the records shall be made available for on-site review during normal working hours.
 4. All sludges, waste oil and solid and hazardous waste shall meet all requirements of SCDHEC's Bureau of Solid and Hazardous Waste Management.
 5. For all new underground pipe except the infiltration gallery, a minimum of three (3) feet of cover shall be provided or cast iron pipe shall be used.
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6. Three monitor wells shall be installed at this site (per the USGS submittal dated September 14, 1989) to provide additional ground-water quality and water level data. One monitor well is to be located on Valley Street approximately 30 to 50 feet east of extraction well EW-18, one monitor well is to be located approximately 50 feet east of extraction well EW-15, and one monitor well is to be located east of extraction well EW-17 (approximately 100 feet from monitor well #2).
7. Ground-water elevation and ground-water quality data shall be submitted on a monthly basis and shall demonstrate to the satisfaction of the Department that there is 100 percent hydraulic containment and that ground-water clean-up is occurring. If 100 percent containment is not maintained, treatment shall be required. A PER shall be required within 30 days from the date of the Department's letter notifying DFSP.
8. The bioremediation system shall be monitored as follows:
 - a). The five surface water (SW) sites shall be sampled quarterly and analyzed for benzene, toluene, ethylbenzene, xylene (BTEX) and total petroleum hydrocarbons (TPH):
 - SW-1 The first storm drain outfall pipe south of Valley Street.
 - SW-2 The stream north of Valley Street approximately 100 feet northwest of SW-1.
 - SW-3 The vault to the drainage culvert west of East Lakeside Drive, between Valley Street and Dogwood Court.
 - SW-4 The stream that runs into the culvert west of East Lakeside Drive, between Dogwood Court and Holly Court.
 - SW-5 The stream, approximately 30 feet south of the culvert west of East Lakeside Drive, between Holly Court and Spring Court.
 - b). Water quality monitoring shall be conducted monthly for the first six (6) months of system operation and quarterly thereafter for the eighteen (18) pumping wells and the three distribution centers to the infiltration gallery. Samples shall be analyzed for BTEX, TPH, total organic carbon, bromide, nitrate, phosphate, pH, alkalinity, and dissolved oxygen.
 - c). The following wells shall be sampled quarterly and shall be analyzed for BTEX, TPH, total organic carbon, bromide, nitrate, phosphate, pH, alkalinity, and dissolved oxygen:

MW-4	MW-9	MW-10	W-104
MW-5	MW-11A	MW-17	W-106
MW-6	MW-12	W-1	W-108
MW-7	MW-12A	W-101	B-101
MW-8	MW-15	W-103	PW-2

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The following wells shall be sampled quarterly and analyzed for naphthalene:

MW-4 MW-11A MW-12 MW-16 PW-2

d). Private well PW-2 shall be monitored contingent upon approval from the owner.

If any of the above-mentioned wells cannot be sampled, appropriate alternate wells should be selected with approval by the Department.

9. Quarterly sampling results shall be submitted to the Department no later than the 28th day of January, April, July and October of each year, unless otherwise approved by the Department. Testing shall be conducted by a S.C. State certified laboratory. All information required herein shall be submitted to:

South Carolina Department of Health & Environmental Control
Attn: Bureau of Drinking Water Protection/Enforcement Section
2600 Bull Street
Columbia, S.C. 29201

10. The horizontal and vertical extent of contamination outside of the area of active remediation shall be determined to the satisfaction of the Department. Within sixty (60) days of the issuance of this permit, the permittee shall submit a schedule for assessment of those areas outside of active remediation. Assessment activities shall proceed concurrently with construction and operation of the bio-remediation system. Once approved, the schedule shall become a part of this permit.

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A P P E N D I X B



North Charleston Sewer District

1000 HERBERT STREET

CHARLESTON, S.C. 29405

Telephone (803) 722-2657

April 3, 1989

- APPENDIX B -

Defense Fuel Supply Point
DSFP-Charleston
P.O. Box 60039
North Charleston, S.C.
29419-0039

ATTN: Mr. Donald Matthews
Quality Surveillance Officer

RE: Non-Domestic Discharge
Permit #049

Dear Mr. Matthews:

In accordance with your waste questionnaire dated September 9, 1989, your discharge permit has been issued and is enclosed herein. Please note that the first monitoring period begins April 1, 1989. The Sewer District will assess a \$125.00 charge for issuing this finalized permit, and treatment charges will be assessed monthly according to: 1) Permitted flow rate and 2) Actual flow rate which is submitted by the Defense Fuel Supply Center each month to this office. Groundwater flow rates should be submitted monthly, whereas analysis results should be submitted quarterly.

If you have any questions, please call ~~Richard Bomar, Tom Wright,~~
or me.

Yours truly,

Ray Peterson

NORTH CHARLESTON SEWER DISTRICT

Allen T. Ramsay
Allen T. Ramsay
District Manager

ATR/sh

Enclosure

cc: J. Donovan Dukes
File

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NORTH CHARLESTON SEWER DISTRICT

NON-DOMESTIC WASTEWATER DISCHARGE PERMIT

Discharge Permit No. 049

In accordance with all terms and conditions of the Sewer Use Resolutions of the North Charleston Sewer District and also with any applicable provisions of Federal or State law or regulation:

Permission is hereby granted to Defense Fuel Supply Center
North Rhett Avenue, Hanahan, South Carolina

Classified by SIC No. 5171

For the discharge of non-domestic wastewater into the District's sewer lines at Naval Weapons Station

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

This permit is granted in accordance with the application filed on September 9, 1988, in the office of the North Charleston Sewer District.

Effective this 31st day of March, 1989

To expire the 31st day of March, 1993

Allen T. Ramsay
Allen T. Ramsay, District Manager
North Charleston Sewer District

3 April, 1989
Date

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PART II

MONITORING AND REPORTING

A. Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharged.

B. Reporting

Monitoring results obtained during the previous 3 months shall be summarized for each month and reported on a Self-Monitoring Form postmarked no later than the tenth day of the month following the completed reporting period. The first report is due on July 10, 1989. A single signed copy of this, and all other reports required herein, shall be submitted to the Manager by mailing to:

North Charleston Sewer District
1000 Herbert street
Charleston, South Carolina 29405

C. Definitions

1. Monthly average: The arithmetic mean of all the samples collected in a one-month period.
2. Flow (gpd): The flow is determined as the arithmetic mean of the total daily flows recorded during the calendar month.
3. Arithmetic Mean: The arithmetic mean of any set of values is the summation of the individual values divided by the number of individual values.
4. Flow Proportional Composite Sample: A sample collected over a defined period of time at a rate proportional to the flow.
5. Grab Sample: An instantaneous sample of the wastewater which shall be collected at the period(s) most representative of the total discharge.

D. Test Procedures

Test procedures for the analysis of pollutants shall conform to Regulation 40 CFR Part 136 published pursuant to Section 304(g) of the Federal Water Pollution Control Act, as amended. When procedures are not contained in Part 136, sampling and analysis shall be performed in accordance with the procedures set forth in the EPA publication, "Sampling and Analysis Procedures for Screening of Industrial Effluents for Priority Pollutants", April 1977, and any amendments to this publication or any other applicable sampling and analytical procedures approved by the Manager.

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PART II (Continued)

E. Recording of Results

For each measurement of sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

1. The date, exact place, method, and time of sampling and the names of persons taking the samples;
2. The dates analyses were performed;
3. Who performed the analyses;
4. The analytical techniques/methods used; and
5. The results of such analyses.

F. Additional Monitoring by Permittee

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Self-Monitoring Form.

G. Records Retention

The permittee is required to retain for a minimum of three (3) years any records of monitoring activities and results and shall make such records available for inspection and copying by the Manager, South Carolina Department of Health and Environmental Control (SCDHEC), or the Environmental Protection Agency (EPA). This period of retention shall be extended during the source of any unresolved litigation regarding the permittee or when requested by the Manager, SCDHEC, or the EPA.

PART III

COMPLIANCE SCHEDULE

The permittee shall achieve compliance with the effluent limitations specified for discharges in accordance with the following schedule:

- A. Not later than fourteen (14) days following each date in the subsequent schedule and the final date for compliance, the permittee shall submit a progress report to the Manager including, as a minimum, whether or not it complied with the increment of progress to be met on such date. If not, the date on which it expects to comply with this increment of progress, the reason for the delay, and steps being taken by the permittee to return the

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activities to the schedule established. In no event shall more than nine (9) months elapse between such progress reports to the Manager.

B. Compliance Schedule

PART IV

General Conditions

A. All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit. Any anticipated facility expansions, production increases, or process modifications which will result in new, different, or increased discharges of pollutants must be reported by submission of a new Discharge Permit Application or, if such changes will not violate the effluent limitations specified in this permit, by notice to the Manager of such changes. Following such notice, the permit may be modified to specify and limit any pollutants not previously limited.

B. The permittee shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit.

C. The permittee shall take all reasonable steps to minimize any adverse impact to the North Charleston Sewer District's sewer system and waste treatment facilities resulting from non-compliance with any effluent limitations specified in this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of any non-complying discharge.

