DOC.NO. . CLW - UUQUE - 1.01 - 51/12/ 2

### ATLANTIC DIVISION NAVAL FACILITIES ENGINEERING COMMAND NORFOLK, VIRGINIA 23511

11-22-82 (Date)

### MEMORANDUM

Subj: Official telephone call (incoming) (outgoing)

1. The following transaction was handled by telephone this date concerning the subject indicated:

Name and office of each individual engaged in call

J.G. WALLMEYER 1306 ALexander LANTINAN FACENGODM MCB. Cray Legenine AC.S FAULARES

Date and hour of call

Originator of call

Call (chargeable) (not chargeable) to appropriated funds.

Subject matter discussed: NACIP Program Additional information new sites; commentation 2 at MCB Camp begenne

11-22-82 0830

Wallmage

Information or instructions given or received: Since on site work was performed, 5 additional persons knowledgable of disposal at Chig have been identified and have offered the following AT I) Z sires within the # 69 Area (RR Chemican Dump), one AT ~15 drums, The other AT N 35-40 drums. Individual related that he was incorned That marenials included NBC marenials. # 2) Mess ball greater and vegerable marren - old Sawmill area SAWMILL Area, NZO drums., reportedly Transformer oil æ3) ONE THE OWL permade #4) The other LANE '403, CARLY '50.3, Camp Geisch - AIR STATION between RR TITACKS AND HOUSING AREA - presently & basketball Court ZSINCS #5) RIFLE RANSE Area - cither sine #68 ar #69 - believed to be DDT TCE and Colcim Hypochlorine Figuipment operation injured - under medicul measure FOR 2 years - occurred. 1970 - Fine And explosion, requested to originate MSG From CLy to NAVENANSA, AL

. Doc. no. CLEJ-00090-1.01-08/11/83

> FAC/REA/hf 6280 I 1 AUG 1983

Environmental Protection Agency, Region IV Attn: Mr. A. Linton 345 Courtland Street Atlanta, GA 30365

> Re: Initial Assessment Study, U.S. Marine Corps Base, Camp Lejeune, NC

Dear Mr. Linton:

The subject report is provided for your information on previous storage, use, and disposal of chemicals and hazardous waste aboard Camp Lejeune. This study has been developed under the Navy Assessment and Control of Installation Pollutants (NACIP) Program. Initial screening has been completed for 76 potential sites to determine those sites requiring further study.

The study concludes that while none of the 76 sites pose an immediate threat to human health or the environment, 22 sites warrant further investigation to assess potential long-term impacts. A confirmation study of these sites, which are described in the enclosure, is currently underway with a target completion date of 1 October 1985. This study will include field investigations with detailed physical and chemical monitoring to confirm or deny the presence of contamination or a health hazard, and to quantify the extent of any problems that might exist. The need for performing mitigation actions or clean-up operations at these sites can then be addressed.

For further information regarding the enclosure or the continuing study, please contact Mr. Bob Alexander at 919-451-3034 or FTS 676-3034.

Sincerely,

N. G. LILLBY Colonel, U.S. Marine Corps Assistant Chief of Staff, Facilities By direction of the Commanding General

Encl

Copy to: CMC (LFF\_2W/o encl) COMEANTNAVPACENGCOM (114) Blind Copy to: (w/o encl) NAVENENVSA (112N) CO, MCAS(H),NR (S-4) Blind Copy to: (w/o encl) JPAO

FAC/REA/el 6280 2 3 DEC 1983

-1/-:30

1. -1 - . .. / a -100

North Carolina Department of Natural Resources and Community Development Division of Environmental Management Attn: Mr. R. Helms P. O. Box 27687 Raleigh, NC 27611

> Re: Initial Assessment Study, U.S. Marine Corps Base, Camp Lejeune, NC

Dear Mr. Helms:

The subject report is provided for your information on previous storage, use, and disposal of chemicals and hezardous waste aboard Camp Lejeune. This study has been developed under the Navy Assessment and Control of Installation Pollutants (NACIP) Program. Initial screening has been completed for 76 potential sites to determine those sites requiring further study.

DOC. 100. COLA - COUDA

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For further information regarding the enclosure or the continuing study, please contact Mr. Bob Alexander at 919-451-3034.

Sincerely,

M. G. LILLEY Colonel, U.S. Marine Cerps Assistant Chief of Staff, Facilities By direction of the Commanding General

Encl

Copy to: (w/o encl) CMC (LFT-2) COMLANTHAVFACENGCOM (114)



DEPARTMENT OF THE NAVY

Doc. No: CLEJ-00207-1.01-03/27/85

ATLANTIC DIVISION NAVAL FACILITIES ENGINEERING COMMAND NORFOLK. VIRGINIA 23511-6287 TELEPHONE NO

SUSPENSE: 19 APR

(804) 444-9566 IN REPLY REFER TO: 5090 1143CFB

2 7 MAR 1985

Environmental Science and Engineering, Inc. Attn: Mr. Russ Bowen Project Manager P. O. Box ESE Gainsville, FL 32602

> Re: Contract N62470-83-C-6106, Confirmation Study; Evaluation of Data From First Round of Verification Sample Collection and Analysis, Marine Corps Base, Camp Lejeune

## Dear Mr. Bowen:

We would like to make the following comments on your interim report. Please incorporate these into your round two sampling report or the Verification Step final report, as appropriate. Our recommendations for round two sampling are described in the draft memorandum which is enclosed for your review and comment. The laboratory analysis completed to date on Camp Lejeune potable wells and water treatment plants is also enclosed for your use.

#### General Comments

+

a. Please use both sides of the page when copying your reports.

b. Please include site maps with well and sample locations.

c. For data evaluation, we would like you to use EPA Health Advisories and North Carolina groundwater and surface water quality standards/criteria. (if they exist), in addition to the EPA Water Quality Criteria. Please discuss the advantages and disadvantages of each of these guidelines as compared to the Health Risk criteria.

d. Please use the  $10^{-6}$  Health Risk Criteria for comparison if your detection limits are that low; if not, use the  $10^{-5}$  values. (We are asking for guidance from higher authorities on which level to use for Verification Step purposes, so this policy may change).

e. Try to improve the readability of your computer-generated tables. We would like to see, in tabular form: the sample number, parameter, result of analysis, criteria exceeded, and criteria value to make comparison easier.

f. We are adopting a standardized labeling system for wells and other sampling locations at all Confirmation Study sites. Please change your numbering system for potable wells sampled to <u>PW</u> from GW. Also, include a cross-reference between sample numbers and building numbers of potable wells.

g. Measure groundwater level elevations to 0.01 foot accuracy.

DOC . No .: QLEJ - 00207 -1.01 - 03/27/85

5090 1143CFB

### Specific Comments

a. Cover Sheet. Prepared for: Atlantic Division, Naval Facilities Engineering Command, Norfolk, Virginia 23511-6287.

b. Page 2-1. Discuss EPA Health Advisories and state water quality criteria/standards.

c. Page 2-3. "Information concerning expected rate and direction... is based on a <u>relative</u> analysis..."

d. Page 2-29. Soil sampling numbering system is confusing. Why are there two samples with the same sample numbers? Which samples were the composites from 0-1 feet and which from 1-2 feet depths? Which samples came from the same boring?

e. Page 2-34. <u>Migration Potential</u>. "All analytical parameters for well 22GW2 (not 22GW3) were below detection limits..."

f. Page 2-39. <u>Objectives</u>. "1. Locate source of TCE ... detected in deep water supply Wells Nos. 601, 602, 60<u>3</u> (not 604), 60<u>8</u> (not 609), <u>634, 637,</u> and 642."

g. Page 2-43. The IAS alluded to TCE use in three buildings in the Hadnot Point industrial area: 901, 909, and 1601. "Approximately 440 gallons of TCE were contained in a tank" (IAS, page 6-16). The IAS did not specify if the tank was underground or aboveground.

h. Page 2-43. "Samples of groundwater should be collected from ... deep water supply wells Nos. 601, 503, 608 (not 609), 634, 637, 642, and Bldg. 20 Hadnot Point Water Plant (untreated influent)..." You should also include shallow wells at 634, 637, and 642 in the sampling/analysis program. (See attached draft memo).

i. Page 2-43. Your characterization step work should also address overlapping comes of depression. (See attached draft memo).

602

j. Page 2-44. Data Evaluation. Levels of IAs exceeded the 10<sup>-5</sup> risk level in Wells 24GW4, 24GW3, 24GW5, and 24GW2. We suggest you use the drinking water standard of 50 ug/1, since your detection limits are higher than the 10<sup>-5</sup> health risk level of .02 ug/1.

k. Page 2-49. Methylene chloride in Well 24GW2 exceeded the 10<sup>-5</sup>, not 10<sup>-7</sup>, risk level.

1. Page 2-50. <u>Migration Potential</u>. We disagree with the statement that no water supply wells which could affect groundwater flow rate and direction are located close to Site 24. Well 608 is within a few blocks of this site. DOC. AO. : CLEJ-00207-1.01-03/27/85

5090 1143CFB

n. Page 2-59.

(1) Since the surface water data was significantly different from the groundwater data at Site 28, please discuss the impact of these findings in greater detail.

(2) TCE was detected in the groundwater - Well 28GWl at 15 ug/1.

n. Page 2-70. <u>Data Evaluation</u>. "The presence of contamination at Well 36GW4... <u>may</u> indicate that the disposal area at Site 36 extends farther to the west than originally estimated."

o. Page 2-71. Why are there two sets of results for each sample number?

p. Page 2-80. DCFM exceeded the  $10^{-5}$  risk level at Well 41GW2, not 41GW1.

q. Page 2-83. Why are there two sets of results for each sample number?

r. Page 2-89. What do these levels of Hg in the soil/sediment mean? Should we go on to the characterization step at this site? Should we sample fish tissue, or what?

s. Page 2-109. <u>Migration Potential</u>. Based on your groundwater elevation data, groundwater appears to flow to the northwest, not the east and southeast as stated. Can you explain this?

t. Page 2-122. <u>Data Evaluation</u>. Why was the analytical method proposed for chloropicrin unsuccessful? Is there another method we can use or a similar parameter we can test for?

u. Page A-1.

- (1) Include common names for trichlorofluoromethane and dichlorodifluoromethane, which are Freon 11 and 12, respectively.
- (2) The acronym for Marine Corps Air Station, New River should be MCAS(H).

v. Page A-2.

- (1) We suggest you use 12DCE in lieu of 12DCLEE.
- (2) SNAPLs are now called EPA Health Advisories. (

v. Page B-1. Why is there no relative elevation given for some wells? Again, water level should be measured to the nearest 0.01 foot. DOC. NO. : CLEJ -00 207 -1.01 - 03/27/85

5090 1143CFB

If you should have any questions, please call Cherryl Barnett at (804) 444-9566.

Marine Corps Base, Camp Lejeune is requested to review the enclosure and provide comments on the proposed round two effort by 19 April 1985.

Sincerely yours,

J. R. BAILEY, P.E. Head, Environmental Quality Branch Utilities, Energy and Environmental Division By direction of the Commander

Enclosure

Copy to: Commanding General Marine Corps Base Camp Lejeune, NC 28542 DOC. No.: CLEJ-00201-1.01-05/24/85 JL-3.01



UNITED STATES MARINE CORPS Marine Corps Base Camp Lejeune, North Carolina 28542-5001

IN REPLY REFER TO: 6280/9 FAC 24 MAY 1985

- From: Commanding General, Marine Corps Base, Camp Lejeune To: Commander, Altantic Division (Code 114), Naval Facilities Engineering Command, Norfolk, VA 23511-6287
- Subj: N.A.C.I.P. PROGRAM CONFIRMATION STUDY; SECOND ROUND SAMPLING
- Ref: (a) LANTDIV 1tr 5090, 1143CFB dtd 27 Mar 85 (b) CG, MCB 031897 Apr 85
- Encl: (1) Review Comments, N.A.C.I.P. Confirmation-Study (2) MCAS(H), NR Suspected N.A.C.I.P. Site Description

1. We have reviewed the LANTDIV comments at reference (a) for the interim report of first round sampling results. Additional concerns of Camp Lejeune are forwarded at enclosure (1). Reference (b) requested the subject study be expedited and the characterization phase be initiated for VOC contamination in water supply wells. Reference (a) adequately addresses these concerns except as noted in enclosure (1).

2. The proposed second round sampling recommends an investigation for potential VOC sources within a one-mile radius of each contaminated well. This monitoring strategy would mean assessing potential sources outside the Camp Lejeune property boundary which may be covered by the Memorandum of Understanding between DOD and EPA, dtd 12 Aug 1983. We suggest that coordination betweent HQMC, LANTDIV, and the North Carolina environmental agencies and Camp Lejeune, be completed in the characterization process to assess these sources.

3. An additional site of potential contamination has been located at MCAS(H), New River. This site needs to be evaluated for inclusion in the N.A.C.I.P. Program. A site description is provided at enlosure (2).

4. Your continued assistance in dealing with the complex problems being addressed by the N.A.C.I.P. Program is appreciated. For additional information on this matter, contact Mr. Bob Alexander, Marine Corps Base Environmental Engineer, AV 484-3034.

By direction

Copy to: CMC (LFL) CO, MCAS(H),NR (S-4) CO, NAVHOSP (PMU) REVIEW COMMENTS N.A.C.I.P. CONFIRMATION STUDY INTERIM REPORT AND SECOND ROUND SAMPLING MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA

Interim Report from First Round of Verification Sampling

1. For discussion of applicable water quality criteria for drinking water, we suggest the EPA recommended maximum contaminant levels be discussed as presented in the June 12, 1984 Federal Register.

2. North Carolina Classifications and Water Quality Standards Applicable to Groundwaters, North Carolina Admin Code Sub-Chapter 2L, effective 1 September 1984, should also be referenced; <u>a copy is attached</u>.

3. Page 2-39, Well 603 has not been detected to contain TCE and has not been closed. Reference (b) incorrectly listed Well 603 as having been closed; wells which have been closed to date are 601, 602, 608, 634, 637, 651, 652, 653, TT-26, and TT-New Well. We concur with your recommendation for Well 603 to be resampled in the second round to include the installation of a shallow groundwater well.

