

N61165.AR.005047
CNC CHARLESTON
5090.3a

SUMMARY AND CONCLUSION FOR DEFENSE FUEL SUPPLY POINT (DFSP) TANK FARM
INVESTIGATION CNC CHARLESTON SC
09/12/1988
NAVFAC SOUTHERN

SUMMARY AND CONCLUSION

SUBJECT : DFSP-NSC TANK FARM INVESTIGATION, CHARLESTON NAVAL
BASE, TANKS 3900-G, 3900-H AND 39-J HYDROCARBON
CONTAMINATION.

BACKGROUND : During the 1986 demolition of tanks 3900-G, 3900-H and 39-J, petroleum product was discovered in the soil surrounding their foundation. SOUTHDIVNAVFAC awarded a groundwater investigation contract to Environmental Science Engineering Inc. (ESE) in May 1986 to determine the type and extent of contamination in the vicinity of the tanks.

The surficial aquifer at NAVBASE is high in dissolved solids, due to the adjacent saline waters, and is not used as a drinking water source. The migration potential is lateral towards the Cooper River because of a thick confining clay layer of Cooper marl, there is a minimal potential for contamination in the surficial aquifer to reach the Santee Limestone which underlies the Cooper formation.

DISCUSSION : A total of forty-three (43) shallow soil boring's and seven (7) ground-water monitoring wells were constructed. Only two (2) monitoring wells had evidence of a floating hydrocarbon layer with a dark opaque appearance possibly the result of natural bio-degradation.

Three (3) shallow monitoring wells contained TRPH concentrations of 341 ug/l, 2,850 ug/l and 130,000 ug/l. Benzene was detected at 1.23 ug/l in the monitoring well with the higher TRPH. TRPH and BTX concentrations were below detection limits at the remaining deeper monitor wells. Re-sampling did not indicate any BTX compounds. TRPH, PAH and Total Ionizable Present (TIP) data all indicated the same trend of hydrocarbon presence. BTX's were not detected in any of the soil or sediment samples. Surface water samples did not contain detectable concentration of TRPH or BTX compounds.

Petroleum migration has spread radially within the soil surrounding tanks 3900-G and 3900-H. The boring logs in the vicinity of these tanks indicate subsurface soil contamination vertically to a depth of approximately 8.0 ft. The approximate volume of contamination is 14,740 cubic yards. Petroleum hydrocarbon residue in sediment could potentially affect the diversity of benthic biological organisms.

Plans have been completed to replace the previous tanks 3900G and 3900H with 100,000 BBL tanks. Any new structure in the vicinity of the contamination complicates remediation or eliminates contamination removal if not accomplished during the construction stage.

CONCLUSION : Petroleum release from original tanks 3900-G and 3900-J has caused contamination of soils, groundwater and sediment in the vicinity of the Base Tank Farm. In its present state, the contamination doesn't represent an imminent threat to human health, however the petroleum contaminated soils are a continuing source of contaminant to the groundwater. The potential exists for migration in the surficial aquifer. The presence of the contaminant will continue to be a NAVY liability due to the potential for movement and extensive long term monitoring requirements. Remedial efforts to minimize movement of contaminant would not eliminate long term NAVY monitoring of the contaminant.

RECOMMENDATION : Removal of contaminated soil is considered the preferred remediation of soil in the vicinity of tank 3900-G and 3900-H foundation. Disposal of soil will be through commercial contractors as a non-hazardous waste material using the following guides for soil limits. Soil shall be removed that shows visible evidence of hydrocarbon contaminants (i.e. petroleum saturated soils) or exhibits a headspace reading of \geq (greater than or equal to) 5 ppm on an organic vapor analyzer (OVA) equipped with a flame ionization detector. After the principal source of contamination is removed a groundwater monitoring plan utilizing existing monitoring wells will be submitted to DHEC. It is anticipated that once the principal source of contamination is removed, restoration of groundwater quality at the site will occur.



0913

ENGINEERING SERVICE REQUEST (ESR)

NAVFAC 11000/7 (4-78)

Supplies NAVDOCKS 2038

S/N 0105-LF-010-0035

Instructions on Reverse

Copy No.

SECTION A
FOR USE BY REQUESTER

1. FROM (Activity and location) COMMANDER, CHARLESTON NAVAL SHIPYARD (CODE 420)	
2. TO COMMANDING OFFICER, SOUTHERN DIVISION, NAVAL FACILITIES ENGINEERING COMMAND	
3. REFERENCE(S)	4. ESR IDENTIFICATION NUMBER (if applicable) 88-09
5. ENCLOSURE(S) (check) <input type="checkbox"/> NAVCOMPT 140 <input type="checkbox"/> OTHER (specify) _____ <input type="checkbox"/> NAVCOMPT 2038 <input type="checkbox"/> NAVCOMPT 372	6. TYPE OF FUNDING (check) <input type="checkbox"/> O&MN <input type="checkbox"/> OTHER (specify) _____ <input type="checkbox"/> NIF <input type="checkbox"/> NAF
7. TYPE OF SERVICES REQUESTED ENGINEERING STUDY TO DETERMINE ORIGIN OF OIL.	8. DESIRED COMPLETION DATE
9. DESCRIPTION OF WORK FUEL OIL WAS DISCOVERED IN THREE FRENCH DRAINS NEAR DIESEL TANKS 3906N, L, & P. IT IS SUSPECTED THAT THE UNDERGROUND TANKS ARE LEAKING INTO THE SOIL. CONDUCT AN ENGINEERING STUDY TO DETERMINE THE ORIGIN OF THE OIL AND IF ANY GROUND CONTAMINATION HAS OCCURRED IN AREA OF TANKS.	

10. FOR INFORMATION CONSULT (Name and phone) LT. SULLIVAN, 36086	11. OFFICIAL REPRESENTATIVE (Signature) <i>E. J. Lowery, Jr.</i> E. J. LOWERY, JR. By direction	12. DATE 31 AUG 1988
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SECTION B
FOR USE BY EFD

1. SCOPE OF SERVICES	2. DATE RECEIVED 12 SEP 1988
	3. ESR NUMBER 8256-240

SECTION C
INTERIM ENDORSEMENT

1. REMARKS Activity visit was accomplished 16 September 1988			
2. EST. COMPLETION DATE 31 December 1988	3. AUTHORIZED REPRESENTATIVE (Signature) HERBERT KOGER, JR., Acting Director, Utilities Division	4. DATE 19 September 1988	

SECTION D
FINAL ENDORSEMENT

1. ENCLOSURE(S) <input type="checkbox"/> DRAWINGS AND MAPS <input type="checkbox"/> SPECIFICATIONS <input type="checkbox"/> REPORT <input type="checkbox"/> OTHER (specify) _____			
2. EST. COST (if applicable) \$	3. AUTHORIZED REPRESENTATIVE (Signature)	4. DATE OF COMPLETION	

TO