D. The permittee shall allow the Manager or his authorized representative, upon presentation of his credentials:

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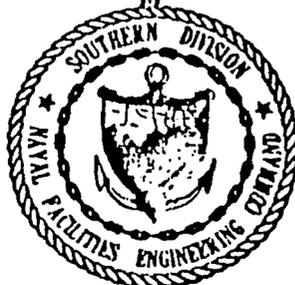
1. The right of entry to, upon, or through any premises in which an effluent source is located or in which any records required to be maintained under the terms and conditions of this permit are located.
 2. Access to and copy any records, inspect any monitoring equipment or method required under the terms and conditions of this permit, and sample any effluents.
- E. Wastewater discharge standards are issued to a specific user for specific operation. A permit shall not be reassigned or transferred or sold to a new owner, new user, or for different premises, unless approved by the Manager.
- F. The permittee shall notify the Manager or the waste treatment facilities immediately of any slug loadings in such volume or strength as to cause interference in the sewer system or at the waste treatment facilities.
- G. This permit is subject to be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:
1. Violation of any terms or conditions of the permit or other applicable law or regulation;
 2. Obtaining of a permit by misrepresentation or failure to disclose fully all relevant facts; or
 3. A change in any condition that requires either a temporary or permanent reduction or elimination of the regulated discharge.
- H. The permittee must apply in writing for a renewal permit within the period of time not more than ninety (90) days and not less than sixty (60) days prior to expiration of the current permit. Provided further that limitations or conditions of a permit are subject to modification as may become necessary due to changes in applicable water quality standards, the District's NPDES Permit, discharge effluent limitations other applicable law or regulation, or for other just cause. The permittee will be notified of any proposed changes in this permit by the Manager at least thirty (30) days prior to the effective date of the change. Any change or new condition in this permit shall include a provision for a reasonable time schedule for compliance. The permittee may appeal the decision of the Manager in regard to any changed permit conditions.
- I. The permittee shall not discharge any of the prohibited pollutants identified in Article V of the District's Sewer Use Resolutions.



BEST MANAGEMENT PRACTICES PLAN

DEFENSE FUEL SUPPORT POINT
CHARLESTON SC

MAY 1991



Southern Division
Naval Facilities Engineering Command
Charleston, South Carolina
29411-0068

EXECUTIVE SUMMARY

An estimated 83,000 gallons of JP-4 was lost in 1975 from a bottom leak in Tank 1 at Defense Fuel Supply Point (DFSP) Charleston. Past remedial action attempts to recover the lost product had limited success.

In 1988, site parameters for biological degradation of the fuel contamination was investigated and found to be appropriate for insitu biological treatment. Schematic designs were prepared for the bioremediation system and NPDES and construction permits were obtained in March and October of 1989. This Best Management Practices (BMP) Plan has been prepared to comply with one of the special conditions of the construction permit issued by South Carolina Department of Health and Environmental Control (SCDHEC).

The purpose of this BMP Plan is to identify potential spill sources associated with the bioremediation system and to propose countermeasures to control or reduce the potential for discharge of significant amounts of oil and hazardous substances (OHS). DFSP operations that are not directly associated with the bioremediation system will not be addressed in the Plan.

Specific requirements that will be addressed in this plan to control pollution are:

- BMP Committee
- Risk Identification and Assessment
- Recommended Countermeasures
- Procedures for Reporting BMP Incidents
- Material Compatibility
- Good Housekeeping Protocol
- Preventive Maintenance
- Inspection and Records
- Security
- Employee Training

The operation and maintenance of the bioremediation system will require daily monitoring by technical personnel familiar with the design of the system and will be provided by offsite contracted sources. The Terminal Manager, however, will still maintain overall responsibility for implementation of the BMP procedures.

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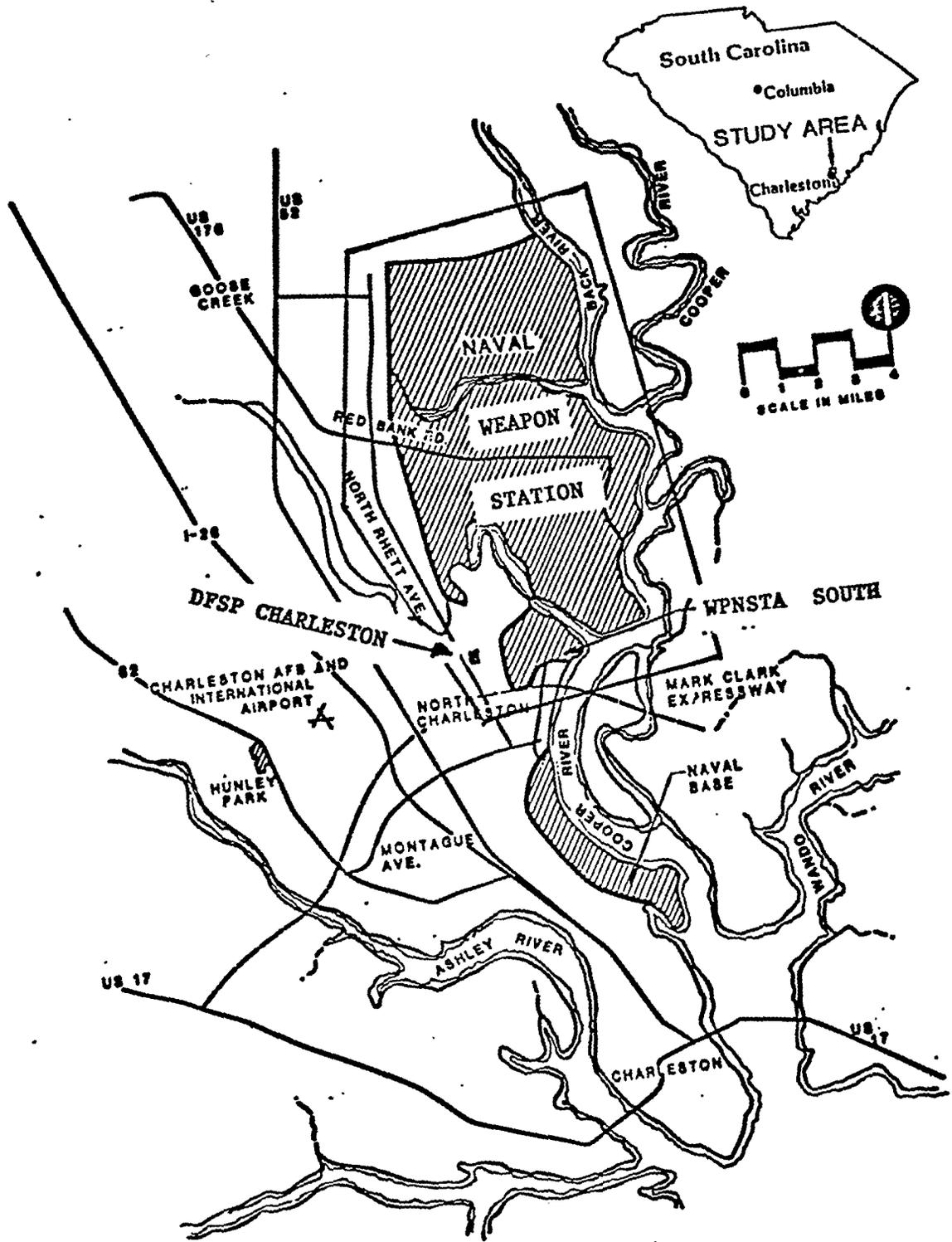
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APPENDIX A Construction Permit 15,707
B NPDES Permit 0024783



VICINITY MAP

CERTIFICATION

I hereby certify that I have examined the Bioremediation Project designed for DFSP Charleston and being familiar with the facility and the provisions of the Clean Water Act and the National Pollutant Discharge Elimination System, attest that this Best Management Practices Plan has been prepared in accordance with good engineering practices.

Carl A. Loop

Carl A. Loop, P.E.
N. Carolina P.E. No. 4919

Date: 16 May 91

SEAL

MANAGEMENT APPROVAL

I hereby certify that I have reviewed this Best Management Practices (BMP) Plan and agree to implement the procedures herein outlined.

Larry D. Vorhosek
Terminal Manager

Date: _____

CHAPTER 1. INTRODUCTION

1.1 GENERAL INFORMATION

Defense Fuel Support Point (DFSP) Charleston is located in Berkley County at 5862 N. Rhett Boulevard in Hanahan, SC (32-54-22N/79-57-15E). Terminal Facilities include:

- 7-80,000 bbl AG Steel Bulk Tanks with floating roofs
- 6-Small Slop Tanks (various sizes)
- 3-Truck Loading Stands (600 GPM)
- 2-Railcar Loading Stands
- 1-Pumping Station (8000 bbl/hr receipt, 500 gpm issue)
- 2-Oil-water separators (750 gpm & 50 gpm)

The terminal's bulk tanks are filled at the rate of 9,000 bbl/hr from barges located at the Naval Weapons Station fueling wharf located off Remount Road in N. Charleston. The fuel is pumped from the Wharf to the Terminal via twin 18 pipelines, a distance of approximately 3 miles.