PROPOSES SECOND ROUND OF SAMPLING

1. In light of the anticipated start date of July/August for second round sampling by the A/E, your recommendations on interim monitoring of water supplies are needed as requested in reference (b). Camp Lejeune laboratory facilities are anticipated to be operational on/about 1 July for limited assistance in these analyses.

2. In order to coordinate samplings of water supply wells and to provide necessary support to the A/E, request a coordination meeting between LANTDIV, the A/E, MCAS(H), New River, and Camp Lejeune be established at least two - three weeks prior to sampling date, ff possible. Coordination with North Carolina Divisions of Environmental Management and Health Services must also be accomplished at that time.

3. Page 3 of Memorandum enclosed to reference (a), sub-para "u" Well No. 603 should be changed to read 608; on page 4, note that VOC's have not been detected in Well 603.

4. Request the additional site at MCAS(H), New River be evaluated as described herein.

5. Page 4 - Add Well 650 to this list of active wells involved in this study.

Enclosure (1)

NORTH CAROLINA ADMINISTRATIVE CODE TITLE 15 DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT ENVIRONMENTAL MANAGEMENT DIVISION SUBCHAPTER 2L CLASSIFICATIONS AND WATER QUALITY STANDARDS

APPLICABLE TO THE GROUNDWATERS

0F

NORTH CAROLINA SECTION .0100, .0200 AND .0300



EFFECTIVE DATE - SEPTEMBER 1, 1984 ENVIRONMENTAL MANAGEMENT COMMISSION RALEIGH, NORTH CAROLINA

## NRSCD - ENVIRONMENTAL MANAGEMENT

### T15: 02L .0100

# SUBCHAPTER 21 - GROUNDWATER CLASSIFICATION AND STANDARDS

#### SECTION .0100 - GENERAL CONSIDERATIONS

UL . MY ...

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1.12

. 2101 AUTHORIZATION

(a) N.C. General Statute 143-214.1 directs that the Commission 1.19 develop and adopt after proper study a series of classifications 1.20 and standards which will be appropriate for the purpose of 1.21 classifying each of the waters of the state in such a way as to 1.22 promote the policy and purposes of the act. Fursuant to this 1.23 statute, the Regulations of this Subchapter establish a series of classifications and water quality standards applicable to the underground waters of the state. 1.25

(b) These Regulations and the standards they establish apply 1.27 to all classified underground waters. Many common activities take place in or near shallow subsurface waters with no resulting 1.29 violation of GA groundwater quality standards and it is the 1.30 intention of these Regulations that those activities continue 1.31 unimpeded except where specific problems are identified on a case by case basis. These activities include: 1.32

- the agricultural operations of applying fertilizer, 1.35 (1)herbicides, or pesticides to croplands or pastures, and the raising of livestock: 1.36
- (2) silvicultural fertilizer, herbicide or pesticide 1.38 application; home cr commercial fertilizer, pesticide, or herbicide application; 1.39
- structural pest control activities when conducted according to label directions; and (3) 1.42
- (4) subsurface or surface municipal, industrial, and 1.44 domestic waste disposal activities or other activities which may affect underground waters when these systems 1.45 are installed and operated or conducted according to 1.46 regulations established by the Departments of Human 1.47 Resources, Agriculture, or Natural Fesources and 1.48 Community Development.

As used herein, the phrase "specific problems" shall mean 1.50 (C) a set of <u>facts</u> or circumstances which show with a reasonable 1.51 certainty that one or more of the following exists or will exist 1.52 in the foreseeable future:

- (1) An existing or probable violation of GA groundwater 1.54 standards: 1.55
- (2) The existence or probability of a violation of any 1.56 other environmental standard or regulation: 1.57 2.2
- A threat to human life, health, or safety; (3)

NORTH CAROLINA ADMINISTRATIVE CODE 09/18/84

DOC. NO .: CLEJ - cuaui - 1. 4. usparjos

## NRGCD - ENVIRONMENTAL MANAGEMENT

### T15: 02L .0100

means the physical, ticlogical and 2.51 quality Natural (3) chemical quality which occurs naturally and which has not 2.52 2.53 been changed by man's activities. per million (ppm) and parts per billion (ppt) shall 2.56 (9) Parts be construed to be equivalent to milligrams per liter and 2.57 micrograms per liter, respectively. of discharge or outlet is the point of initial 3.2 (10) Point contact of waste with the existing soil or rock materials. 3.3 3.4 Potable waters are those waters suitable for drinking, (11) 3.5 culinary and food processing purposes. groundwaters are those groundwaters having a 3.6 Saline (12)3.7 chloride concentration of more than 250 mg/l. The saturated zone is that part of the water-bearing 3.8 (13)consolidated and unconsclidated formations in which all 3.9 the voids are filled with water under pressure greater 3.10 It does not include the capillary than atpospheric. fringe. Subsurface means the area beneath the land surface and may 3.12 (14)or may not be part of the saturated zone. Subsurface waters are those waters cocurring in the 3.13 (15)and infiltration 3.14 subsurface and include groundwaters waters. 3.15 Toxic substances shall mean those substances which if (16)3.16 ingested or assimilated into any crganism either directly 3.17 indirectly will cause death, disease, behavioral OL abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunctions in such organisms of 3.19 their offspring). The unsaturated zone is the portion of the consolidated 3.19 (17)and unconsolidated formations between land surface and the 3.20 3.21 water table. It includes the capillary fringe. 3.22 table is the surface of the saturated zone in the (19) Water unconfined water-bearing formation or material at which 3.23 3.24 the pressure is atmospheric. Thermal waste for purposes of groundwater quality means 3.27 (19) discharges having a temperature which is ir excess of 30 degrees fahrenbeit above or below the naturally occurring 3.28 temperature of the receiving groundwater as determined by 3.20 the director. Underground waters means all waters in the subsurface 3.31 (20)including infiltration and groundwaters. mean any individual, proprietorship, 3.33 shall (21) "Person" 3.34 partnership, joint venture, corporation, or any other 3.35 employee, designee, agent, OF any 10 entity, representative in any official capacity garowered to act 3.36 in behalf of that entity with knowledge of that entity, 3.37 either express or implied. NOFTH CAROLINA ADMINISTRATIVE CODE 09/18/84 2L-3

#### 115: 02L .0100

- (2) Where a statutory variance has been granted for the 4.27 underground waters as provided is Paragrph (d) of this Rule.
- 4.28 (3) Where underground waters contain naturally occurring concentrations in excess of the standards established 4.29 under Rule .0202(b) of this Subchapter whether or not 4.30 restoration or treatment is feasible, but provided that 4.31 for naturally occurring excess restoration concentrations may not be required of any person as a 4.32 result of this designation. 4.33
- (4) Where underground waters have been designated RS under 4.34 Subparagraph (1) of this Paragraph, and where the 4.35 source of contamination and the responsible person are 4.36 identified, a compliance schedule shall be issued 4.37 within 12 months of the underground waters being 4.38 designated.

(d) Any person subject to the provisions of General Statute 4.40 143-215.1 may apply to the EMC for a variance from the groundwater classifications and quality standards established 4.41 pursuant to these Regulations and North Carolina General Statute 4.42 143-214.1. A variance may be granted by the compission fursuant 4.43 to the requirements of North Carolina General Statute 143-4.44 215.3(e). The burden of proof in any public hearing or other proceeding pursuant to North Carolina General Statute 143-4.45 215.3 (e) shall be upon the applicant for a variance. No variance 4.46 shall be granted to allow the discharge of waste to the 4.47 subsurface or groundwaters of the state by means of wells or for 4.48 ar extension or expansion of the perimeter of compliance as established pursuant to the regulations of this Subchapter. 4.49

Any person conducting an activity causing or significantly (e) 4.51 contributing to the violation of underground water quality standards may apply to the director for a compliance schedule. 4.52 In such cases the director may authorize a compliance schedule 4.53 requiring the restoration of the quality of the underground 4.54 waters to the level of the standard, or to a level as close to 4.55 applicable standards hereunder as is econcrically and the 4.56 technologically feasible. In determination the structure, 4.57 duration, level of compliance, and feasibility of a compliance schedule, the director shall consider the extent of 5.1 any violations, the extent of any threat to human health or safety, 5.2 the extent of damage to the environment, the total cost of the 5.3 cleanup involved, the marginal cost of the cleanup required, 5.4 further technological advances which might permit such cleanup, 5.5 and the public and economic benefit of requiring such cleanup. 5.6 Compliance schedules may be revised or revoked by the director if 5.7 the terms of the compliance schedules are violated by the person operating the reunder, or if additional information on the extent 5.8

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#### NRSCD - ENVIRONMENTAL MANAGEMENT

#### T15: 02L .0100

commission determines to be necessary when any of 5.54 the following conditions occur: (i) a violation of the standard in adjoining GA 5.57

- (1) a violation of the standard in adjoining GA 5.57 waters occurs or can be reasonably predicted to occur considering hydro-geologic 6.1 conditions, modeling, or other available evidence;
- (ii) an imminent hazard or threat to the public 6.3 health or safety exists or can be predicted. 6.4
- (3) For existing facilities, the compliance perimeter shall 6.6 be established at a distance 500 feet from the point of discharge, or the property boundary, whichever is less. 6.7
- (4) For new facilities, the compliance perimeter shall be 6.9 established at the lesser of 250 feet from the point of discharge, or 50 feet within the property boundary. 6.10
- (5) Nothing in this Rule shall be construed to prevent the 6.12 commission from initiating enforcement action even when pollution occurs solely within the compliance perimeter 6.13 based upon permit violations, imminent threat to the 6.14 public health, safety, or the environment, or 6.15 violations of any special order issued by the commission.

(i) Exemptions. The following activities shall not be subject 6.17 to the regulations of this Subchapter: 6.18

- (1) Upcoming resulting from water use activities conducted 6.21 under and in compliance with a water use permit.
- (2) The use of drilling fluids as approved under the well 6.23 construction regulations.

History 1	Note:	Statutory Authority G.S. 143-214: 143-214.1:	6.26
		143-214.2; 143-215.3 (e);	6.27
		Eff. June 10, 1979;	6.28
		Amended Eff. September 1, 1984;	6.29
		December 30, 1983.	6.30

.0104 ANALYTICAL PROCEDURES

Tests or analytical procedures to determine compliance or non- 6.35 compliance with the underground water quality standards established in <u>Pule</u> .0202 of this Subchapter will be in 6.36 accordance with:

- (1) the methods described in Standard Methods for the 6.39 Examination of Water and Wastewater, fifteenth edition, 1980; and the 1981 supplement theretc; 6.40
- (2) testing, monitoring, on analytical procedures required as 6.42 a condition of a permit issued by the Division of Environmental Management under N.C.G.S. 143-214.1; or 6.43

NORTH CAROLINA ADMINISTRATIVE CODE 09/18/84

21-7

6.32

#### T15: 02L .0200

7.17

#### SECTION .0200 - CLASSIFICATIONS AND WATER OUALITY 7.14 STANDARDS 7.15

UNDERGECOND WATER CLASSIFICATIONS - 02 01

classifications which may be assigned to the underground 7.20 The waters will be those specified in the following series of classifications: 7.22

- (1) Class GA waters; usage and occurrence:
  - Best Usage of Waters. Existing or potential source of 7.24 (1) water supply for drinking, culinary use, and food 7.25 processing without treatment, except where necessary to 7.26 correct naturally occurring conditions.
  - Conditions Related to Best Usage. This class is (b) 7.27 intended for those groundwaters in which chloride concentrations are equal to or less than 250 mg/l, 7.28 considered safe for drinking, culinary use, and food 7.29 processing without treatment, but which may require disinfection or other treatment when necessary to 7.30 reduce naturally occurring concentrations in order not 7.31 to exceed the maximum concentrations specified in Rule .0202 of this Section. 7.32
  - Occurrence. At depths greater than 20 feet below land 7.33 (c) surface and in the saturated zone above a depth of 20 7.34 feet where these waters are a principal scurce of 7.35 potable water supply. 7.36
- Class GSA waters; usage and occurrence: (2)
  - (2) Best Usage. Existing or potential source of water 7.39 supply for potable mineral water, culinary use, food 7.39 conversion to fresh waters by processing, and 7.40 treatment.
  - Conditions Related to Best Usage. 7.41 (b) This class is intended for those groundwaters in which naturally 7.42 occurring chloride concentrations are greater than 250 mg/1, and which are considered safe for potable mineral 7.43 culinary use, and fccd processing without water, 7.44 treatment but may require disinfection or other treatment when necessary to reduce naturally occurring 7.45 concentrations in order not to exceed the maximum 7.46 concentrations specified in Rule .0202 of this Section.
  - Occurrence. At depths greater than 20 feet below land 7.47 (0) surface and in the saturated zone above a depth of 20 7.48 feet where these waters are a principal source of 7.40 potable mineral water supply.
- (3) Class GB waters; usage and occurrence:

7.50

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21-9

#### T15: 02L .0200

8.46

classification would technically or economically not be feasible, or not in the best interest of the public, or 8.36 for which maximum feasible restoration has been completed.

(c) Occurrence. As determined by the commission on a case 8.38 by case basis.

History Note: Statutory Authority G.S. 143-214.1; 8.41 Eff. June 10, 1979. 8.42 Amended Eff. September 1, 1984; 8.43 December 30, 1983. 8.44

#### .0202 UNDERGROUND WATER QUALITY STANDARDS

8.49 (a) The water quality standards for the underground waters of the state are those specified in this Rule. These standards are the maximum levels of contamination that are permitted under these Regulations. It is the policy of the EMC, however, to 8.50 8.51 to protect and maintain the existing quality of the groundwaters 8.52 where that quality is better than the assigned standards. Therefore, the increase in any constituent for which a standard 8.53 is specified to a concentration of 50 percent of the standard may 8.54 in review or modification of an existing permit, 8.55 result requirements for additional monitoring, or issuance of a special 8.56 order where a violation of standards may be predicted.

(b) Class GA Waters. The maximum allowable contaminant levels 9.1 for toxic and deleterious substances are those concentrations specified in Subparagraphs (1) - (31) of this Paragraph. For 9.2 substances not specified, the standard is the naturally occurring 9.3 concentration as determined by the director. Synthetic, manmade, or other substances that do not naturally occur are 9.5 prohibited. Where not otherwise indicated, the standard refers to the total concentration of any constituent. 9.6

(1)	where naturally occurring concentrations exceed the established standard, the standard will be the	9.9
	naturally occurring concentration as determined by the director:	9.10
(2)	total coliform: 1 per 100 milliliters;	9.12
(3)	endrin: .0002 mg/1;	9.13
(4)	lindane: .004 mg/1;	9.14
(5)	methoxychlor: 0.1 gg/1;	9.15
(6)	toxaphene: .005 mg/1;	9.16
(7)	2,4,D: 0.1 mg/1;	9.17
(8)	2,4,5,-TP Silver .01 mg/1;	9.18
(9)	total trihalomethanes: 0.10 mg/1;	9.19
(10)	arsenic: .05 mg/1;	9.20
(11)	barium: 1.0 mg/1;	9.21
(12)	cadmium: .010 mg/1;	9.22

NORTH CAROLINA ADMINISTRATIVE CODE 09/18/84

# NREED - ENVIRONMENTAL MANAGEBERT

# T15: 02L .0200

(15)	mercury: .002 mg/1;	10.19
(16)	nitrate: (as N) 10.0 mg/1:	10.20
(17)	nitrite: (as N) 1.0 mg/1;	10.21
(18)	selenium: .01 mg/1:	10.22
(19)	silver: .05 mg/1;	10.22
(20)	flucride: 1.5 mg/1;	10.23
(21)	combined radium - 226 and radium - 228: 5 pCi/1;	10.24
(22)	gross alpha particle activity: 15 pCi/1;	
(23)	gross beta particle activity: 50 pCi/1;	10.29
(24)	iron: 0.30 mg/1;	10.30
(25)	manganese: .05 mg/1;	10.31
(26)	pH: No increase from naturally occurring pH values in	10.32
	acidity below or increase in alkalinity above 7;	10.35
(27)	chloride: allowable increase not to exceed 100 percent	
12.7	of the naturally occurring chloride concentration:	10.38
(28)	color less than 15 units;	
(29)	nhendly not granter than 1 0 weith	10.40
	phenol: nct greater than 1.0 ug/1;	10.41
(31)	total dissolved solids: 1000 mg/1; and	10.42
(2.)	thermal: not greater than 30 degrees Pahrenheit	10.45
	variance from the naturally occuring level as	
(d) Cla	determined by the director. Iss GB Waters. No increase above the naturally	10.46
uplace it	concentration of any toxic or deleterious substance	10.49
director t	can be shown, upon request, to the satisfaction of the that the increase:	10.50
(1)	will not cause or contribute to the contravention of	10.53
	water quality standards in adjoining waters of a	
	different class;	
(2)	will not accumulate in a manner such that unusual or	10.55
	different hydrological conditions may cause a threat to	
	public health or the environment: and	10.56
(3)	will not cause an existing or potential water supply to	11.1
	become unsafe of unsuitable for its current use.	
Le) Cla	ss GSB Waters. No increase above the naturally	11.3
occurring	concentration of any toxic or deleterious substance	11 //
unless 1t	can be shown, upon request, to the satisfaction of the	11.5
diffector f	nat the increase:	성용 가장 소망
(1)	will not cause or contribute to the contravention of	11.8
	water quality standards in adjoining waters of a	
	different class;	
(2)	will not accumulate in a manner such that unusual or	11.10
	different hydrological conditions may cause a threat to	
and the same in the second second	puplic nealth of the environment: and	11.11
(3)	will not cause an existing or potential water supply to	11.13
And the second s	Decome unsate of unsuitable for its current use	
(I) Clas	ss GC Waters. All chemical, radioactive, biological	11.15
tasta produ	scing, odor producing, thermal, and other toxic or	11.16
	the state of the state toxic of	11.10
	en en la ser en la se	

NORTH CAROLINA ADMINISTRATIVE CODE 09/18/84

NRSCD - ENVIRONMENTAL MANAGEMENT

T15: 02L .0300

11.51

	· · · · · · · · · · · · · · · · · · ·
SECTION .0300 - ASSIGNMENT OF UNDERGROUND WATER	11.31
CLASSIFIC ATIONS	11.32
- 2019년 1월	
.0301 CLASSIFICATIONS: GENERAL	11.34
(a) Schedule of Classifications. The classifications are	11.36
pased on the quality, occurrence and existing or contemplated	11.37
est usage of the underground waters as established in Section	11.38
.0200 of this Subchapter and are assigned statewide except where	11.39
supplemented or supplanted by specific classification assignments	11.40
y major river basins.	
(b) Classifications and Water Ouality Standards. The	11.41
lassifications and standards assigned to the underground waters	11.42
re denoted by the letters GA, GSA, GB, GSE, or GC. These	11.43
classifications refer to the classifications and standards	11.44
established by 15 NCAC 2L, "Classifications and Standards	11.45
applicable to the "inderground Waters of North Carolina."	
History Note: Statutory Authority 3.5. 143-214.1;	11.48
Eff. December 30, 1983.	11.49
LIL. DECEMPER JU, 1903.	114 42

.0302 STATEWIDE

(a) The classifications assigned to the underground waters 11.54 located within the boundaries or under the extraterritorial jurisdiction of the State of North Carolina are: 11.55

- (1) Class GA Waters. These underground waters in the state 12.1 naturally containing less than 250 mg/1 chloride and occurring at depths greater than 20 feet below land 12.2 surface are classified GA.
- (2) Class GB Waters. Those underground waters in the state 12.4 naturally containing less than 250 mg/1 chloride concentration and occurring between land surface and a 12.5 depth of 20 feet are classified GE.
- (3) Class GSA Waters. Those underground waters in the 12.6 state naturally cortaining greater than 250 mg/1 12.7 chloride concentration and occurring at depths greater 12.8 than 20 feet below land surface are classified GSA. 12.9
- (4) Class GSB Waters. Those underground waters in the 12.11 state naturally containing greater than 250 mg/1 12.12 chloride concentration and cccurring between land 12.13 surface and a depth of 20 feet are classified GSB.
- (5) Class GC Waters. These underground waters assigned the 12.15 classification GC in Rules .0303 - .0318 of this Section.

History Note: Statutory Authority 3.5. 143-214.1; 12.18 Eff. December 30, 1983. 12.19

NORTH CAROLINA ADMINISTRATIVE CODE 09/18/84

DOC. NO. : CLES - 00201 - 1.01 - 05/24/8.

NRSCO - ENVIRONMENTAL MANAGEMENT	T15: 02L .0300
Eff. December 30, 1983.	13.25
.0310 SAVANNAH RIVER BASIN No classification assignments other Rule .0302 are made for the river basin.	than those specified in 13.27
History Note: Statutory Authority G.S. Eff. December 30, 1983.	143-214.1; 13.33 13.34
.0311 LUMBER FIVER BASIN No classification assignments other Pule .0302 are made for the river basin.	13.36 than those specified in 13.39
History Note: Statutory Authority G.S. Eff. December 30, 1983.	143-214.1; 13.42 13.43
.0312 NEUSE RIVER BASIN No classification assignments other Rule .0302 are made for the river basin.	13.45 than these specified in 13.48
History Note: Statutory Authority G.S. Eff. December 30, 1983.	143-214.1; 13.51 13.52
.0313 NEW-WATAUGA RIVER BASIN No classification assignments other Pule .0302 are made for the river basin.	13.54 than those specified in 13.57
History Note: Statutory Authority G.S. Eff. December 30, 1983.	143-214.1; 14.3 14.4
.0314 PASOUOTANK FIVER BASIN No classification assignments other Fule .0302 are made for the river basin.	14.6 than those <u>specified</u> in 14.9
History Note: Statutory Authority G.S. Eff. December 30, 1983.	143-214.1; 14.12 14.13
.0315 RCANCKE RIVER EASIN No classification assignments other Rule .0302 are made for the river basin.	14.15 than those <u>specified</u> in 14.19
History Note: Statutory Authority G.S. Eff. December 30, 1983.	143-214.1; 14.21 14.22
.0316 TAR PAMLICO RIVER BASIN No classification assignments other Bule .0302 are made for the river basin.	14.24 than these specified in 14.27

NORTH CAPOLINA ADMINISTRATIVE CODE 09/18/84 2L-17

DOC. NO. : CLEJ - 00 201 - 1.01 - 05/24/85

POTENTIAL N.A.C.I.P. SITE AT MCAS(H), NEW RIVER

#### SITE DESCRIPTION

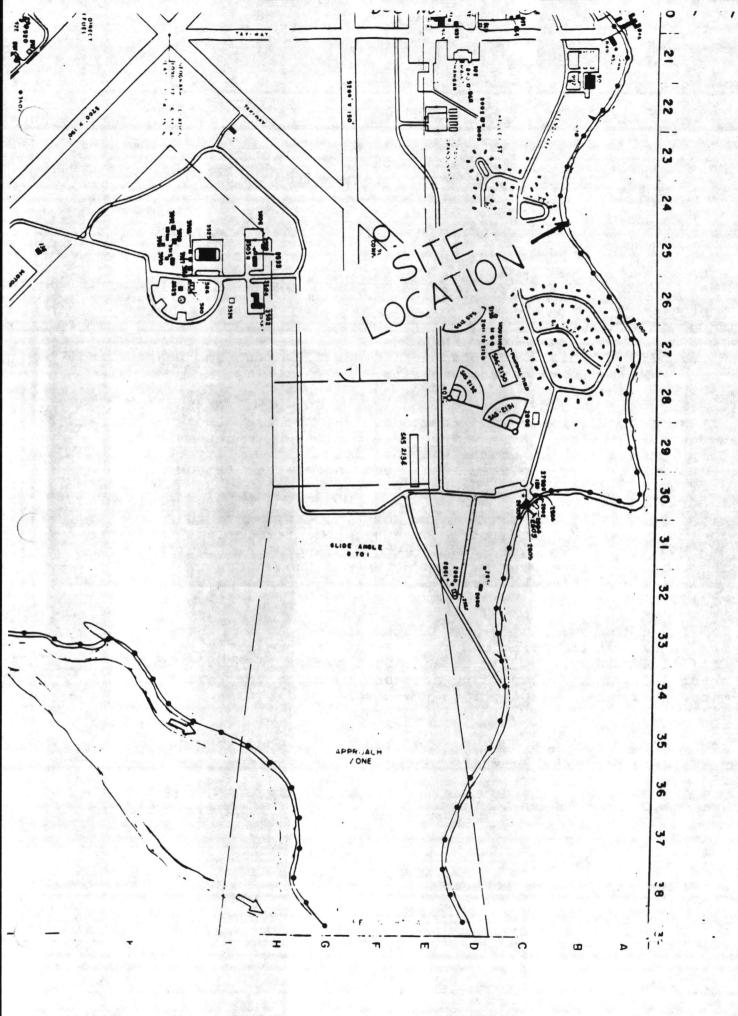
Location: See Attached map.

- Size: Unknown, but estimated at 50 meters in length and 50 meters in width adjacent to the shoreline.
- Previously Reported: No
- Activity: No known disposal of hazardous substance has occurred in this area due to its location within the MCAS(H), NR officers' housing area. Prior to the development of the area for housing in 1958, the area had been used for Marine Corps field training.
- Materials Involved: Calcium hypochlorite in small glass vials and another compound (one glass vial, less than four ounces) of a brown oily liquid, for which laboratory analyses has not been received at the date of this writing. In addition a small medicine bottle was located which contained a few small tablets that have not been identified.
- Quantity: An estimated 100 one to two ounce glass vials of a white powdery substance identified as calcium hypochlorite were found at the shoreline of the New River after being exposed by children digging along the eroding shoreline.

When: Late 1940s to late 1950s.

Comments: The area was immediately secured by placing fill material along the shoreline area where the vitals were located to preclude safety hazards or additional exposure to children of the housing area.

Enclosure (2)



DOC. NO. : CLEJ - 00205-1.01-06/05/85

UNITED STATES MARINE CORPS Marine Corps Base Camp Lejeune, North Carolina 28542-5001

> 11300 FAC

MEMORANDUM FOR THE COMMANDING GENERAL CHIEF OF STAFF

Subj: NATER SOURCE

Encl: (1) Graphic Description of the Aquifer for Camp Lejeune and the City of Jacksonville

1. Pursuant to your telephone call on 5 June, Mr. Shriber, N.C. Division of Environmental Management, and the Camp Lejeune Natural Resources Director, Mr. Wooten, were contacted to determine if Camp Lejeune's water source had any affect on the City of Jacksonville. As depicted in the enclosure, Camp Lejeune is drawing its water from 200' to 250' and the City of Jacksonville is drawing its water from approximately 500'. The present problem with the City of Jacksonville is that for many years they were the only user of that aquifer of 500'; therefore, plenty of water was available. Recently, Onslow County tapped that aquifer for its county residents as well as Jones and Duplin Counties and other towns within that area. All of these users have overtaxed that aquifer.

2. It is the opinion of Mr. Shriber and Mr. Wooten that we are in no way affecting the aquifer that is presently used by the City of Jacksonville. As noted on the enclosure, there are several layers of clay which act as a membrane to prevent the groundwater from seeping into the middle sand aquifer.

3. The reason the City of Jacksonville, Onslow County and other towns do not use the 200' to 250' aquifer is that it requires water treatment which is very expensive to produce.

Very respectfully,

R. A. TIEBOUT AC/S, Facilities

Drafter: Col Tiebout Tvpist: H Poster

Doc. No .: CLEJ - 00204-1.01-08/19/85

6280/9 FAC

AUG 1 9 1985

From: Commanding General, Marine Corps Base, Camp Lejeune To: Defense Utilization and Marketing Office

Subj: REQUEST TO BURY CONCERTINA WIRE AT LOT 203

Ref: (a) DPDO-ZWM 1tr dtd 22Feb85

1. Due to the ongoing studies of underground contamination at Lot 203, the reference request must be deferred until the N.A.C.I.P. study is complete. Because the data reported for many of the soil samples taken at Lot 203 indicated detectable levels of DDT and related compounds, excavations for disposal of the concertina wire should not be attempted until the N.A.C.I.P. study identifies the boundaries of the contaminated area. The study has been scheduled for completion in December, 1986.