The terminal's main customer, Charleston AFB, is located approximately 12 miles to the west and is fed by an 8" underground pipeline at 1599 bbl/hr. The terminal's offsite customers are supplied either by rail, tanker car, or barge. Monthly throughput averages 8 million gallons of JP-4.

1.2 DFSP CHARLESTON MISSION

DFSP's sole mission is to supply JP-4 to its Air Force customers in Charleston and surrounding areas. The Plant operation is contracted to Continental Services Company. The Terminal Manager (superintendent) is Mr. Larry D. Verhosek. The plant is manned 24/hours per day. Normal day staffing is 17 persons. After hours staffing is security personnel only.

The responsible government agency is:

Defense Logistics Agency (DLA)
Defense Fuel Supply Center (DFSC)
Cameron Station, VA 22314-6160
ATT: Mr. W.E. Goode
Chief, Environmental Quality Division
Directorate of Facilities Management

DLA's daily onsite Quality Assurance Representative (QAR) is Mr. Donald Matthews.

1.3 BACKGROUND INFORMATION

In October 1975, an 83,000 gallon leak from the bottom of Tank 1 contaminated the shallow water-table aquifer in the vicinity of the tank at DFSP Charleston. Remedial efforts in late 1975 and early

1976 recovered about 29,000 gallons of the lost product. Recent investigations indicate that the plume has migrated north towards the Gold Cup Springs subdivision. The migration of the plume raises a concern that the contaminants may pose a health risk to the inhabitants of the residential neighborhood.

Starting in early 1987, RMT, Inc., working with the U.S. Geological Survey, designed an in-situ bioremediation system to remove the organic constituents and hydrocarbons from the soil and groundwater.

1.4 BMP POLICY AND OBJECTIVES

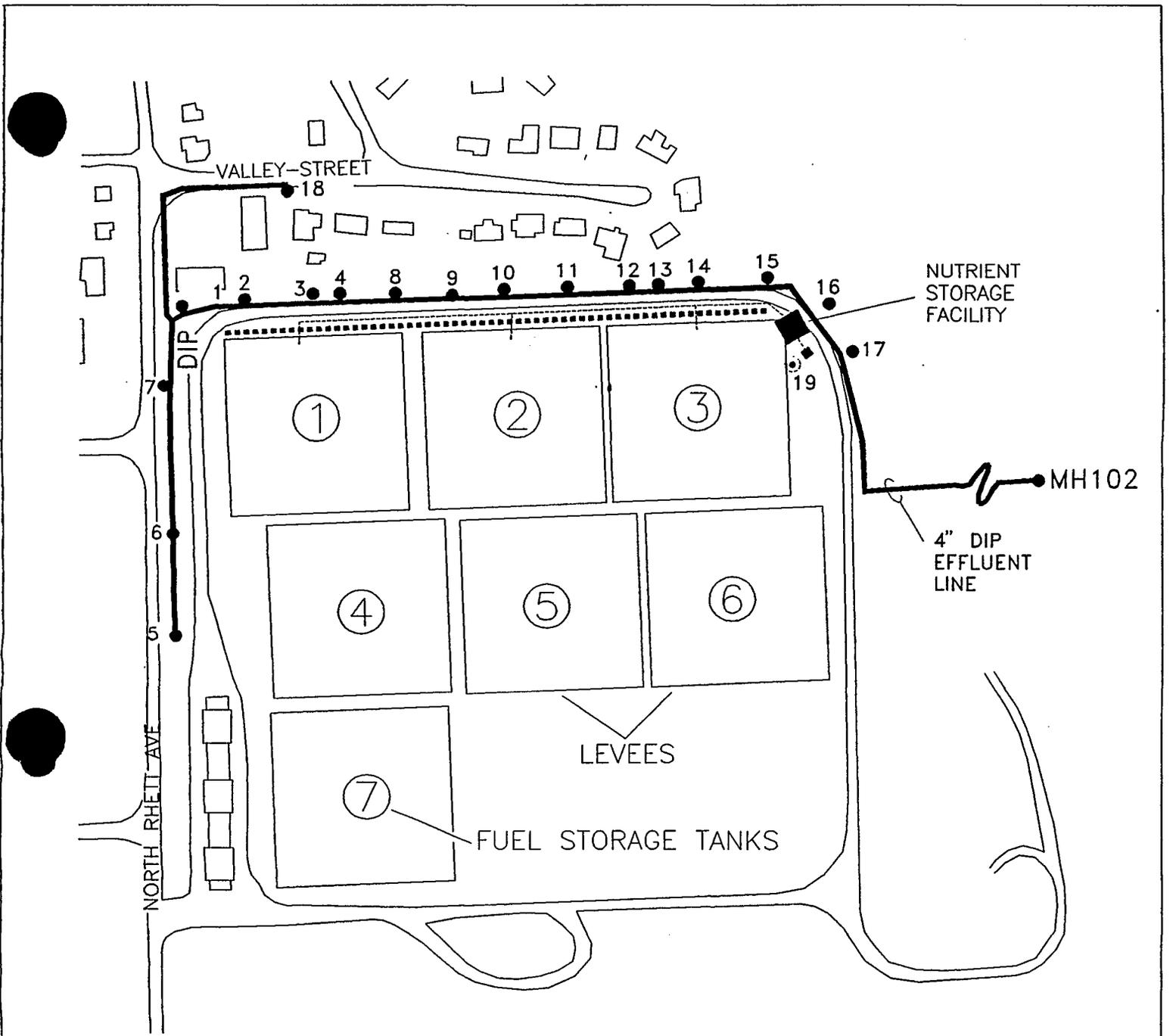
DFSP Charleston fully supports DOD's goal of being "first" in federal agency compliance with environmental regulations and initiatives. DFSP will take whatever actions necessary to reduce the risk of environmental contamination and health hazards resulting from the operation and maintenance of the groundwater remediation project addressed in this plan.

This BMP Plan has been prepared specifically to meet Special Condition No. 2 of South Carolina Department Health and Environmental Control (DHEC) Construction Permit No. 15,707 (Appendix A) and NPDES Permit No. SC 0024783 (Appendix B) for the construction of a groundwater remediation system and the discharge of effluent to the North Charleston Sewer District sanitary sewer.

The management practices presented in this Plan have been coordinated with cognizant DOD, DFSP Charleston, and remediation system operation and maintenance (O&M) personnel to ensure that spill prevention and containment will have the highest priority. Daily O&M and technical monitoring of the remediation system is outside the scope of Terminal employees' expertise and will therefore be contracted to outside specialists. However, overall responsibility for implementation of the Plan's spill prevention objectives will remain with the Terminal Manager. Problems will be immediately brought to the attention of the BMP Committee for prompt review and resolution.

1.5 REMEDIATION SYSTEM

Due to the technical nature of the remediation system, an understanding of the basic design concept and system components is necessary in order for procedures outlined in this Plan to be effective. The treatment system is composed of three basic systems: (1) Groundwater Extraction, (2) Bioremediation, and (3) Off-site Disposal. The Operations and Maintenance Manual, prepared by RMT, Inc., should be reviewed for a more indepth coverage of the items summarized below. See Figure 1.1 for a schematic layout of the entire system.



LEGEND

- 17 EXTRACTION WELL
- INFILTRATION TRENCH
- VALVE PIT
- ⊙ 19 4" EXTRACTION WELL (Approx. 275' depth)

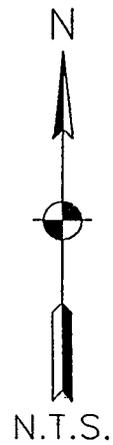
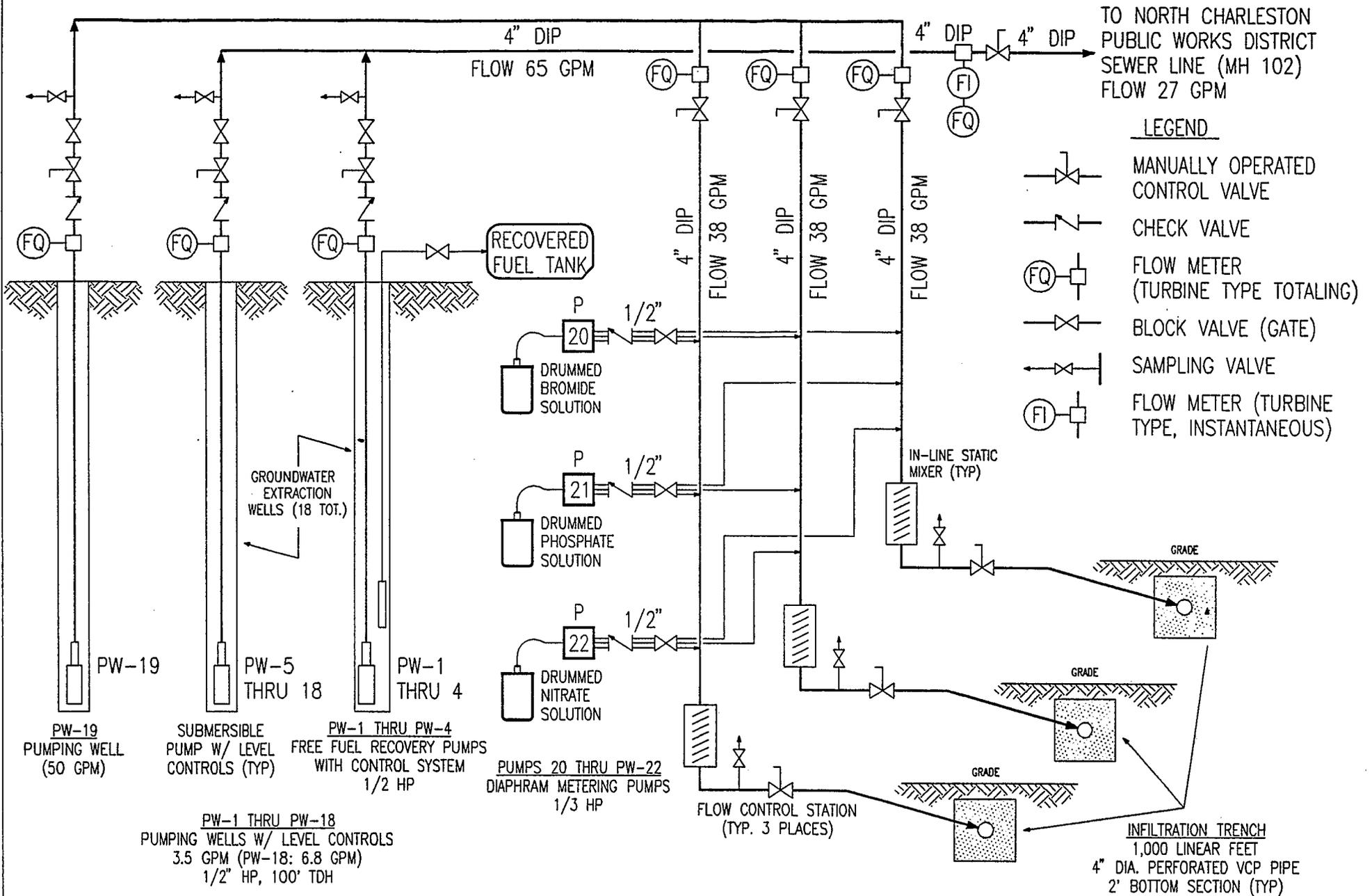


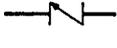
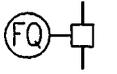
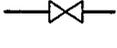
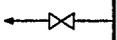
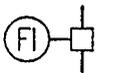
FIGURE 1-1
GENERAL LAYOUT
(3)

FIGURE 1-2
 SCHEMATIC REMEDIATION SYSTEM LAYOUT
 N.T.S.



TO NORTH CHARLESTON
 PUBLIC WORKS DISTRICT
 SEWER LINE (MH 102)
 FLOW 27 GPM

LEGEND

-  MANUALLY OPERATED CONTROL VALVE
-  CHECK VALVE
-  FLOW METER (TURBINE TYPE TOTALING)
-  BLOCK VALVE (GATE)
-  SAMPLING VALVE
-  FLOW METER (TURBINE TYPE, INSTANTANEOUS)

PW-19
 PUMPING WELL
 (50 GPM)

SUBMERSIBLE
 PUMP W/ LEVEL
 CONTROLS (TYP)

PW-1 THRU PW-4
 FREE FUEL RECOVERY PUMPS
 WITH CONTROL SYSTEM
 1/2 HP

PW-1 THRU PW-18
 PUMPING WELLS W/ LEVEL CONTROLS
 3.5 GPM (PW-18: 6.8 GPM)
 1/2" HP, 100' TDH

PUMPS 20 THRU PW-22
 DIAPHRAM METERING PUMPS
 1/3 HP

FLOW CONTROL STATION
 (TYP. 3 PLACES)

INFILTRATION TRENCH
 1,000 LINEAR FEET
 4" DIA. PERFORATED VCP PIPE
 2' BOTTOM SECTION (TYP)

GROUNDWATER EXTRACTION SYSTEM: Seventeen groundwater extraction wells (PW-1 through 17) have been installed along the northern perimeter of the Terminal to remove the contaminated groundwater and develop a cone of depression to retard further migration of the plume. Each well is provided with a 1/2-HP/3.5 gpm submersible pump with automatic level controls. An additional well (PW-18) is located in the Gold Cup Springs subdivision just north of the Terminal and will be pumped at 6.8 gpm.

Four of the extraction wells (PW-1 through 4) are equipped with oil skimmer pumps (1/2 HP/3.5 gpm) to remove floating product. Collected fuel will be pumped via a common pipeline to a skid mounted holding tank positioned inside the bulk tank secondary containment facility.

A new 4" extraction well (PW-19) will be installed to approximately 340' depth. This well will be equipped with a submersible pump to supply up to 50 gpm of clean groundwater which is low in iron. This well will provide the infiltration water source, will be plumbed into the existing valve box near the nutrient storage facility, and will be fitted with a totalizing flow meter and an adjustable valve.

BIOREMEDIATION (RECHARGE) SYSTEM: Extraction wells (PW-1 through 18) are connected to sanitary sewer MH 102 located on the adjacent Naval Weapons Station property. Water from extraction well PW-19 is mixed with nitrates and phosphates to enhance biological degradation of the hydrocarbons and recharged into the soil via a 2000 sf infiltration trench. Bromide is added prior to injection as a tracer to monitor flow characteristics.

EFFLUENT DISCHARGE: A 4" ductile iron pipe, routed under the railroad tracks on the east side of the tank farm, is used to transfer the untreated effluent to the North Charleston Sewer District's line located on the adjacent Weapon Station property to the east. A flow meter is provided in the splitter pit to provide documentation of daily flows for compliance with the NPDES discharge permit.

1.6 TECHNICAL OVERSIGHT/DAILY MONITORING AND ADJUSTMENT

The U.S. Geological Survey (USGS) has been contracted to provide technical oversight and overall management of the remediation system. Trident Labs will provide a certified operator to perform daily O&M checks, adjustments, and data collection. All test results will be sent to the Geological Survey for interpretation. Contacts are listed below:

USGS: Dr. Marjorie Aelion, Hydrologist
US Dept. of Interior
Geological Survey, Water Resources Division
Stephenson Center, Suite 129
720 Gracern Road
Columbia, SC 29210-7651
(803) 750-6128

TRIDENT LABS: Ms. Melinda Lewis, Sr. Analyst
Trident Labs, Inc.
125 Wagon Trail Road
Ladson, SC 29456
(803) 871-4999

CHAPTER 2. SPECIFIC REQUIREMENTS

2.1 BMP COMMITTEE

The BMP Committee is a group of individuals assigned responsibility for assisting plant management with the implementation of the spill prevention and control measures outlined in the BMP Plan and making recommendations for improvements or changes as the need arises. The following personnel are recommended for membership on the committee:

- 1-Mr. Larry D. Verhosek, Terminal Manager (BMP Chairman)
- 2-Mr. Donald Matthews, QAR (Liaison with DLA)
- 3-Dr. Majorie Aelion, Hydrologist (Technical Rep)
- 4-Ms. Melinda Lewis, Senior Analyst (Daily Oversight)

Due to the relatively static nature of the project and the limited spill risks associated with the remediation system, it is not anticipated that a major effort will be required by the committee to implement the plan. Table 2.1 provides phone numbers for committee members and alternates.

The responsibilities of a BMP committee normally include the following:

- 1 -Identification of toxic and hazardous substances
- 2 -Identification of potential spill sources
- 3 -Establishment of incident reporting system
- 4 -Development of Inspection Records and procedures
- 5 -Reviewing spill incidents
- 6 -Coordination of spill response and cleanup efforts
- 7 -Spill Reporting
- 8 -Establishing BMP training for plant personnel
- 9 -Reviewing proposed plant construction for impacts on BMP
- 10 -Evaluate overall effectiveness of BMP Plan

Since this Plan only addresses best management practices relative to the bioremediation system, not all responsibilities will be applicable to this project. Chemical inventories should remain static throughout the life of the project. However, periodic reviews by the committee should address all aspects of the plan due to the possibility of changes over time. Offsite committee members may not be assigned all responsibilities. Listed below are the specific committee member assignments:

COMMITTEE CHAIRMAN (Terminal Manager)

- Overall responsibility for implementation of the BMP policies and procedures
- Take immediate action in case of a spill. Implement procedures outlined in this plan and those of the Terminal-wide response plan
- Ensure employees receive the specified BMP training in a timely manner
- Review Terminal construction projects for potential negative impacts on the remediation project and BMP procedures
- Advise DLA via the BMP Committee liaison of any spill incidents or changes needed in the Plan

DLA LIAISON REPRESENTATIVE (QAR)

- Perform periodic checks to ensure that established BMP procedures are properly implemented
- Inform DLA of committee decisions concerning changes needed in the BMP
- Review Terminal construction projects for potential impacts to the remediation project and BMP procedures

TECHNICAL REPRESENTATIVE (USGS)

- Assist committee with any technical matters related to the project or Plan
- Inform members of any changes in the operation of the system that may impact the spill potential or related health hazards

DAILY OVERSIGHT (TRIDENT LABS)

- Inform Terminal Manager of operation procedures that warrant closer monitoring as a result of experience gained as the system comes on line
- Observe plant policies/procedures for possible negative impacts on the remediation project's spill potential

COLLECTIVE COMMITTEE DUTIES (All members)

- Meet at request of any member to resolve identified problems with the Plan. Out-of-town members may provide input via phone unless onsite review is deemed necessary
- Meet after every spill incident (where BMP procedures failed) to evaluate corrective measures, additional training, modification to plant equipment, etc.
- Meet at least semiannually to review the Plan. Review should evaluate need for any modifications to employee training, security, spill response/reporting procedures, DFSP/DLA/Lab/USGS coordination, changes in toxic or hazardous chemical inventories, etc.