2. An interim solution to disposal of the wire at the base land fill site may be available. Request you contact the Base Maintenance Officer, ext. 2511, for further assistance.

> B. W. ELSTON By direction

Copy to: EMO NREAD DOC.NO.: CLEJ - 00209-1.01-11/18/85



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV 345 COURTLAND STREET ATLANTA, GEORGIA 30365

NOV 1 8 1985

4PM-EA/WM

Commander Atlantic Division Naval Facilities Engineering Command Norfolk, Virginia 23511-6287

Attention: J.R. Bailey, P.E. Environmental Quality Branch

Re: 6280/1143CFB

Dear Sir:

We have received your letter dated October 31, 1985, pertaining to Navy Assessment and Control of Installation Pollutants (NACIP) Phase I reports pertaining to Marine Corps Air Station, Cherry Point (NEESA 13-009) and Marine Corps Base, Camp Lejeune (NEESA 13-011), which you transmitted in May and August 1983, respectively.

Personnel of the U.S. Environmental Protection Agency (USEPA) have recently (October 31, to November 1, 1985) had the opportunity to visit these two installations for the purpose of familiarization with the proposed NACIP sites, and the following comments and observations are offered for your consideration in pursuing the NACIP Phase II Confirmation Studies. We hope that the delay in providing this input will not preclude its consideration.

1. General Comments Applicable to Both Studies

a. Phase I reports generally propose analytical protocol which are heavily dependent on use of indicator parameters such as Total Valuable Organics, Total Organic Carbon and Total Organic Halides, and other physico-chemical measures in addition to specific chemical species suspected to be present from the available information on past operations. While the USEPA recognizes that such analyses are useful for preliminary screening, or detection of pollutant plumes, or for siting sampling locations, principally due to economic considerations, we feel strongly that they should not be the basis for conclusive decisions that no releases of pollutant exist at a given location. EPA recommends that at some point in the NACIP Phase II Study, an optimally collected sample(s) of groundwater, soil and/or surface water from each site under investigation be analyzed for all 123 priority pollutants before a final decision is made in the presence or absence of any environmental release from that site.

- b. In designing any confirmatory survey to identify and/or characterize environmental releases from potential uncontrolled hazardous materials disposal sites it is necessary to identify and sample representative background levels of the 123 priority pollutants at representative locations for each environmental media, soil, groundwater and surface water.
- c. The NACIP Phase II studies should contain, or make reference to, sufficient geologic and hydrological data to support conclusions regarding the hydrogeology and drainage of the general area, and to provide a valid assessment of the probable direction of horizontal migration or potential for vertical migration of releases from the sites under investigation. Likewise, where vertical migration in groundwater is contemplated, the design of sampling schemes should take this into consideration.
- d. Where studies indicate significant potential for release, or detect migration of pollutants, it is desirable to collect and include data or potential receptors or populations at risk of exposure in the confirmatory report.

# 2. Comments Which Pertain Specifically to MCAS Cherry Point

- a. The proposals contained in the NACIP Phase I Study Report (NEESA 13-009) are acceptable, subject to the preceding general comments, however it would be highly desirable to consider the effects of pending RCRA regulation in evaluating future work at Site 10, the Old Sanitary Landfill.
- b. It may prove impractical to attempt to separate the environmental effects of the sludge pits at Site 10 from the effects of other disposals throughout this landfill. Consequently, if the total area of the landfill will be regulated under a RCRA permit or postclosure order, it may be desirable to defer remedial action as the sludge pits alone until the required action for the surrounding area is defined.

-3-

### 3. Comments Pertaining Specifically to MCS Camp Lejeune

- a. The proposals contained in the NACIP Phase I Study Report (NEESA 13-011) are acceptable, subject to the preceding general comments.
- b. Based on information and preliminary data presented by MCS Camp Lejeune staff during a November 1, 1985, meeting, USEPA believes that there is sufficient data

indicating potential extensive contamination of groundwater in several areas of Camp Lejeune to warrent immediate consideration of this site for inclusion on the National Priority List (NPL). Because of the potential risk to the population dependent on groundwater as a potable water supply at Camp Lejeune, USEPA recommends that further investigation at Camp Lejeune commence as expeditiously as practical; we wish to emphasize that inclusion on the NPL, if supported by available data, should enhance the priority for funding assigned to this facility.

If you have any questions, please do not hesitate to contact me at (404) 881-3776 or FTS 257-3776.

Sincerely yours,

1.20

Arthur G. Linton, P.E. Regional Federal Facilities Coordinator Environmental Assessment Branch Office of Policy and Management

cc: Commander, MCAS Cherry Point Commander, MCS Camp Lejeune Mr. Carl Zillig, Chief of Naval Operations LTC Warren Hull, OFA

# UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

# AUG 1 4 1986

TO

NACIP Confirmation Study, Scope of Work for Round Two Sampling and Characterization/Feasibility, Marine Corps Base, Camp Le Jeune North Carolina

Geologist, Remedial Review Team, ERRB

Arthur G. Linton, Federal Facilities Coordinator

We have completed our review of the Scope of Work (SOW), and the activities scheduled for this effort appear to address all areas of concern. Specific comments are provided below.

- We understand that PVC materials are being used in the construction of all monitor wells. A brief discussion of the rationale for using PVC (versus other materials) should be included in the report summarizing this round of sampling.
- 2) Please refer to item 1 (v) in the SOW. While composite sampling of water supply wells is cost effective, it provides little specific information about the groundwater contamination problem. We recommend that all wells in the area around the contaminanted Hadnot Point wells be sampled individually. This will make it possible to pinpoint wells that are contributing contaminants to the water supply system, and such information could assist in tracking the movement of contaminants through the shallow aquifer.
- 3) It is not clear if there will be two two-week soil gas investigation efforts carried out or if one soil gas investigation is intended to have a dual-fold purpose.

We appreciate being given the opportunity to provide input to this Camp Le Jeune Scope of Work.

Andrew J. Puff

2 Call

ENVIRONMENTAL ACCES AUG 1 8 1951 EPA-REGION IV ATLANTA, GA

Doc. No: CLEJ-00210 1-01-8/14/86

A Fee 1328-6 (Rev. 3-76)

OPNAV 5216/144A (Rev. 8-81) DOC. NO : CLES- 00 651-1.01. - 15/05/86 S/N 0107-LF-052-2320

DEPARTMENT OF THE NAVY

Memorandu 5050

Ganra

FAC

D 5. OCT 1986 DATE:

Assistant Chief of Staff, Facilities, Marine Corps Base, FROM: Camp Lejeune Distribution TO:

#### ENVIRONMENTAL SURVEY SUBJ:

Encl: List of Buildings to be visited by Environmental Science (1)and Engineering personnel

Marine Corps Base, Camp Lejeune has contracted Environmental 1. Science and Engineering (ESE) to conduct an environmental study to determine what effect past disposal practices (POL, Solvents, etc.) may have on the Base water supply source.

2. Mr. Dave Brentlinger and Mr. Joe Wittington are the ESE representatives who will be compiling the data for the study. These two representatives of ESE will be visiting the buildings listed in the enclosure. The purpose of their visit to each building is to conduct a walk-through and ask questions concerning present and past disposal methods of POL, solvents, etc.

3. Request that each unit listed in the enclosure notify key personnel of the authorized visit by ESE personnel. Visits will Legin with 2d FSSG at 1300 on 8 October 1986 and proceed to other units in the sequence listed in the enclosure.

4. POC is Mr. Alexander, extension 3035/3034. -

Distribution: 2d FSSG 2d MarDiv CO, NH KC/S, Log AC/S, Trng&Ops AC/S, Manp RSU DRMO Spl Svcs Dir CCMS MCX SptBn, MCB HqBn, MCB

DOCNO: CLEJ -00651-1.01-10/6/8 1000 1500 - C6601 ESE P. O. Box ESE GAINESVILLE, FL 32602 msp-1 DATE 10-7-4:2 (904) 332-3318 CHECKED BY SCALE INCUSTIAL AIEA HATRS Bn, MCB (code = 25) 900 - SER #91 1005 - OFFICE Dely - P.6 W/KS 57-46 1046 1400 - FIRE 455 57 = 56 1403 - MCXch5+645557=66 DEFENSE Prop Disposal DEFICE (code #61) 906 - SEE #91 1117 - V45E 57-73, W45ErAMON 73-86 BASE MOTOL T (ode # 50) 906 - CENTIAL PAINT Stop 57-70, COM, VEL MAT 70-1407 - MT OFFICES 57-72, GEN MSE 72,96 140% - EQUID STY 5768, GEN WHSE 68-84 AC15, LogisTics (code # 60) 915 - SEE # 91 1307 SAME AS 1306 Cut LAN WASE 76-486 1002 - FILLING STATION 57-86 1315 Lumber 4, 157-65, Red ALLES-67, 57 11 0190 1004 - Pump STATION 5.7-72, P.PE 72-86 1316 WHSE-57-86 1014 - 5766 57-65+55 100 Or6 /074 65-70, GENLANS 414 - SCALE HOUSE 57-86 1101 - J.B.M 57-55, GEN U456 55-72, GEN, WHSE + DATA NEW 72-86 1116 - 4456 57-86 1200 - COMMISSALY 57-86 1201 - UASE 17-66 1212 - WHSE 57-86 1300 - Cold 5596 57-66 1301 - WHSE 57-66 1302 - Lumber STGE 57-65, ST (ou angloch 65-70, GEN W45E 70-76, RJ 50P3 EXEMO 76-86 1303 - LUMBER 5766 57-65, 57 (00 arg/ort 15-70, 600 WISE 70-76, 600 5701 5400 76-86 1305 - Lumber 5705 57 60 ORG/ 176 15-70, GEN WHSE 70-76, LEN STOR SHED 76-86 1306 -GEN STAL SHED 76-66

DOC NO: CLEU -00651 - 1.01 10/0/ 00 JOB AMI US 11/115 06/00 : ESE SHEET NO. P. O. Box ESE CALCULATED BY. GAINESVILLE, FL 32602 CHECKED BY\_ /A/A/ - DATE 12- 7- 9:-(904) 332-3318 SCALE INDUSTICAL AREA AC15 Training (code # 31) 919 - TONG Bldg 15-74, RANGE Kldg 74-86 934 - APPL INSTR Elly Zo-11 70 935 -943 - Gen STAShod 70-86 1404 - OFFICE Equit REPAIL ST -86 1409 - 5TG. DECON Blog 57-65, ST COU DIG POTA 65-68, GEN. WHSESS-74, Almn-1-86 1410 - FUIN Repair 57-67, PW MAINT 67,74, Admin 74 1419 - HAZ FLAM STOLASE 77-86 BASE MAINTENANCE (code # 30) 939 - PAU/GR EDP SUED 65-46 70-86 940 -920 -77-86 1013 - STA Bldg 57-65, ST CON ORG/1014 65-79, GEN NASE 70-86 1102 - Equip 579 57 45, 57 CON OR6 ( OTH 45-20, Pur MAINT 70 -86 1104 - " 5765,57 cou OR6/0TH (5-TO, TELE EX TO 73, PW STG. 73-86 1105 -11 57-65, PW MAINT 65-72, 6 SPT EQUIP 72-46 1114 -11 57-15, 57 COU ORC/0TH 65-70, PUMAINT 70-72, 6 SPT FAMP 72-46 1127 - HAZ FLAM STOL 79-86 1141 - MTS UTL PLT 76-46 1202 - CAMP MAT 57-65, PW MAINE 65-96 1203 - Equip STG 57-51, MT OPER 59-65, 57 rov alloloth 65-72, VEH HUD SHED 72-86 1204 - 11 57-65, 5T COU OR6 forth 65-64, GEN WYSEG &- TU, PUMAINT 19-46 1300 - 566 #60 1304 - Cumber STQ 57-65, 57 COU ORG/OTAC5-70, AS MAINT 70-46 1341 - MTS UTL PLT 77-86 SPECIAL SERVICES (code #14) 197 - LATANE 78-86 1106 - Hobby 540P 57-46 1107 - 11 57-86 1113 - EQUIP 576 57-65, PLU MAINT 65-66, HOBBY SHOT 66-86

PRODUCT 204-1 /NEBS/ Inc., Grown, Mann. 014

DOC NO. CLOU - UNO 6/ 800B-ESE SHEET NO ... P. O. Box ESE CALCULATED BY\_ GAINESVILLE, FL 32602 DATE 10-7-26 (904) 332-3318 CHECKED BY SCALE INDUSTRIAL AREA End Club MANAGEMENT Sys (code #71) 1006 - (AFE 57-86 1401 - BAKERY 57-72, GEN LASE 72-76 MARINE Corps Exchange (code # 81) 1001. - 500 #71 1010 - BAIRACKS -7-59, STEE 59-65, ST COU ORC/OTH 65-1015 - Cold STGE 59-65, CAFE (5-86 1207 - Service (Lob 57-65, KChq 65-86 1220 - REST 79-46 1402 - W45E 57-46 1413 - MC Xchy 57-46 Support Br, MCB (code #10) 1011 - WHSE 57- 86 1041 = DISP 69-86 TO42 - UPEH 74 -86 1044 - SENTM 82-86 1117 - WHSE 57-1209 - MESS 5765, SobSTAKE Bldg 65-66 1318 ACD/GENSANS DID67-46 1340-0164 77-46 Naval HospiTAL (code = 16) 1041-500 #10 1300- SEE #60

PRODUCT 204-1 [NETS] Inc. Graten. Mass. 01471.

NUC NU.LL 5 ESE P. O. Box ESE GAINESVILLE, FL 32602 (904) 332-3318 DATE \_\_\_\_\_ DATE \_\_\_\_\_ 7. 41. CALCULATED BY. CHECKED BY\_ SCALE INDUSTRIAL ALEA RESCIUE Support UNIT, MCB (code 40). 1111 - MC Xchq 57 65, 57 100 086/074 65-86 1403 - MC Xchy 57-67, Thrift Sh 67-86 2. MATINE PIVISION (code #90) 1115 - MCX Service STA 37-65, Admin 65-72, DATA PIDE 7 2-76, Printing Plans 26-54 1140 - Admin 76-84 1205 - MT REPAIR 57-466 1206 - 11 57-86 1208 - MC Xchq 57-65, Admin 65-86 1301 - 55560 1450 - AUTO ORGTL 34 81-86 1451 - MAZ FAR STHSE 81-86 ACIS, MAN POWER (code #13) 1403 - See #40

NOC M. CLO 11 11/15 7.6601 ESF SHEET NO P. O. Box ESE GAINESVILLE, FL 32602 CALCULATED BY Mai (904) 332-3318 DATE 10-7-466 CHECKED BY INDUSTRIAL ALEA 2 d Force-Service Support Group (Code #91) 900 - INSTR REPAIR 901 - OFDNANGE SH 57-67, VEH MNT 67-72, CABT ORGTL 72-74, Field MNT 74-66 902 - OPDNENCE WHSE 57.65, CONST EQ MNT +5m. Arms 65-84 903 - OIDNANG WHSE 57-65, GEN WHSE 65-80 904 - OIDNANCE WHSE 57-65, Gen UHSE 65-84 915 - Signal Supply WHSE-57-65, GEN WHSE-Elec MNT65-72, SAME + BAT. HQ 72-86 906 - QA W450 57-15, GEN U455 65-74, Disp/salse 74- TE GEN W450 79-81, 907 - ON WHSE 57-65, GEN W456 65-86 909 - STE Cilig 57-15, Prod FASIOTHER 65-57, MAT THANK ALTO 67-14, GEN WHYE MATO OKETL 74-26 910 - 145E 57-65, 5T TOU ORU Latter 65-67, CONST EQ 540PG7-54, WEIDING- 44-46 911 - Army Bldg 57-65, MAINT FACLORA 65-TOIN DOWN, REDILT 85 HAZ FLAN STHSE 913 - WHSE 57-65, CABT VEH MNT 65-76, Field MNT 76-86 914 - WHY 57-46 915 - W45E 57-86 916 - U455 57 -76, W455 + ARMORY 76-46 924 - LATVINE 60-46 926 - Admin. 65-67, Gen. W45E-67-86 927 - Admen 65-67, GEN WHSEG7-86 928 - AND VEH MUT 65-67, Admin 67-12, BAT. HQ 12-76, STGE/0/STOR ME 76-84 1012 - WHSE 57-86 1108 - 4455 57 - 84 1118 - WHSE 57- 86 1211 - WHSE 57 - 86 1308 - 5-51Age 57-65, Admin: 63-66, Admin + Gen 57966-86 1309 - 5TOIA9E 57-67,6EN, W45E 67-86 1310 - Equip. 579 57-65, AUTO Vet MNT 65-86 1311 - REPAIR 540P 57-65, ELEC MATT STELS 67, GEN W45E67-90 1312 - REPAIR SHOT 57-65, ELEC MUT 1-576 65-67, 600 WH3E 67-80 1317 - WHSE 57-96 1405 - REPAIR SHOP 57-65, COM VEH MNT 65-64, COM, VEH MNT F WHEE 1872, COM VEH MNT FRINT 72-1406 - MT REPAIR 57 65, ANTO VEH MAR 65-466

6280/9 FAC

Doc. No .: CLEJ- 00198-1.01-03/31/87

MAR 31 1997 Environmental Engineer

Assistant Chief of Staff, Facilities Via: Facilities Management Officer

> EPA REGION IV RECOMMENDS MCB BE ADDED TO NATIONAL PRIORITY LIST PER SUPERFUND ACT

Ref: (a) AC/S Fac ltr to JPAO 5280/9 dtd 17 Sep 86

1. Per phonecon with Mrs. Cheryl Barnett, NAVFACENGCOM (Code 114), EPA Region IV has made subject recommendation to Headquarters, EPA. We have no documentation on this decision following Region IV staff's visit in November.

2. The two biggest impacts if this happens:

a. We must prepare a Community Relations Plan - reference (a) has details.

b. EPA increases oversight of NACIP methods, report reviews, etc.

Both of these impacts will require more attention be given by MCB staff to the NACIP program.

3. Current NACIP milestones remain:

Hadnot Point Characterization Study Report - June 87 (extent of pollution of groundwater supply) Hadnot Point Feasibility Report - Fall 87 (remedial alternatives) Ohter NACIP Sites Verification - Summer 88

4. I have notified JPAO and SJA of EPA's recommendation and will provide follow-up data from CMC and EPA as needed.

Very respectfully,

R. B. ALEXANDER

Doc. No .: CLEJ-00196-1.01-04/03/87

# UNITED STATES MARINE CORPS 6280/9 Marine Corps Base Camp Lejeune, North Carolina 28542-5001

5216 FAC APR 0 5 1987

MEMORANDUM FOR THE COMMANDING GENERAL CHIEF OF STAFF

Subj: REAL PROPERTY LICENSE AGREEMENT WITH UNC-CHAPEL HILL

Encl: (1) Proposed Agreement

(2) SJA 1tr 5800 SJA41 dtd 12 Feb 87

(3) Authorization to be signed by Commanding General

1. We are pursuing this agreement to assist UNC-Chapel Hill in a groundwater research project at the Tarawa Terrace Exchange Service Staticn as shown at enclosure (1). U.S. Environmental Protection Agency has funded UNC-CH to conduct an in-depth multiyear gascline contaminant study.

2. In the process of reviewing the subject agreement, we have determined that your written authorization is needed to enter into this real property license. At enclosure (2), SJA indicates the authorization is needed because the subject agreement is not routine correspondence to which "By direction" authority applies.

3. As we receive many such license agreements, request authorization by the Commanding General, enclosure (3), to sign such agreements that are routine in nature rather than having to forward each to the Commanding General for signature.

Very respectfully,

T. J. DALZELL AC/S, Facilities

Writer: Mr. Alexander, EnvEngr, FAC, X3034 Typist: M. Ballentine, 31 Mar 87; revised by Col Dalzell 2 Apr 87 DOC. NO .: CLEY - 00196 -1.01 - 04/03/87



UNITED STATES MARINE CORPS MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA 28542-5001

IN REPLY REFER TO. 6280/12 FAC APR 0 8 1987

Dr. Cass T. Miller Assistant Professor Dept of Environmental Sciences and Engineering The University of North Carolina at Chapel Hill Rosenau Hall 201 H Chapel Hill, North Carolina 27514

Re: Tarawa Terrace Field Research Site

Dear Professor Miller:

We are forwarding the proposed real property license for the subject site. Request you sign the proposed license agreement and return it at your earliest convenience. We will provide a signed copy for your records. Please initial and date on the reverse side of the license agreement the portion of paragraph lof which is not applicable to this project and which has been deleted.

Mr. Bob Alexander, Marine Corps Base Environmental Engineer, will provide any assistance you may need in conducting this research.

Sincerely,

T. J. DALZELL Colonel, U.S. Marine Corps Assistant Chief of Staff, Facilities By direction of the Commanding General

Encl: (1) Real Property License

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SITE AS	SHOWN BY AT	FACHMENT	"A". (APPR	OXIMATELY 400 X 5	00 FEET)
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LICENSOR		Section		NTATIVE, DEPT. OF NAVY OFFI	
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	OF THE NAVY Vaine and address)	and the second second	Camp Lejeu	64. LOCAL REPRESENTAT	
Universi Chapel H	ty of North Hill, Rosenau Hill, NC 275	1 Hall 20	a at )1 H,		Womack r of Business and Finance North Carolina, Chapel Hill, NC
	<u>1111; NC. 22</u>	Charles Manual State		Y LICENSEE (Payable in advance) enter "None" under item 7a ".	
AMOUNT (Ea payment) None	b. FREQUE PAYMEN	NCY	c. FIRST DUE DATE	d. TO (Title and a	Idress of local representative of the Government)
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FOR	10.00	Contract in the second		IY .	DATE
POR	NAM	AE AND TIT	E(Typed)	SIGNATU	RE
EPARTMENT	T. J. DALZE AC/S, Facil	LL, Col, ities, E	USMC By direction		APR 0 8 1987
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This license between Marine Corps Base, Camp Lejeune, North Carclina and the University of North Carolina at Chapel Hill (hereinafter called UNC-CH), provides for use of facilities at the Marine Corps Base in connection with the drilling of 20 to 40 monitoring well clusters of two to five wells each ranging in depth from 20 to 100 feet and sampling of both newly constructed and existing groundwater monitoring wells at approximately monthly intervals.

- UNC-CH shall have the right to use the site as shown by exhibit "A", which is approximately 400 by 550 feet. Any use of utilities, water, electric power, signal lines, and sewer lines will be on a reimbursable basis (see paragraph 2).
- UNC-CH shall reimburse the Marine Corps Base for the actual cost incident to the provision and use of utilities and services in accordance with applicable statutes, regulations, and instructions if any utility is used.
- 3. Upon termination of this license, unless otherwise provided for by prior written agreement, UNC-CH shall remove from the site all structures placed or erected by it and shall permanently abandon all wells, in accordance with Federal and State law. Well casing will be removed at ground level and the well will be filled with concrete.
- 4. To the extent authorized by the North Carolina Tort Claims Act, UNC-CH shall indemnify and save harmless the Government its officers, agents, servants, and employees from all liability under the Federal Tort Claims Act (62 Stat. 869, 982, 28 U.S.C. 2671-2680) or otherwise, for death or injury to all persons or loss or damage to the property resulting from the use of the site by UNC-CH.
- 5. Upon written request, the UNC-CH will supply the owner all information derived from the research.
- UNC-CH shall be responsible for obtaining monitoring well construction permits from N.C. Division of Environmental Management prior to constructing wells.
- UNC-CH shall construct all monitoring wells in accordance with applicable portions of 15 NCAC 2C (N.C. well construction standards).
- 8. The United States Marine Corps understands that the activities to be carried out by UNC-CH under the terms of this license are for the primary benefit of The University of North Carolina at Chapel Hill and any benefits accruing to the owner are incidental. UNC-CH is not and shall not be construed to be an agent, employee, or contractor of the owner under the terms of this license.

DOC. NO .: eLEJ -00196 -1.01- 04/03/87

5216 APR 0 6 1987

From: Commanding General, Marine Corps Base, Camp Lejeune Tc: Assistant Chief of Staff, Facilities

Subj: AUTHORITY TO SIGN REAL PROPERTY LICENSE AGREEMENTS ON BEHALF OF THE COMMANDING GENERAL

1. Authorization is granted to the Assistant Chief of Staff, Facilities to sign the subject agreements on my behalf.

J. E. CASSITY

(alex has original Memos to CG and Authorization bo authorization ) in his files.)

Writer: Mr. Alexander, EnvEngr, FAC, X3034 Typist: M. Ballentine, 31 Mar 1987

DOC. NO .: QLEJ-00196-1.01-04/03/8;

UNITED STATES MARINE CORPS Marine Corps Base Camp Lejeune; North Carolina 28542-5001

11011

5216 FAC APR 0 2 1987

MEMORANDUM FOR THE COMMANDING GENERAL CHIEF OF STAFF

Subj: REAL PROPERTY LICENSE AGREEMENT WITH UNC-CHAPEL HILL

- Encl: (1) Proposed Agreement
  - (2) SJA 1tr 5800 SJA41 dtd 12 Feb 87
  - (3) Authorization to be signed by Commanding General

1. We are pursuing this agreement to assist UNC-Chapel Hill in a groundwater research project at the Tarawa Terrace Exchange Service Station as shown at enclosure (1). U.S. Environmental Protection Agency has funded UNC-CH to conduct an in-depth multiyear gasoline contaminant study.

2. In the process of reviewing the subject agreement, we have determined that your written authorization is needed to enter into this real property license. At enclosure (2), SJA indicates the authorization is needed because the subject agreement is not routine correspondence to which "By direction" authority applies.

3. As we receive many such license agreements, request authorization by the Commanding General, enclosure (3), to sign such agreements that are routine in nature rather than having to forward each to the Commanding General for signature.

Very respectfully,

DA Facilities

DOC. NO .: CLEJ-00196-1.01- 04/03/87



UNITED STATES MARINE CORPS MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA 28542-5001

IN REPLY REFER TO: 5216 FAC APR 0 : 1987

From: Commanding General, Marine Corps Base, Camp Lejeune To: Assistant Chief of Staff, Facilities

Subj: AUTHORITY TO SIGN REAL PROPERTY LICENSE AGREEMENTS ON BEHALF OF THE COMMANDING GENERAL

1. Authorization is granted to the Assistant Chief of Staff, Facilities to sign the subject agreements on my behalf.

E. CASSIT

DOC. NO .: CLEJ - 00193 -1.01 - 10/16/87

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OCT 0 8 1987

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Environmental Engineer

Assistant Chief of Staff, Facilities, Marine Corps Base, Camp Lejeune

TRIP REPORT MEETING WITH LANTDIV AND ENVIRONMENTAL SCIENCE AND ENGINEERING, INC. REGARDING INSTALLATION RESTORATION PROGRAM 16 SEPTEMBER 1987

 From LANTDIV, Code 114: Mr. Rakowski, Mrs. Barnette, Mr. Wallmeyer.

From ESE: Mr. Gregory, Mr. Geden, Mr. Farrell. From MCB: Mr. Alexander.

2. The Purpose of the Meeting: To review the Installation Restoration Program status, specifically to review the proposed remedial actions for the Hadnot Point groundwater problems and to examine data collected to date on the remaining 22 contaminated sites aboard Camp Lejeune.