TABLE 2.1
BMP COMMITTEE MEMBERSHIP

<u>MEMBER</u>	<u>COMMITTEE POSITION</u>	<u>TITLE</u>	<u>WORK PHONE</u>	<u>HOME PHONE</u>
Larry Vorhosek (Ron Embry)*	Chairman	Terminal Mgr. Assist. Mgr.	(803) 744-3834 (803) 744-3834	(803) 552-2269 (803) 871-0393
Don Matthews (Ted Campbell)	DLA Liaison	Terminal QAR SOUTHDIV EIC	(803) 744-6393 (803) 743-0576	(803) 552-7888 (803) 720-8715
Marjorie Aelion	Tech Rep	Hydrologist USGS	(803) 750-6128	-
Melinda Lewis	Over/Sight	Sr. Analyst Trident Labs	(803) 871-4999	(803) 873-0709

* Names in () are alternate members. Committee chairman is responsible for maintaining an up-to-date list of current membership and phone numbers.

2.2 RISK IDENTIFICATION AND ASSESSMENT

AREAS SUBJECT TO BMP PLAN: The only areas subject to the BMP requirements of this Plan are those associated with the operation and maintenance of the groundwater remediation system. The Terminal's regular mission work is not addressed in this Plan unless it impacts, or is impacted by, the remediation system project.

POTENTIAL SPILL RISKS: The potential spill volume for this project is relatively low. The spill risk, however, is much higher due to the continuous automatic operation of the system. The following five areas were identified as potential spill risks:

- 1- Infiltration gallery
- 2- Waste fuel tank
- 3- Effluent discharge line
- 4- Nutrient storage area
- 5- Offsite extraction well

INFILTRATION GALLERY: The 2000 sf infiltration trench is fed by a 340' deep extraction well (PW-19) at a rate of roughly 57,600 gpd. During periods of extended heavy rains there is a possibility that the loading rate will exceed the soil's absorption capacity.

Since pumping well PW-19 pumps clean groundwater continuously, if trench failure should occur, contaminated groundwater from the contaminated soil could be discharged to the ground surface and discharge into adjacent drainage ditches that flow into Gold Springs Cup Lake. If the failure condition went unnoticed for an extended period of time, contaminated water could be released into the environment.

The injection of the nitrate (sodium nitrate or potassium nitrate) will not result in CERCLA reportable quantities even if trench failure would occur.

WASTE FUEL TANK: Wells PW-1 through PW-4 are designed to automatically pump free product into a 1000 gallon storage tank. If the float switches were to malfunction during a period when the water table was high and rising, the pumps could overflow the tank, releasing fuel and contaminated groundwater.

The tank will be located inside the bulk tank diked area which will prevent any release from reaching navigable or surface waters. However, the spilled product could soak into the soil inside the containment facility, resulting in costly soil remediation efforts.

EFFLUENT DISCHARGE LINE: Extracted groundwater will be pumped via a 4" ductile iron pipe to sanitary sewer MH 102 located on Naval Weapon Station property to the east of the Terminal. If a pipe leak or rupture should occur and go unnoticed, a substantial volume of contaminated groundwater could be released back into the environment. Depending on the size and location of the leak or failure, the spill could migrate down to the water table or,

surface and discharge into Gold Cup Springs Lake via surface runoff.

NUTRIENT STORAGE AREA: The chemicals that will be used to provide nutrients to enhance the biodegradation of the organic constituents in the soil and groundwater (NH₄OH, P₂O₅, NaBr) pose very little spill risk. The nutrients are basically fertilizers and will be stored in small containers (12 to 15, 55-gallon drums) on a covered concrete slab. However, in sufficient quantities, a release could cause a fish kill or destroy aquatic vegetation. Aqua Ammonia is classified as a hazardous substance and a release to surface waters would be a violation of the Clean Water Act.

A ruptured drum or even minor operational spills that are not promptly cleaned up could result in surface runoff into adjacent surface waters during periods of heavy rains.

OFFSITE EXTRACTION WELL: Well PW-18 is located off Terminal property and is therefore subject to an increased risk of vandalism. If someone were to remove the well cover and dump solvents or other hazardous or toxic substances into the well, the material would directly impact the aquifer, resulting in a problem worse than the one we are trying to remediate.

2.3 EXISTING CONTAINMENT MEASURES

INFILTRATION GALLERY: The Trident Lab operator will visit the site daily but cannot shut the system down except when onsite. It would be difficult for Terminal employees to verify system failure during darkness and heavy rains.

WASTE FUEL TANK: The bulk fuel tank secondary containment system will prevent overfills from reaching navigable or surface waters, but will not prevent any spills from being absorbed into the soil.

NUTRIENT STORAGE AREA: The storage facility consists of a concrete slab with a metal roof. Sidewalls will be provided.

OFFSITE EXTRACTION WELL: The well is provided with a lockable cover and will be periodically inspected by the Trident Lab operator.

2.4 RECOMMENDED COUNTERMEASURES

The following recommendations are considered "best engineering practice" to reduce the risk spills.

INFILTRATION GALLERY: Should the ground be saturated due to the combined effects of heavy rains and water from extraction well PW-19, or for any other reason, security personnel and the terminal manager will be instructed to shut down extraction well PW-19 and the operator notified. The operator shall adjust the flow to prevent surface runoff.

WASTE FUEL TANK: Establish procedure to gage tank daily to ensure that adequate freeboard is maintained in the tank. Maintain a gaging log as part of the standard operating procedure. Fuel in the tank will be removed when the tank is 67 percent full.

Install a high-level shut-off switch in the tank to shut down the skimmer pumps in wells PW-1 through PW-4 whenever fuel in the tank reaches a preset level. Maintain a gauging log as part of the standard operating procedure.

EFFLUENT DISCHARGE LINE: Install a dual check-valve assembly on the discharge line downstream of the flow meter to prevent back flow of raw sewage into the remediation system.

Perform annual line pressure test to check for small leaks.

OFFSITE EXTRACTION WELL: Establish a daily check procedure of the well cap to ensure that closure integrity has not been breached. If evidence of tampering, turn off pump, sample and test well for contamination prior to restart. If tampering becomes a problem, install an automatic shutdown switch inside the casing that will shut the pump down immediately when the cap is opened and wire for manual restart only.

2.5 SPILL POTENTIAL OF FUTURE MATERIALS

There are no plans at the present time for any changes to the quantities or types of hazardous substances to be used or stored at the remediation site. The BMP Committee should be aware that if future changes do occur, the changes must be addressed in an amendment to this Plan.

2.6 SPILL REPORTING

A spill reporting system has been established for the Terminal and is documented in the facility's Emergency Response Plan. Any bioremediation project spills should be reported as outlined in the Response Plan except as modified in this Section.

The concentration of contaminants of the extracted groundwater is expected to be so low that it will be highly unlikely to sustain a spill with sufficient volume to exceed the reportable quantities established in CERCLA. Even if the spill quantity does not exceed the established RQs, any spill reaching navigable waters (as defined in 40 CFR 110) which causes an oil sheen must be reported immediately to the National Response Center at 1-800-424-6802.

Table 2.2 lists the Reportable Quantities (RQs) for the priority pollutants that are known contaminants of the aquifer beneath DFSP Charleston along with that of one of the nutrients that will be stored onsite.

As a matter of BMP policy, any extracted groundwater spill escaping the confines of the Terminal property shall be treated as a reportable spill and reported to the Terminal Manager. The

TABLE 2.2
CERCLA REPORTABLE QUANTITIES

<u>CONTAINMENT</u>	<u>CASRN</u>	<u>RO (lbs)</u>
Benzene	71432	1,000
Ethylbenzene	100414	1,000
Toluene	108883	1,000
Xylene	1330207	1,000
Arsenic	7440382	1
Beryllium	7440417	1
Chromium	7440473	1
Cyanide	57125	1
Lead	74399921	1
Zinc	7440666	1

Terminal Manager and a report developed that meets the following minimum requirements:

- Provides date and time of discharge
- Provides weather related data
- Provides staffing information immediately prior and during spill event
- Spilled material and volume
- Spill duration
- Cause of spill and response procedures used
- Method of cleanup
- Environmental damage
- Cost of cleanup
- Notifications made
- Recommended revisions if appropriate to the BMP Plan

The Terminal Manager shall be responsible for developing the report and convening the BMP Committee to review the spill incident.