3. A summary of the <u>Hadnot Point groundwater problem</u> follows:

a. In the shallow aquifer 15 volatile organic compounds (VOC) have been identified; the four most serious compounds violate recommended State and EPA standards.

b. Two large plumes have been identified in the shallow aquifer. One includes a portion of the industrial area between Building 1700 and the Burger King extending from Holcomb Boulevard to Louis Street. The second includes the area from the fuel farm on Ash Street northeastward to Sneads Ferry Road and from Holcomb Boulevard to Louis Street on the Southeast.

c. One of the most significant issues currently being addressed is the issue of "how clean is clean". Neither State nor EPA standards are clearly defined although North Carolina has provided their Maximum Contaminant Limits for seven of the problem pollutants. (Note: State of North Carolina is proposing revised standards. We should get these and comment as needed.)

d. Recent deep well monitoring has identified an additional contaminant, methol ethyl ketone (MEK), in the deep aquifer. This new data will compound the problem of identifying groundwater treatment options for the deep aquifer because MEK is not treated with the same methods as the other pollutants identified to date.

DOC. NO .: efter -00145 -1.01 -1416/81

Pubj: TRIP REPORT MEETING WITH LANTDIV AND ENVIRONMENTAL SCIENCE AND ENGINEERING, INC., REGARDING INSTALLATION RESTORATION PROGRAM 16 SEPTEMBER 1987

> e. ESE described a tentative list of short and long term remedial options to be presented in a report in a comparison of effectiveness and total cost.

f. Groundwater treatment options currently being examined will cause additional environmental emissions through one or all of the following media:

> --Sewage treatment plant --Air emissions --Packaged VOC for hazardous waste disposal off base

g. We recommend pulling the pumps and equipment at the eight contaminated water supply wells in the Hadnot Point area, leaving them available for sampling only.

4. An estimated schedule of events for the Hadnot Point groundwater problem includes:

a. ESE will send a draft Remedial Investigation/ Feasibility Study Report to LANTDIV and Camp Lejeune in early October (RI/FS).

b. We will review the report ASAP and return to ESE for a final draft.

c. Upon revision, we will send the report to the State and EPA (estimated in mid November) for their review over a 30 day period. Some time within that 30 day period a briefing will be held here at Camp Lejeune with the State and EPA officials.

5. Regarding the other 22 IRP sites.

a. We recommend discontinuing work at nine sites due to the lack of documented contamination of any significance.

b. We recommend doing a <u>Risk Analysis at six sites</u> to determine if additional contaminants exist and/or are causing environmental problems.

c. We recommend continued monitoring and development of clean up options at seven sites and development of a change order for the ESE contract to produce a report regarding the findings at these sites. This report should be available at the end of the second guarter FY-88. bj: TRIP REPORT MEETING WITH LANTDIV AND ENVIRONMENTAL SCIENCE AND ENGINEERING, INC., REGARDING INSTALLATION RESTORATION PROGRAM 16 SEPTEMBER 1987

6. I have discussed these findings with Mr. Hubbel, CMC LFL, and he feels that MCB and LANTDIV should discuss the release of some of this information to the public in accordance with the superfund amendments. We will need to review these regulatory requirements for public involvement with the JPAO and develop a cooperative effort in light of these rules and the possibility that Camp Lejeune sites could be named to the EPA National Priority List.

## R. E. ALEXANDER

DOC NO .: eLET-00193 -1.01-10/16/87

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Copy to: JPAO SJA NREAD PWO BMO

Doc. no. : CLES-00648-01.02-02/20/81

MCBul 6280 11 Dec 1980

ACTIVITY Marine Corps Base, Camp Lejeune, North Carolina

UIC 67001

SITE NUMBER 6

SECTION III. DETAILED DISPOSAL INFORMATION .

This section should be completed only if active or past disposal sites were identified in section II. Section III should be completed for each site. As an example, say your activity has three sites. Make three copies of section III and complete them. Assign a number to each site (1, 2, and 3) and eater it in the upper right-hand corner.

1. Is this disposal site currently in operation or has it been closed? Yes, currently in operation. (Note: Prior to 1976 this operation utilized lot 140

which is described under Site #7).

Years of operation: From 1976 To Present.

2. What is/was the name of the site (e.g., slurry pit)? Pest Control Shop. Bldg PT 37

(formerly Naval Field Research Laboratory)

3. Where is/was the site located (provide a description and give activity map coordinates)? On parachute tower road extension, 1 mile west of Holcomb Blvd. at

map coordinates 850401.

4. Describe how the site is/was operated. From 1947 - 1976 this was a Naval Medical Field Research Laboratory. From 1976 to present this facility has been used for Insect Vector Control Shop. Pesticides and pesticide containers are managed in accordance with current regulations.

Doc. No.: CLEJ-00648-01.02-02/20/81

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UOC. NO. : CLEJ-00648-0102-02/20/81

MCBul 6280 11 Dec 1980

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## DOC.NO.: CLEJ-00648-01.02-02/20/2

MCBul 6280 11 Dec 1980

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Doc. No. : CLEJ-00648-01.02-02/20/8

MCBul 6280 11 Dec 1980

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Doc. No.: CLEJ-00648-01.02-02/20/81

MCBul 6200 11 Dec 1980

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		ne Corps Base, Car UlC	67001
		SITE NUMBER	
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Doc. No. : (CLEJ-00648-0102-02/0):

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MCBul 6280 11 Dec 1980

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ION III. DETAILED DISPOSAL INFORMATION	4	aller der de
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DOC. ND. : CLEJ-00648-01.02-02/24

MCBul 6280 11 Dec 1980

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	SITE NUMBER3
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	Adjacent to shoreline of New River. Approximately 4 1/2 miles t nearest non-military land area.
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Appendix A to ENCLOSURE (1)

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Doc. NO. : CLEJ-00648-01,02-02/2018

MCBul 6280 11 Dec 1980

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· · · · ·	•						-
		•		· · · ·			_
Briefly describe animal and peculiarities (e.g., dying	plant lif plants).	e surround	ing the sit	e, inclu	ding a	iny	
The entire area has be	en stab	ilized.	There ar	e no ob	serve	ed	
occurrences of dying	vegetat:	ion.			2.5		<u>_</u>
		• • • • •		<u></u>	·		
	Anna anna anna anna anna anna anna anna	. <u></u>					
· · · · · · · · · · · · · · · · · · ·	A State	i i i i i i i i i i i i i i i i i i i					_
Do personnel live or work n	ear the si	te? Pleas	e explain.	<u>20 - 21 </u>			-
The site is contiguous				ustrial	area	and	ne
a recreational area fo	or base :	residents	•		bo		-
		States and states					25

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		UIC _	67001
		SITE NUMBER	
If the site was closed, A borrow pit was est			ought in an
the dump site covered	ed with dirt. Fill	depth was equiv	alent to
existing state guide	elines.		
	•		
As well as possible, desc	ribe the wastes that e	ntered the site.	
Type of Waste	Quantity	Origin	

Appendix A to ENCLOSURE (1)

UOC.NO...CLEJ-00048-01.02-02/20/8

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ACTIVITY	Marine Corps Base, Can	the second s
		57001
	SITE NUMBER	3
TION III. DETAILS DISPOSAL INFORMATION		
This section head be completed only were identifierin section II. Section each site. As example, say your and three copies desction III and complete site (1, 2, 2, 3) and enter it in the	on III should be completed f ctivity has three sites. Ma ete them. Assign a number t	or ke
Is this disposalsite currently in opera	ation or has it been closed?	<u> </u>
Years of operation: From 1946 (appr	roximatekw) 1971 (ap	proximately)
		<u>From 10000</u> ,
What is/was then are of the site (e.g.,	slurry pit)?	· ·
Hadnot PointBarn Dump		and the second
Where is/was thesite located (provide a coordinates)? Near the mouthof Cogdell's Creek		
Hadnot Point Strage Treatment Pla		
· · ·		
Describe how thesite is/was operated.	and the second	
This was dump for refuse, trash a	and the second	ted throughout
inis was, dump our refuse, trash a		ted throughou
the industrialarea at Hadnot Poi	nt and nearby housing	areas. Waste
were burned an residues covered	with dirt.	
	and the second second	and a second start of the
	and the second	
		<u>.</u>
	Letter water	

## DOC. NU. . CLES - UOGUS- 01.02- 02/20/8

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	China land		and the second			uc	67001	
						SITE NUMBER		1000
D.	Have there	been any in	ncidents	or compl	aints concerr	ning this site?	Explain.	
	No.	·				<ul> <li>and the analysis of the the</li> </ul>		
		ener an				and the second se	the second s	an in the s
	na si kana ka		t salah salah					
			No. No. No.		11		de servición	
			5141 <sub>2</sub>	A. S. S. S.			1. A	
		de the edge			- houndard and	250 meters	to nevi	gahl
	HOW CLOSE	is the site	to the a					
		A STATE OF A						
	water.	2,500 met	ers to	nearest	adjacent	non-military	land ar	ea.
	water.	2,500 met	ers to	nearest	adjacent	non-military	land ar	ea.
	water.	2,500 met	ers to	nearest	adjacent	non-military	land ar	<u>ea</u> .
	water.	2,500 met	ers to	nearest	t adjacent	non-military	<u>land ar</u>	<u>ea</u> .
	water.	2,500 met	ers to	nearest	ad.jacent	non-military	<u>land</u> ar	<u></u>
				 		non-military	land ar	<u></u>
		2,500 met		 		non-military	r land ar	<u></u>
				 		non-military	<u>land ar</u>	<u>ea</u> .
				 		non-military	r land ar	<u>rea</u> .
				 		non-military	· land ar	<u>rea</u> .
				 			land ar	<u>rea</u> .
				 		non-military	· land ar	<u>rea</u> .
				 			land ar	<u>rea</u> .
	Additional			 			· land ar	<u>rea</u> .
	Additional			 			· land ar	<u>rea</u> .
	Additional			 			· land ar	
2.	Additional			 				
	Additional			 				
	Additional			 				

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	. UIC_67001
	SITE NUMBER 2
	Describe the site's hydrogeology, including information on terrain, soils, water table depth, groundwater quality, nearby surface waters, etc. The site is located at an elevation of approximately 15 feet above
3	mean sea level. Although soils in the area have been highly modified
ALL PLAY	by construction associated with the original construction of airport,
1	the soils were originally baymeade and have same characteristics as site
1	number 2. Distance to nearest body of water is approximately 100 meters
	to a small tributory of southwest creek. Distance to tidal waters is appro mately 200 meters.
F	Briefly describe animal and plant life surrounding the site, including any eculiarities (e.g., dying plants). There is no vegetation in the immediate area (100 ft radius), however,
t	this could easily be relateed to heat and heavy traffic. There is no
c	bservable effects beyond this distance.
-	
-	
-	o personnel live or work near the site? Please explain.
	Ves; personnel work approximately 500 feet away from site which is
2	djacent to end of aircraft runway in restricted access area.

Appendix  $\lambda$  to ENCLOSURE (1)

DOC.NO.. CLEJ-00648-01.02-02/20/81

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		UIC _6	7001
		SITE NUMBER	2
the site was closed, brief this time Air Station els, otherwise there i	n policy is to	burn only water co	ontaminated
			<u>.</u>
· · · · · · · · · · · · · · · · · · ·			
-	•		<del></del>
	Carrier Parage		
ell as possible, describe	the wastes that	entered the site.	
pe of Waste	Quantity	Origin	
			a salarah salar
			C. Constant
			and the lates
and the second second	and and they	and the second second second	Land Barris
	and the second second second		
		a start to a start	
· · · · · · · · · · · · · · · · · · ·			

Dec. No. : CLEJ - 00648-01.02-02/8

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	UIC <u>67001</u>
	SITE NUMBER2
ION III. DETAILED DISPOSA	L INFORMATION
were identified in section each site. As an example three copies of section	ompleted only if active or past disposal sites on II. Section III should be completed for e, say your activity has three sites. Make III and complete them. Assign a number to each ater it in the upper right-hand corner.
	ently in operation or has it been closed? In operation
Note: Use of area exc	cept for burning of water contaminated fuel is
prohibited.	· · · · · · · · · · · · · · · · · · ·
lears of operation: From	1975 To present
rash crew fire traini There is/was the site location	ted (provide a description and give activity map
larine Corps Air Stati	ion (H), New River at map coordinates 755428
Cherry of Tableton	
	as operated. Water contaminated fuels and used petrol
	as operated. Water contaminated fuels and used petrol aced into a pit and burned. Present use restricted
products have been pla	
products have been pla	
products have been pla	
products have been pla per item (1) above.	aced into a pit and burned. Present use restricted
	aced into a pit and burned. Present use restricted

DOC.NO.: (LEJ-00648-01.02-02/20/8

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	. ис_	67001
	SITE NUMBER	1
<b>.</b>	Have there been any incidents or complaints concerning this site? None	Explain.
	· · · · · · · · · · · · · · · · · · ·	
	· · · · · · · · · · · · · · · · · · ·	
•	How close is the site to the activity's boundaries?	
	300 meters to shoreline and approximately 1,000 meters	to adjoining
	tract of non-military land	
	Additional comments	
「「「「「」」」		
	Additional comments	

LOC. NO. 2 CLEJ-00648-01.02-02/20/8

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	ACTIVITY Marine Corps Base, Camp Lejeune
	UIC
	SITE NUMBER1
water table depth, gro The site is locate	drogeology, including information on terrain, soils, bundwater quality, nearby surface waters, etc. ad approximately 300 meters southwest of New River approximately 25 ft. above sea level. Based on
soils maps develop	ed by Soil Conservation Service, USDA, soils in the owing characteristics. The soil (baymeade) has a
sandy surface laye	r approximately 2 ft thick. Below this, materials
	<u>loamy sands with high permeability. Depth to seasonal</u> <u>s 3.5-5 ft. The soil has high corrosivity to c</u> oncrete
neculturities (e.e., d	l and plant life surrounding the site, including any ying plants). unded by managed forests consisting of loblolly pine
and various hardwo	ood trees and shrubs. Much of the site is covered with
pine saplings. The vegetation.	nere are no apparent effects of the site on surrounding

9. Do personnel live or work near the site? Please explain. No The site is in a relatively remote location and access is restricted to authorized personnel.