2.7 MATERIALS COMPATIBILITY

Materials compatibility considerations include the following three elements:

- Compatibility of chemicals with container
- Compatibility of mixed chemicals within container
- Compatibility of container with environment

The only chemicals that will be used in the remediation project are nitrates, phosphates, and a tracer, Sodium Bromide. Free product, JP-4, will be skimmed and pumped to an onsite aboveground tank.

CONTAINER COMPATIBILITY: Nitrates and phosphates are basically farm fertilizers and are corrosive to metals. Sodium bromide (similar to table salt) is also corrosive to mild steel.

Nitrates which are formed from nitrogen in the air are extremely explosive in dry form (Sodium Nitrate, potassium nitrate, ammonia nitrate). Storage of any dry form of nitrogen containing compound is not recommended for this project due to the proximity of the bulk JP-4 tanks.

The liquid form of nitrate proposed for this project, ammonia hydroxide or aqua ammonia, is stable and should pose no container compatibility problems other than corrosion.

Phosphates are derived from phosphate rock and are available in either liquid or dry form. Phosphoric acid is the most common farm industry source of phosphate in liquid form. Phosphates in either dry or liquid form should pose no container compatibility problems other than corrosion.

Sodium Bromide poses no container compatibility problem except for corrosion of mild steel.

JP-4 is highly flammable and can be stored in either steel or fiberglass tanks which are properly vented. All sources of ignition should be kept at least 50 feet away from the storage tank.

Since the "nutrient" chemicals will be fed a relative low rate, drum storage time onsite could be sufficiently long to promote corrosion. Drums should be checked daily for signs of deterioration and replaced at the first sign of distress.

COMPATIBILITY OF MIXED CHEMICALS: There are no known compatibility problems associated with mixing the nutrients with the extracted groundwater.

In order to prevent possible compatibility problems or aquifer contamination due to mislabeling of drum contents at the factory, the operator should establish a sampling and testing procedure to visually verify contents prior to hookup to the mixing pumps.

CONTAINER COMPATIBILITY WITH THE ENVIRONMENT: The low country is famous for its high humidity. Drums, pipelines, tanks, pumps, equipment - anything containing steel - is subject to "environmental attack".

All underground piping will be PVC or ductile iron and should pose no corrosion problems. Steel drums, however, will be attacked from within due to the corrosive nutrients and from without due to oxidation. Poly drums for any liquid corrosive is highly recommended. Corrosives in dry form do not pose as much of a spill threat and can be more safely stored in steel containers.

2.8 GOOD HOUSEKEEPING

Good housekeeping is essentially the maintenance of a clean, orderly work environment which contributes to the overall safety and environmental protection effort. The following "Good Housekeeping" elements will be required for the DFSP remediation project:

- Neat and orderly storage of chemicals
- Prompt removal of spillage
- Proper pathways, walkways
- Proper chemical unloading/transfer areas
- Stimulation of employee interest

Due to the limited scope of this project, good housekeeping will be limited primarily to the nutrient storage area. Since the remediation project basically takes chemicals from the storage area, mixes them, and injects the mixture directly into the surface aquifer, it is mandatory that the storage area be maintained as clean and sanitary as possible. The nutrient storage area should not be used for other than chemical storage.

All pathways, walkways, and work areas shall be maintained sufficiently clear and uncluttered to enable the safe and efficient operation of the facility.

The drum unloading area shall be maintained to provide a firm, level surface for the operation of unloading equipment. Ruts or other evidence of subgrade instability shall be reason for prompt remedial action. It is the intent of DLA to maintain the remediation project in a model condition for all interested parties to examine.

A poly spill drum should be placed adjacent to the nutrient storage area for immediate collection of spilled chemicals. A second poly drum labeled "spill drum" should be placed adjacent to the nutrient storage facility and contain a shovel, dust pan, and sufficient sorbent pads and boom to quickly contain and recover up to a 55 gallon spill.

2.9 PREVENTIVE MAINTENANCE

An effective preventive maintenance (PM) program is recognized as an integral part of preventing BMP incidents. However, it would be redundant and beyond the scope of a BMP Plan to include specific PM procedures within the Plan. Instead, the objective is to highlight the requirements for qualified plant personnel (BMP committee and any needed consultants) to evaluate the proposed PM Plan and recommend any changes needed to address BMP requirements. The BMP Committee is also tasked with oversight of the agreed to PM procedures to ensure proper implementation.

The BMP Committee should recognize the elements of a good PM Plan:

- Identification of equipment or systems subject to the PM Plan
- Periodic inspections or tests of identified equipment or systems
- Appropriate adjustment, repair or replacement of equipment
- Maintenance of complete PM records for the life of the remediation project

One of the first taskings of the BMP Committee is to ensure that management provides a professionally prepared PM Plan prior to startup of the system. Upon receipt of the PM Plan, the BMP Committee should ensure that the remediation project operator (Trident Lab employee) is fully trained, qualified, and certified by the state to operate the biological treatment system.

2.10 INSPECTIONS AND RECORDS

The objective of an inspections and records system is to detect actual or potential BMP incidents. Plant security will be assigned some nontechnical tasks and the plant operator will complete the remainder. The BMP Committee should also consider inviting an outside audit team to annually inspect the facility for compliance

with this plan in its entirety. This section will establish minimum inspections and inspection records for those areas identified in the "Risk Assessment" section of this Plan.

INFILTRATION GALLERY

- 1- Inspection Required: During dry weather, check for surface wetness or actual seepage of water in the vicinity of the gallery. During wet weather or rain, check for bubbling up of water or an excessive surface runoff from the infiltration trench area.

Frequency: Daily

By: Roving Security Personnel on normal rounds and daily by operator

If system overloading is observed, shutdown the pump of PW-19 and alert the project operator promptly. The operator shall adjust the flow to prevent surface runoff.

WASTE FUEL TANK

- 1- Inspection Required: Gauge tank

Frequency: Daily

By: Security

Depending on the inflow rate to the tank, the tank will have to be periodically pumped to remove collected free product. The tank should never be allowed to fill over 67 % of its capacity prior to pumping.

- 2- Inspection Required: General condition of tank, supports, and piping

Frequency: Daily

By: Project operator

EFFLUENT DISCHARGE LINE

- 1- Inspection Required: Check operation of dual check-valve assembly

Frequency: Annually

By: Certified backflow specialist

- 2- Inspection Required: Perform line pressure test

Frequency: Annually

By: Consultant or EFD specialist

- 3- Inspection required: Compare flow leaving site with that entering MH 102

Frequency: Daily
By: Project operator

Action: If significant deviations are observed shut down the system and check for leaks or rupture

NUTRIENT STORAGE AREA

1- Inspection Required: Check all drums, pumps, piping, fittings, etc., for leaks, spills, corrosion, deterioration of supports, or other signs of distress.

Frequency: Daily
By: Project operator

OFFSITE EXTRACTION WELL

1- Inspection Required: Check well cap for closure integrity

Frequency: Daily
By: Project operator

Action: If tampering is evident, immediately shut down the well pump, sample and test for contamination prior to restart.

RECORDS: An inspection log should be developed for each of the required inspections. The logs shall be maintained for the life of the remediation project. Each log shall be denoted with the inspector's initials, date, time, and follow-up action taken or recommended.

TRACKING: The Terminal Manager shall maintain a master log of all identified deficiencies discovered during the inspections, date and time discovered, assign a cure date, and track the project to ensure that the corrective action is completed in a timely fashion.

INSPECTION OF TRANSFER OPERATIONS: It is a matter of record that spills frequently occur during transfer operations. There are only two transfer operations associated with the remediation project, other than the continuous pumping operations: delivery of nutrients by truck and removing waste fuel from the storage tank.

The Terminal Manager should ensure that adequate response personnel are onboard prior to commencing either of the transfer operations. Transfer operations should not be conducted after hours.

2.11 SECURITY

Existing security is adequate to protect the remediation project with the exceptions outlined in the "Inspections and Records" section of this Plan.

Terminal security personnel must be trained to make the additional

inspections outlined in Section 2.10 and make the appropriate report or response to system failure or warning.

Since the remediation system uses a system of adjustment valves to control both infiltration and offbase flow, it is imperative that only qualified personnel be permitted to make adjustments to the system. This project will probably receive a lot of attention, both Navy and regulatory, and security personnel must ensure that visitors do not tamper with the adjustment valves.

2.12 EMPLOYEE TRAINING

Employee training relative to the remediation project should be incorporated into the training program outlined in the Terminal's Spill Response Plan.

Initially, each employee should be given a copy of the BMP Plan and Operations Manual to read. Next, with the assistance of the remediation project operator (Trident Labs), a hands-on review of each part of the project should be conducted with all employees. Finally, employees should be provided with instructions on how to shut down the affected part of the system.

Initial start-up training should include time allotted for familiarization with the health risks associated with the chemicals used in the remediation project.

All master switches and shutoff valves should be numbered and coded to the Operations Manual and the Inspection Logs, which are to be developed under Section 2.10 of this Plan.

Spill drills should be conducted semiannually to ensure that employees are fully familiar with all BMP procedures outlined in this Plan. Quarterly spill briefings should be conducted to keep safety and spill prevention in the forefront of every employee's daily operations.

The Terminal Manager is responsible for verifying that the contractor personnel assigned to operate the remediation system are qualified Class III Biological Treatment Plant operator and is familiar with the operation of the remediation system and all BMP countermeasures.

CHAPTER 3. PLAN REVIEW AND UPDATE

3.1 BMP PLAN REVIEW AND UPDATE

The BMP Committee shall meet at least semiannually to review this Plan and evaluate the need for any modifications to the Plan or procedures used. The BMP Committee shall prepare a "Review Report" and provide to DLA for action. Since this is an "Engineered Document", changes must be made by a professional engineer familiar with the remediation project, NPDES discharge permit requirements, and BMP procedures and standards.

3.2 DLA FUNDING AND IMPLEMENTATION RESPONSIBILITY

DLA must take the necessary measures to ensure that funding and or personnel are provided to amend the plan as recommended by the BMP Committee. If countermeasures outlined in this plan require contract modification, additional funding, or changes to the remediation project, DLA shall be the responsible agency for those changes or modifications.

3.3 PERIODIC REVIEWS

The Terminal Manager or other BMP Committee member has the obligation to call for a "professional" review at any time when changes in procedures, Terminal construction, personnel, chemicals used, or other factors affect the spill risks sufficiently to warrant additional attention to the plan.

3.4 EMPLOYEE PARTICIPATION

Terminal employees are encouraged to bring any concerns or proposed improvements to the BMP Plan to the attention of the Terminal Manager. Spill prevention is a team effort and only works when everyone works together as a team.



DEFENSE LOGISTICS AGENCY
DEFENSE FUEL SUPPLY CENTER
CAMERON STATION
ALEXANDRIA, VIRGINIA 22304-6160

IN REPLY
REFER TO DFSC-FQ

- APPENDIX A -

13 NOV 1989

SUBJECT: Spill Prevention Control and Countermeasure (SPCC) Plan for
Defense Fuel Support Point (DFSP) Charleston

TO: Mr. Glen Bradley
Environmental Branch, Code: 115
SODIVNAVFACENCOM
Charleston, SC 29411-5000

1. References:

- a. SPCC Plan for DFSP Charleston.
- b. South Carolina Department of Health and Environmental Control (SCDHEC) Construction Permit Number 15707 with special conditions (enclosed).
- c. Telephone conversation between Steve Wilson and Irene Sailer, 7 November 1989, subject as above.

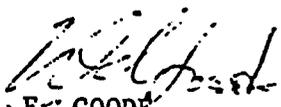
2. In reference 1.b., SCDHEC issued a permit to Defense Fuel Supply Center (DFSC-FQ) for the construction of monitoring wells, etc. necessary for the bio remediation system at DFSP Charleston. Along with the permit, SCDHEC issued a series of special conditions, more specifically, the requirement of a plan for implementing "Best Management Practices (BMP)" to identify and control the discharge of oils and hazardous and toxic substances (see special conditions, paragraph 2.). Additionally, SCDHEC state that a SPCC plan may be used in lieu of a BMP plan if BMP requirements are satisfied.

3. In reference 1.c., you stated that you were provided a copy of the 1985 SPCC plan (reference 1.a.). This office is in the process of having the 1985 amended SPCC document retyped and will forward a copy to you when it is available. It is understood that you will prepare an amendment to the SPCC plan addressing the bioremediation system. Additionally, you indicated that you would review the SPCC plan and make recommendations necessary to ensure that the special conditions (on this issue) are met.

4. If you need additional information please contact Irene Sailer at AV-284-6989.

FOR THE COMMANDER:

Encl


W. E. GOODE
Chief, Environmental Quality Division
Directorate of Facilities Management

cc:

SODIVNAVFAC (Mr. Ted Campbell)

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SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL
CONSTRUCTION PERMIT

Permission is hereby granted to: Defense Fuel Supply Center (DFSC-FQ)
Cameron Station
Alexandria, VA

22304-6160

for the construction of a waste treatment and/or collection system in accordance with construction plans, specifications, engineering report and Construction Permit Application signed by Robert F. Martin,
Registered Professional Engineer, S.C. Registration No.: 5928

Project Description: (See Attachment)

(NPDES Permit #SC0024783)
Effluent to be discharged to A. N. Charleston Sewer System B. Infiltration gallery in the
Santee-Cooper River basin at a daily rate not to exceed A. 40,320 (28 gpm)
B. 54,720 (38 gpm) gallons
per day. County in which project is located: Berkeley Coordinates of the discharge point: N/A
(to nearest five seconds)

Effluent concentrations of those constituents the system is designed to remove or reduce will be as follows:

The permittee shall comply with all pretreatment rules and regulations of the North Charleston Sewer District and the South Carolina Department of Health & Environmental Control, whichever are more stringent.

Special Conditions: (See Attachment)

Permit No: 15,707 Date of Issue: October 3, 19 89

Expiration Date: Unless construction is initiated prior to October 3, 1990, it will be necessary to reapply since this permit will no longer be valid.

Treatment Plant Classification: Group III-Biological

In accepting this permit, the owner agrees to the admission of properly authorized persons at all reasonable hours for the purposes of sampling and inspection.

THIS IS A PERMIT FOR CONSTRUCTION ONLY AND DOES NOT CONSTITUTE STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL APPROVAL, TEMPORARY OR OTHERWISE, TO PLACE THIS SYSTEM IN SERVICE.

JBR/CLW/jf

J. Bart Paine P.E.
Bureau of Water Pollution Control



SPECIAL CONDITIONS

1. The permittee shall maintain at the permitted facility a complete Operations and Maintenance Manual for the bioremediation system. The manual shall be made available for on-site review during normal working hours. The manual shall contain operation and maintenance instructions for all equipment and appurtenances associated with the bioremediation system. The manual shall contain a general description of the treatment process(es), operating characteristics that will produce maximum treatment efficiency, and corrective action to be taken should operating difficulties be encountered.
2. The permittee shall develop and implement a Best Management Practices (BMP) Plan to identify and control the discharge of significant amounts of oils and the hazardous and toxic substances listed in 40 CFR Part 117 and Tables II and III of Appendix D to 40 CFR Part 122. The plan shall include a listing of all potential sources of spills or leaks of these materials, a method for containment, a description of training, inspection and security procedures, and emergency response measures to be taken in the event of a discharge to surface waters or plans and/or procedures which constitute an equivalent BMP. Sources of such discharges may include materials storage areas; in-plant transfer, process and material handling areas; loading and unloading operations; plant site runoff; and sludge and waste disposal areas. The BMP plan shall be developed in accordance with good engineering practices, shall be documented in narrative form, and shall include any necessary plot plans, drawings, or maps. The BMP plan shall be developed no later than six months after issuance of the Construction Permit. A Spill Prevention Control and Countermeasure (SPCC) plan may be used in lieu of a BMP plan if BMP requirements are satisfied. The BMP plan or its equivalent shall be maintained at the plant site and shall be available for inspection by Department personnel.
3. The permittee shall provide for the performance of routine daily inspections of the bioremediation system by a certified operator of the appropriate grade. The inspection shall include, but is not limited to, areas which require a visual observation to determine efficient operations and for which immediate corrective measures can be taken using the O & M manual as a guide. All inspections shall be recorded and shall include the date, time and name of the person making the inspection, corrective measures taken, and routine equipment maintenance, repair, or replacement performed. The permittee shall maintain all records of inspections at the permitted facility and the records shall be made available for on-site review during normal working hours.
4. All sludges, waste oil and solid and hazardous waste shall meet all requirements of SCDHEC's Bureau of Solid and Hazardous Waste Management.
5. For all new underground pipe except the infiltration gallery, a minimum of three (3) feet of cover shall be provided or cast iron pipe shall be used.

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6. Three monitor wells shall be installed at this site (per the USGS submittal dated September 14, 1989) to provide additional ground-water quality and water level data. One monitor well is to be located on Valley Street approximately 30 to 50 feet east of extraction well EW-18, one monitor well is to be located approximately 50 feet east of extraction well EW-15, and one monitor well is to be located east of extraction well EW-17 (approximately 100 feet from monitor well #2).

7. Ground-water elevation and ground-water quality data shall be submitted on a monthly basis and shall demonstrate to the satisfaction of the Department that there is 100 percent hydraulic containment and that ground-water clean-up is occurring. If 100 percent containment is not maintained, treatment shall be required. A PER shall be required within 30 days from the date of the Department's letter notifying DFSP.

8. The bioremediation system shall be monitored as follows:

a). The five surface water (SW) sites shall be sampled quarterly and analyzed for benzene, toluene, ethylbenzene, xylene (BTEX) and total petroleum hydrocarbons (TPH):

SW-1 The first storm drain outfall pipe south of Valley Street.

SW-2 The stream north of Valley Street approximately 100 feet northwest of SW-1.

SW-3 The vault to the drainage culvert west of East Lakeside Drive, between Valley Street and Dogwood Court.

SW-4 The stream that runs into the culvert west of East Lakeside Drive, between Dogwood Court and Holly Court.