Dec. NO. CLEJ-00648-01

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			UIC	67001
			SITE NUMBER	1
. If the site was closed, bric	fly describe t	he closure	procedures.	
Not specific				N. And
			•	
				n de la dela
		· · ·		•
	1. A.			

6. As well as possible, describe the wastes that entered the site.

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Type of Waste	Quantity	Origin	
			1. 198
(ed. and provide a		e general a state of the second state of	and distribution
		•	a hair s
and the second second	1		
An I was a subject of the	Same an and the		14 12
1		an a	Sec. 1
		······································	

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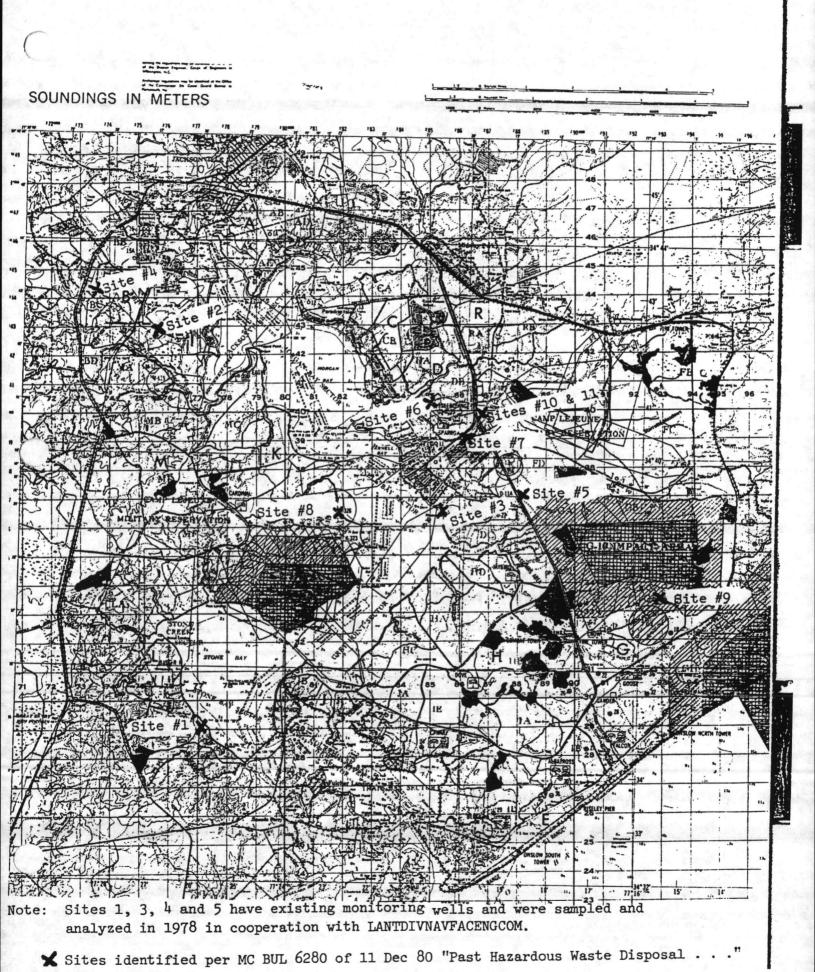
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Doc. NO.: CLEJ-000418-01.02-02/20/8.

MCBul 6283 11 Dec 1980

ACTIVITY	Marine Corps Base, Camp Lejeu
	UIC _ 67001
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	SITE NUMBER1
ON III. DETAILED DISPOSAL INFORMATION	
This section should be completed only were identified in section II. Section each site. As an example, say your and three copies of section III and comple- site (1, 2, and 3) and enter it in the	on III should be completed for ctivity has three sites. Make ete them. Assign a number to each
Is this disposal site currently in opera Not active	ation or has it been closed?
lears of operation: From unknown	To approximately 1978
What is/was the name of the site (e.g.,	slurry pit)?
Toxic chemical dump, Rifle Range	Area
Where is/was the site located (provide a coordinates)? Approximately 3 miles east south	
Highway 17 and NC Highway 210 at	map coordinates 770290. Aboan
Marine Corps. Base	
Describe how the site is/was operated and covered with soil. As a need	
taken to the site, a hole dug and	the container of waste or oth
naterial was placed in it and cov	이 같은 것 같은
A A A A A A A A A A A A A A A A A A A	

DOC. NO. PCLEJ-00648-01.02-02/20181



## DOC. NO. : (LE)-00648-01.02-02/20/:

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	UIC
izations outside azard to on-base	ny chemical or special waste disposal sites run by orga- c the activity's fenceline which may present a current e personnel? Did the activity ever operate disposal y which has since been excessed? Please explain.
UNKNOWN/ No	evidence of sites on excessed property
In answering the on past operation Please explain.	questions in this section, was reliable information available ns? How far back in the past? What sources were work?.
Information	based on recollection of knowledgeable paramel.
Documentatic following.pe	on of specific irems disposed was not the table. The ersons furnished information: Elijah Wilson, Electri
Distribution	(Retired), Gene Jones & John Jordon, Tublic Works 1
Hoy Burns, I	Technician Water Quality Control Laboratory, Percy Hu
Sewage Treat	tment Branch Head, LT Salamanca (Tel-0118) Explosive
and the second se	
3456). Mrs.	Crawford, Plant Account (Tel-3967), R. J. Indrews,
3456), Mrs.	Crawford, Plant Account (Tel-3967), R. J. Indrews, Base Safety Officer, Charles Peterson, Fase
3456). Mrs.	Crawford, Plant Account (Tel-3967), R. J. Indrews, Base Safety Officer, Charles Peterson, Fase
3456), Mrs.	Crawford, Plant Account (Tel-3967), R. J. Indrews, Base Safety Officer, Charles Peterson, Fase
3456), Mrs.	Base Safety Officer, Charles Peterson, Lase
3456), Mrs.	Crawford, Plant Account (Tel-3967), R. J. Indrews, Base Safety Officer, Charles Peterson, Fase
3456), Mrs.	Crawford, Plant Account (Tel-3967), R. J. Indrews, <u>Axy</u> Base Safety Officer, Charles Peterson, Fase hager.

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Appendix A to ENCLOSURE (1)

## LOC.NO: CLEJ-000418-01.02-02/2015

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			CALL THE REAL OF
		. UIC	01
at the activity. If the the box in column 1 (som	activity ha e of these is checked	d to find out whether small-scale di ther intentional or not) may have oc s ever run an operation listed below operations may have been noted in sec , go to column 2 and check the box is is "yes."	curred , check
Refuse disposal site	Column 1	Did this site ever receive chemicals or special wastes?	Column 2'
Pest control shop	l <del>⊼k</del>	Have pesticides or pesticide rinse- ates ever been disposed of any- where on a regular basis?	Ø
Firefighting training using open burning	· I <u>x</u> k	Were substances other than oil (e.g., solvents) burned?	۶.
Ordnance operations	1	Were ordnance wastes ever dis- posed of on base?	۶. I
Storage of chemical materials or special wastes in a specified area	±⊠ .	Have these materials ever leaked or otherwise escaped confinement?	. Kot
etea	No. 19 AS	in the second second second	14:15
disposal site identified is of chemicals or special was required. (SEE APPENDIX	In fill shou, in question istes on bas X A TO TH ing hazardou	is materials ever occurred at the act	cant ed
		mable materials storage wareho of fire a minimum of water wa	and the second second
to fight fire. Struct	ture and	contents were destroyed.	
Radioactive beta butto	ons disco	vered while grading lot at Bld	g PT-37
	the state of the s		

Appendix A to ENCLOSURE (1)

3.

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DOC.NO. . CLEJ-00648-01.02-02/20/

## ACTIVITY Marine Corps Base, Camp Lejeune

SECTION II. DISPOSAL OF SPECIAL WASTES

This section of the fact form will ask about waste disposal sites that are or have been operated by the activity. If a disposal site(s) is identified in this section, section III should be filled out.

To complete this section (and section III, if necessary), activity records should be examined and knowledgeable activity personnel should be interviewed. Long-time activity employees will be invaluable in this effort, since they will be familiar with past disposal operations. If deemed necessary to accurately complete this section, preliminary field investigations may also be performed (however, this fact form does not warrant extensive investigations such as soil borings and waste analyses).

1. Have any of the following techniques ever been used to dispose of chemicals or special wastes on base? Do not include trash or garbage (check the appropriate boxes).

		Operations	Present /Pa	ast
	Solvent Pit			
Ľ.	Acid/Caustic Pit		HH	-
	Slurry (Chemical Mixtures) Pit			-
	Waste Oil/Oil Sludges Pit		HH	-
9.2	Evaporating Pit			-
	Grease Pit		HH	-
13	Surface Spreading			-
	Open Burning (Examples: Firefighting Training, Ord	nance Waste	D.H b	d
1	Incinerator		TH F	-
	Land Disposal with State Permit		HE	-
			E D	

Any other disposal operations?\* Please explain Lot 140 (discussed in Section III) was utilized for storage and repair of transformers. Significant quantities of oil were discharged onto the ground before awareness to PCB hazards developed.

\*Do not include industrial waste treatment/pretreatment facilities that are subject to pretreatment regulations or NPDES permits. Disposal of industrial sludge should be included, however. Doc. No. : CLEJ-00 648-0102-02/20/81

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6.

	ACTIVITY MarineCorps Base, Camp Lejeune
	UIC 67001
ny other industrial operations? NOPS	Please list. Tacizal vehicle maintenance
	ducted in the past thich have since been discontinued year discontinued. Hepair of used transformers ontinued in mid 300's still used for storage
vaiting disposal.	situated in mid sous still used for storage
aroung aroposar.	
, 2011년 1월 1939년 2월 1939년 1월 1931년 1월 1938년 1월 1931년 1월 19	
Additional Comments Naval Fiel	d Medical Research Laboratory was operated
rom 1947 - 1976. Site is	presently used for Insect Vector Shop which
listed as Site #6 in Section	n III of this reat
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worth the second states and the	and the second
	a man and a second s
State State States	
<u></u>	
-122-18 (Sec. 2017)	
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	and the second

DOC. NG: CLET - 00648-0102- 02/20/:

MCBul 6280 11 Dec 1980

		UIC 67001
SECTION I. GENERAL	INFORMATION	
	Person compiling this information: Name Danny Sharpe	
	Code_BMaintDeptelephone_451-5003	
	y first established?	1941
	esctivity's mission. To provide housin	
and logistical su	apport for Fleet Marine Force and o	ther units assigned
conduct specializ	red training as assigned.	
Has this always been when they were chang	the activity's mission? If not, describe ed. Yes	previous missions and
when they were chang	the activity's mission? If not, describe ed. Yes	previous missions and
when they were chang Estimate the activit	ed	
when they were chang Estimate the activit Equivalent Population + 1/3 x (employees t	ed	
when they were chang Estimate the activit Equivalent Population + 1/3 x (employees to Describe the activity a. Location within a	ed. Ies y's equivalent population. on = activity residents who corrute in).	49,000 k) Borders Atlanti
Estimate the activity Equivalent Population + 1/3 x (employees y Describe the activity a. Location within a Ocean in Onsion	ed. Ies y's equivalent population. on = activity residents who commute in). y's location, including: state (e.g., northeastern corner near Podun	49,000 k) Borders Atlanti
Estimate the activity Equivalent Population + 1/3 x (employees to Describe the activity a. Location within a Ocean in Onsico b. Lies in a general	ed. Ies y's equivalent population. on = activity residents who commute in). y's location, including: state (e.g., northeastern corner near Podun ww County, North Carolina, near City	49,000 k) Borders Atlanti y of Jacksonville
when they were chang Estimate the activity Equivalent Population + 1/3 x (employees to Describe the activity a. Location within a Ocean in Onsico b. Lies in a general Docs the activity hav boxes)?	ed	49,000 k) Borders Atlanti y of Jacksonville
Estimate the activity Equivalent Population + 1/3 x (employees to Describe the activity a. Location within a Ocean in Onsico b. Lies in a general Docs the activity hav boxes)? Ship Repair Aircraft Rework Aircraft Intermediate	ed. 105 y's equivalent population. on = activity residents who corrute in). y's location, including: state (e.g., northeastern corner near Podun w County, North Carolina, near City (ly rural or urban setting? rural re any of the following operations (check the Pest Control Disaster Control Power Control Power Generation	49,000 k) Borders Atlanti y of Jacksonville
when they were chang Estimate the activity Equivalent Population + 1/3 x (employees to Describe the activity a. Location within a Ocean in Onslo b. Lies in a general Docs the activity hav boxes)? Ship Repair Hircraft Rework	ed	49,000 k) Borders Atlanti y of Jacksonville

Appendix A to ENCLOSURE (1)

UNITED STATES MARINE CORPS MARINE CORPS BASE CAMP LEJEUNE. NORTH CAROLINA 28542

> MAIN/JIW/mkc 5240

IN REPLY REFER TO

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560 500

Su 12 1981

Doc. No .: CLEJ - 00648-01.02-02/20/8,

Commanding General Fromt 10: Coumendant of the Marine Corps (Code LFF)

- \_ub : Past dezurlous Waste Disposal bites; report of (Report Symbol DN-6280-32)
- (a) ECBUI 6200 of 11 Dec 1900 API:

anci: (1) Completed Marine Corps Activity Dispusal site Fact Form

i. In accordance with reference (a), requested information for Marine Corps Base, Camp Lejeune and Marine Corps Air Station (Helicopter), New River North Carolina has been entered on enclosure (1) and is submitted herewith.

2. If additional information is desired, please contact Mr. Jangy Sharpe. Natural Resources and Environmental Aifairs Division, Base Maintenance Department, (FTS) 676-5003, (commercial) 919-451-2083.