SW-5 The stream, approximately 30 feet south of the culvert west of East Lakeside Drive, between Holly Court and Spring Court.

b). Water quality monitoring shall be conducted monthly for the first six (6) months of system operation and quarterly thereafter for the eighteen (18) pumping wells and the three distribution centers to the infiltration gallery. Samples shall be analyzed for BTEX, TPH, total organic carbon, bromide, nitrate, phosphate, pH, alkalinity, and dissolved oxygen.

c). The following wells shall be sampled quarterly and shall be analyzed for BTEX, TPH, total organic carbon, bromide, nitrate, phosphate, pH, alkalinity, and dissolved oxygen:

MW-4	MW-9	MW-16	W-104
MW-5	MW-11A	MW-17	W-106
MW-6	MW-12	W-1	W-108
MW-7	MW-12A	W-101	B-101
MW-8	MW-15	W-103	PW-2

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The following wells shall be sampled quarterly and analyzed for naphthalene:

MW-4 MW-11A MW-12 MW-16 PW-2

d). Private well PW-2 shall be monitored contingent upon approval from the owner.

If any of the above-mentioned wells cannot be sampled, appropriate alternate wells should be selected with approval by the Department.

9. Quarterly sampling results shall be submitted to the Department no later than the 28th day of January, April, July and October of each year, unless otherwise approved by the Department. Testing shall be conducted by a S.C. State certified laboratory. All information required herein shall be submitted to:

South Carolina Department of Health & Environmental Control
Attn: Bureau of Drinking Water Protection/Enforcement Section
2600 Bull Street
Columbia, S.C. 29201

10. The horizontal and vertical extent of contamination outside of the area of active remediation shall be determined to the satisfaction of the Department. Within sixty (60) days of the issuance of this permit, the permittee shall submit a schedule for assessment of those areas outside of active remediation. Assessment activities shall proceed concurrently with construction and operation of the bio-remediation system. Once approved, the schedule shall become a part of this permit.

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North Charleston Sewer District

1000 HERBERT STREET

CHARLESTON, S.C. 29405

Telephone (803) 722-2657

April 3, 1989

- APPENDIX B -

Defense Fuel Supply Point
DSFP-Charleston
P.O. Box 60039
North Charleston, S.C.
29419-0039

ATTN: Mr. Donald Matthews
Quality Surveillance Officer

RE: Non-Domestic Discharge
Permit #049

Dear Mr. Matthews:

In accordance with your waste questionnaire dated September 9, 1989, your discharge permit has been issued and is enclosed herein. Please note that the first monitoring period begins April 1, 1989. The Sewer District will assess a \$125.00 charge for issuing this finalized permit, and treatment charges will be assessed monthly according to: 1) Permitted flow rate and 2) Actual flow rate which is submitted by the Defense Fuel Supply Center each month to this office. Groundwater flow rates should be submitted monthly, whereas analysis results should be submitted quarterly.

If you have any questions, please call ~~Richard Bomar; Tom Wright,~~
or me.

Yours truly,

Ray Peterson

NORTH CHARLESTON SEWER DISTRICT

Allen T. Ramsay
Allen T. Ramsay
District Manager

ATR/sh

Enclosure

cc: J. Donovan Dukes
File

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NORTH CHARLESTON SEWER DISTRICT

NON-DOMESTIC WASTEWATER DISCHARGE PERMIT

Discharge Permit No. 049

In accordance with all terms and conditions of the Sewer Use Resolutions of the North Charleston Sewer District and also with any applicable provisions of Federal or State law or regulation:

Permission is hereby granted to Defense Fuel Supply Center
North Rhett Avenue, Hanahan, South Carolina

Classified by SIC No. 5171

For the discharge of non-domestic wastewater into the District's sewer lines at Naval Weapons Station

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

This permit is granted in accordance with the application filed on September 9, 1988, in the office of the North Charleston Sewer District.

Effective this 31st day of March, 1989

To expire the 31st day of March, 1993

Allen T. Ramsay
Allen T. Ramsay, District Manager
North Charleston Sewer District

3 April, 1989
Date

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PART II

MONITORING AND REPORTING

A. Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge.

B. Reporting

Monitoring results obtained during the previous 3 months shall be summarized for each month and reported on a Self-Monitoring Form postmarked no later than the tenth day of the month following the completed reporting period. The first report is due on July 10, 1989. A single signed copy of this, and all other reports required herein, shall be submitted to the Manager by mailing to:

North Charleston Sewer District
1000 Herbert street
Charleston, South Carolina 29405

C. Definitions

1. Monthly average: The arithmetic mean of all the samples collected in a one-month period.
2. Flow (gpd): The flow is determined as the arithmetic mean of the total daily flows recorded during the calendar month.
3. Arithmetic Mean: The arithmetic mean of any set of values is the summation of the individual values divided by the number of individual values.
4. Flow Proportional Composite Sample: A sample collected over a defined period of time at a rate proportional to the flow.
5. Grab Sample: An instantaneous sample of the wastewater which shall be collected at the period(s) most representative of the total discharge.

D. Test Procedures

Test procedures for the analysis of pollutants shall conform to Regulation 40 CFR Part 136 published pursuant to Section 304(g) of the Federal Water Pollution Control Act, as amended. When procedures are not contained in Part 136, sampling and analysis shall be performed in accordance with the procedures set forth in the EPA publication, "Sampling and Analysis Procedures for Screening of Industrial Effluents for Priority Pollutants", April 1977, and any amendments to this publication or any other applicable sampling and analytical procedures approved by the Manager.

PART II (Continued)

E. Recording of Results

For each measurement of sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

1. The date, exact place, method, and time of sampling and the names of persons taking the samples;
2. The dates analyses were performed;
3. Who performed the analyses;
4. The analytical techniques/methods used; and
5. The results of such analyses.

F. Additional Monitoring by Permittee

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Self-Monitoring Form.

G. Records Retention

The permittee is required to retain for a minimum of three (3) years any records of monitoring activities and results and shall make such records available for inspection and copying by the Manager, South Carolina Department of Health and Environmental Control (SCDHEC), or the Environmental Protection Agency (EPA). This period of retention shall be extended during the source of any unresolved litigation regarding the permittee or when requested by the Manager, SCDHEC, or the EPA.

PART III

COMPLIANCE SCHEDULE

The permittee shall achieve compliance with the effluent limitations specified for discharges in accordance with the following schedule:

- A. Not later than fourteen (14) days following each date in the subsequent schedule and the final date for compliance, the permittee shall submit a progress report to the Manager including, as a minimum, whether or not it complied with the increment of progress to be met on such date. If not, the date on which it expects to comply with this increment of progress, the reason for the delay, and steps being taken by the permittee to return the

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activities to the schedule established. In no event shall more than nine (9) months elapse between such progress reports to the Manager.

B. Compliance Schedule

PART IV

General Conditions

A. All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit. Any anticipated facility expansions, production increases, or process modifications which will result in new, different, or increased discharges of pollutants must be reported by submission of a new Discharge Permit Application or, if such changes will not violate the effluent limitations specified in this permit, by notice to the Manager of such changes. Following such notice, the permit may be modified to specify and limit any pollutants not previously limited.

B. The permittee shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit.

C. The permittee shall take all reasonable steps to minimize any adverse impact to the North Charleston Sewer District's sewer system and waste treatment facilities resulting from non-compliance with any effluent limitations specified in this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of any non-complying discharge.

D. The permittee shall allow the Manager or his authorized representative, upon presentation of his credentials:

1. The right of entry to, upon, or through any premises in which an effluent source is located or in which any records required to be maintained under the terms and conditions of this permit are located.
 2. Access to and copy any records, inspect any monitoring equipment or method required under the terms and conditions of this permit, and sample any effluents.
- E. Wastewater discharge standards are issued to a specific user for specific operation. A permit shall not be reassigned or transferred or sold to a new owner, new user, or for different premises, unless approved by the Manager.
- F. The permittee shall notify the Manager or the waste treatment facilities immediately of any slug loadings in such volume or strength as to cause interference in the sewer system or at the waste treatment facilities.
- G. This permit is subject to be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:
1. Violation of any terms or conditions of the permit or other applicable law or regulation;
 2. Obtaining of a permit by misrepresentation or failure to disclose fully all relevant facts; or
 3. A change in any condition that requires either a temporary or permanent reduction or elimination of the regulated discharge.
- H. The permittee must apply in writing for a renewal permit within the period of time not more than ninety (90) days and not less than sixty (60) days prior to expiration of the current permit. Provided further that limitations or conditions of a permit are subject to modification as may become necessary due to changes in applicable water quality standards, the District's NPDES Permit, discharge effluent limitations other applicable law or regulation, or for other just cause. The permittee will be notified of any proposed changes in this permit by the Manager at least thirty (30) days prior to the effective date of the change. Any change or new condition in this permit shall include a provision for a reasonable time schedule for compliance. The permittee may appeal the decision of the Manager in regard to any changed permit conditions.
- I. The permittee shall not discharge any of the prohibited pollutants identified in Article V of the District's Sewer Use Resolutions.