Giaist of Staff

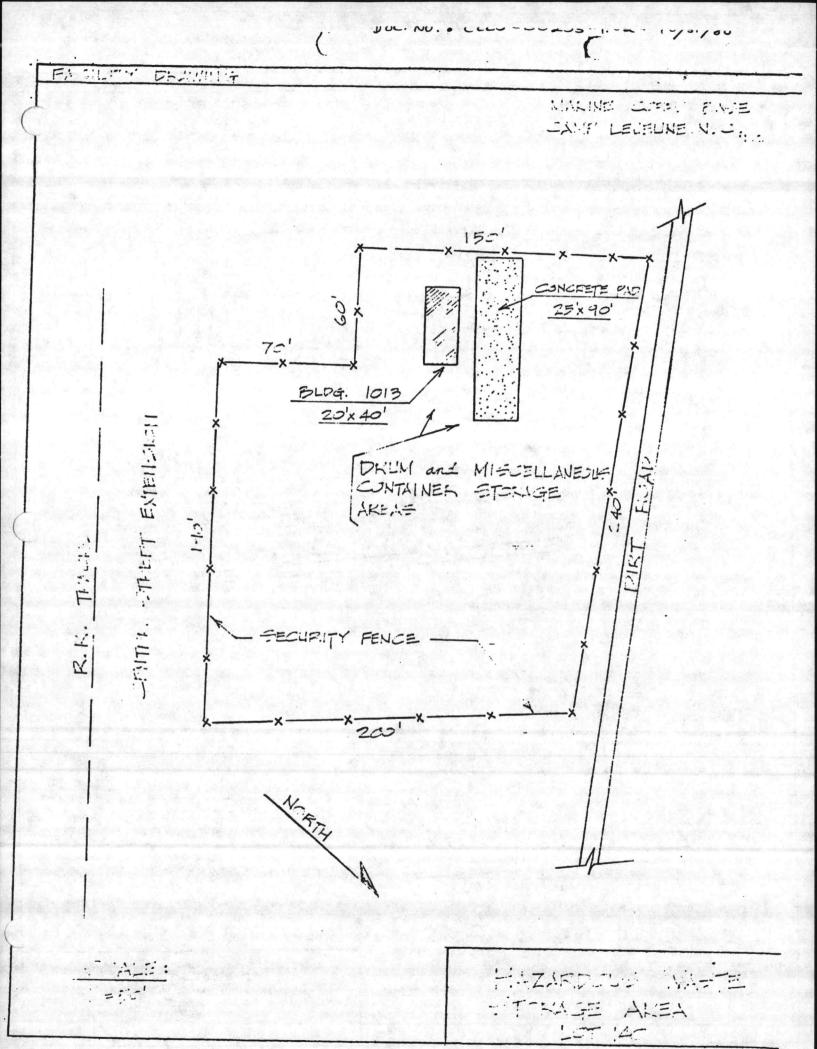
Copy to: COMIT, LANTHA VFACENCOM Cadr, NAVEESA CU, MCAS(H), NR

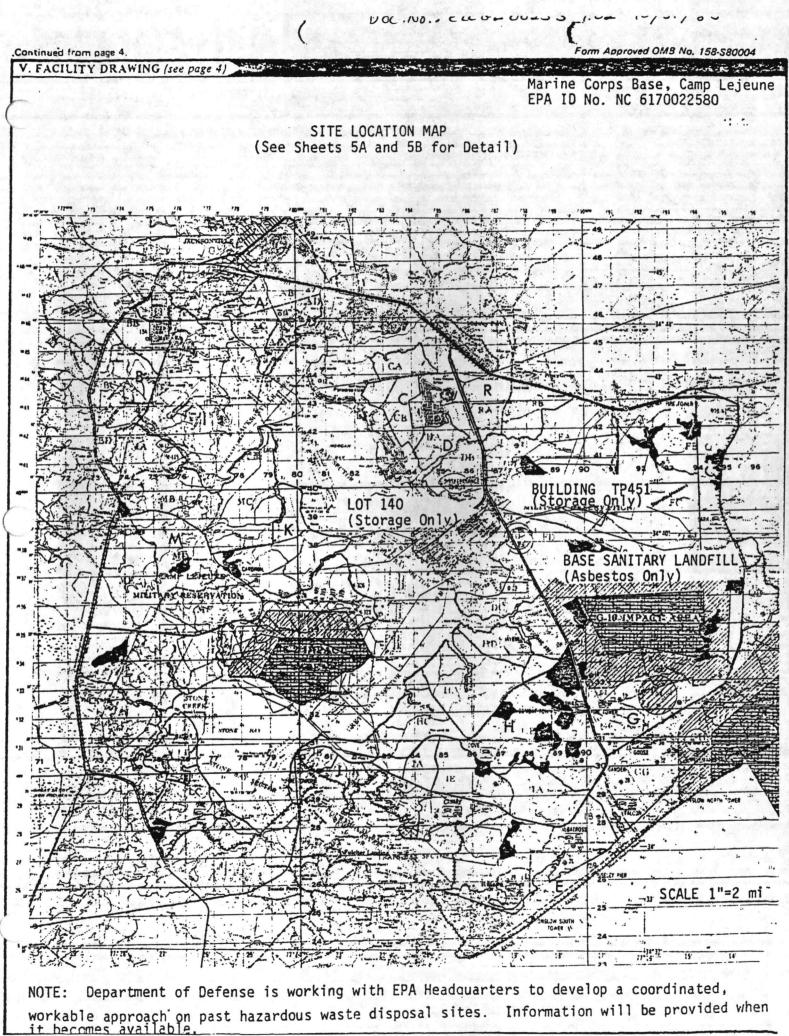
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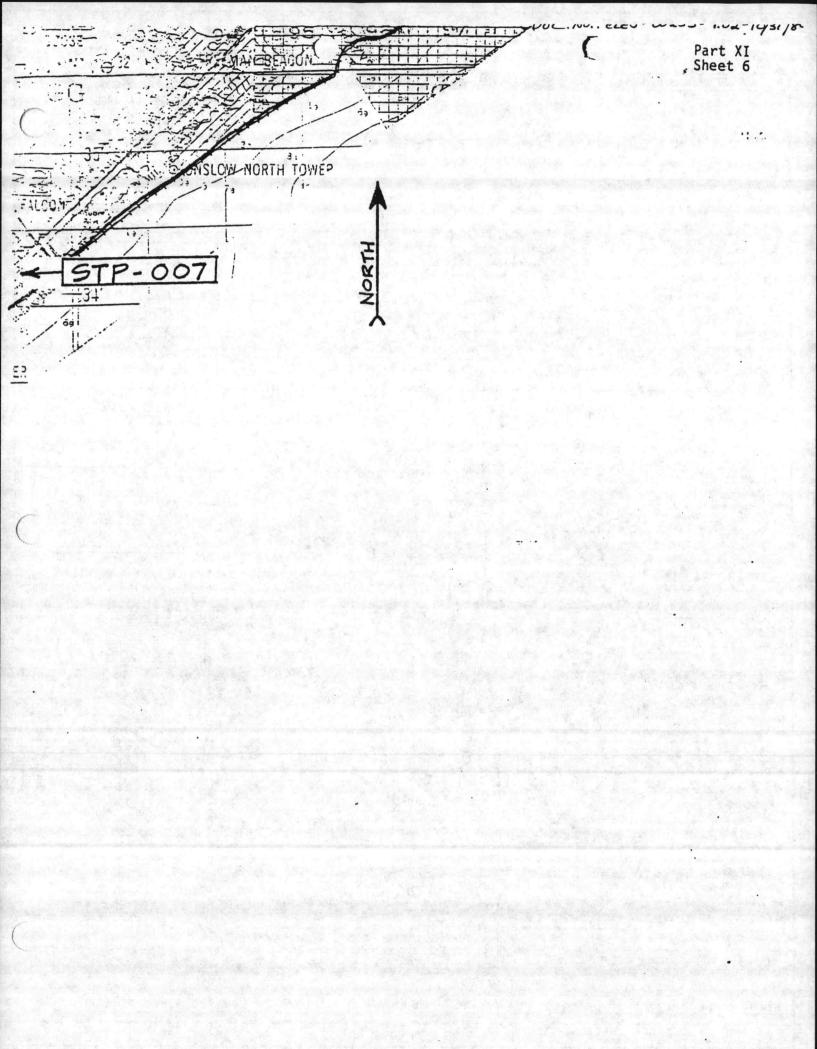
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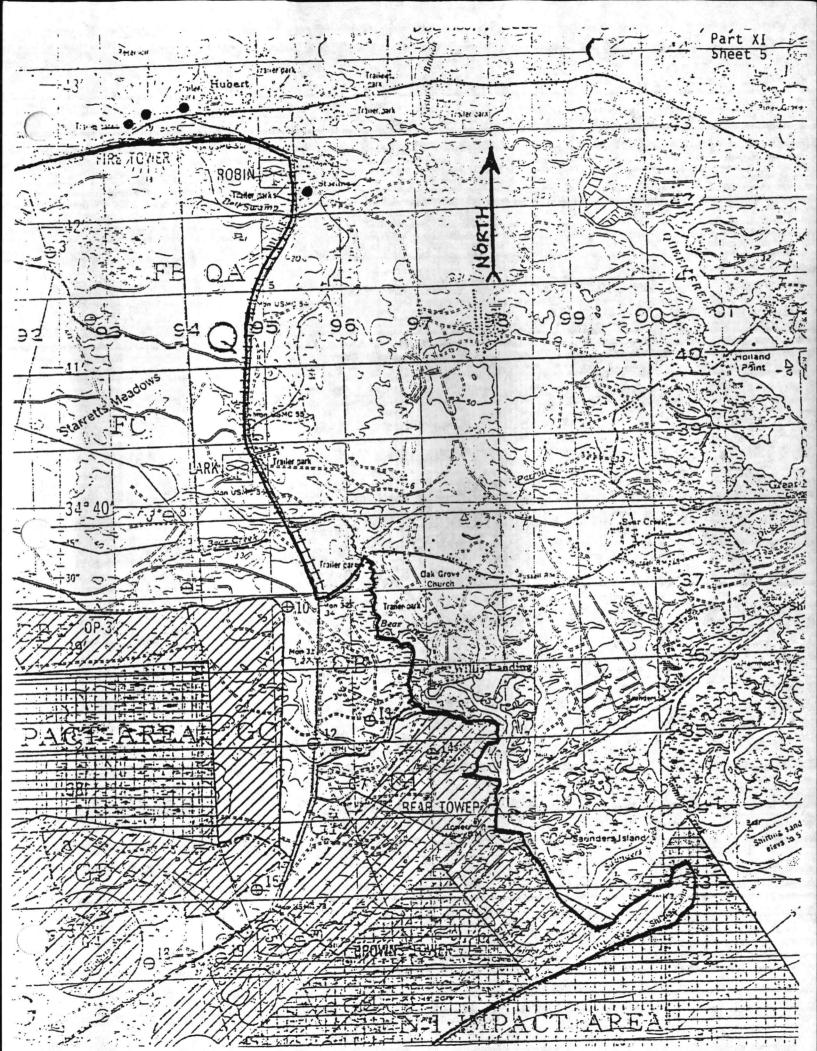
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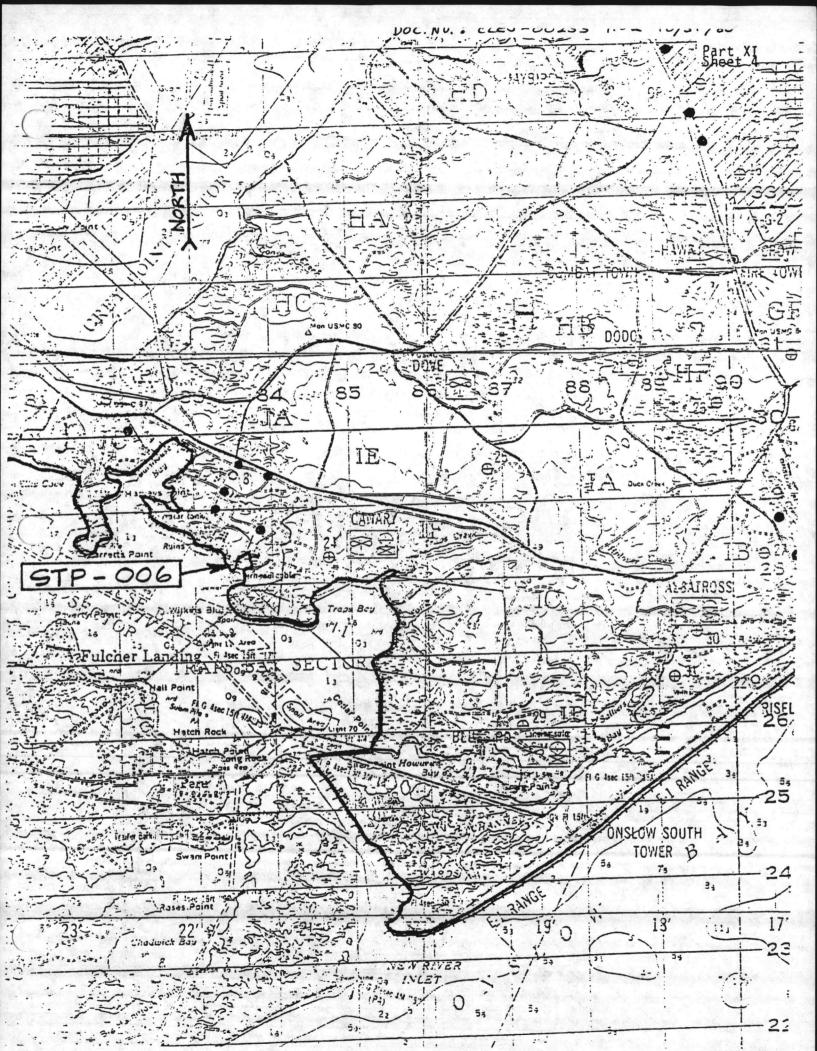
DOC. NO. 9 CLEJ - 00263-1.02 - 10/31/80 { FACILITY PRAWING MARINE CORPS BASE CAMP LEJEUNE, N.C. PLANNED SECURITY FENCE -400' EXIST. MISCELLANEOUS CONTAINER STORAGE FUTURE PRUM and AREA - BLDG. TP-451 MISC. CONTAINER 13 100' x 50' STORAGE AREA -300 2001 400' NORTH PINEY GREEN RD. SCALE: STORAGE AREA 1"= 100' BLDG. TP- 451

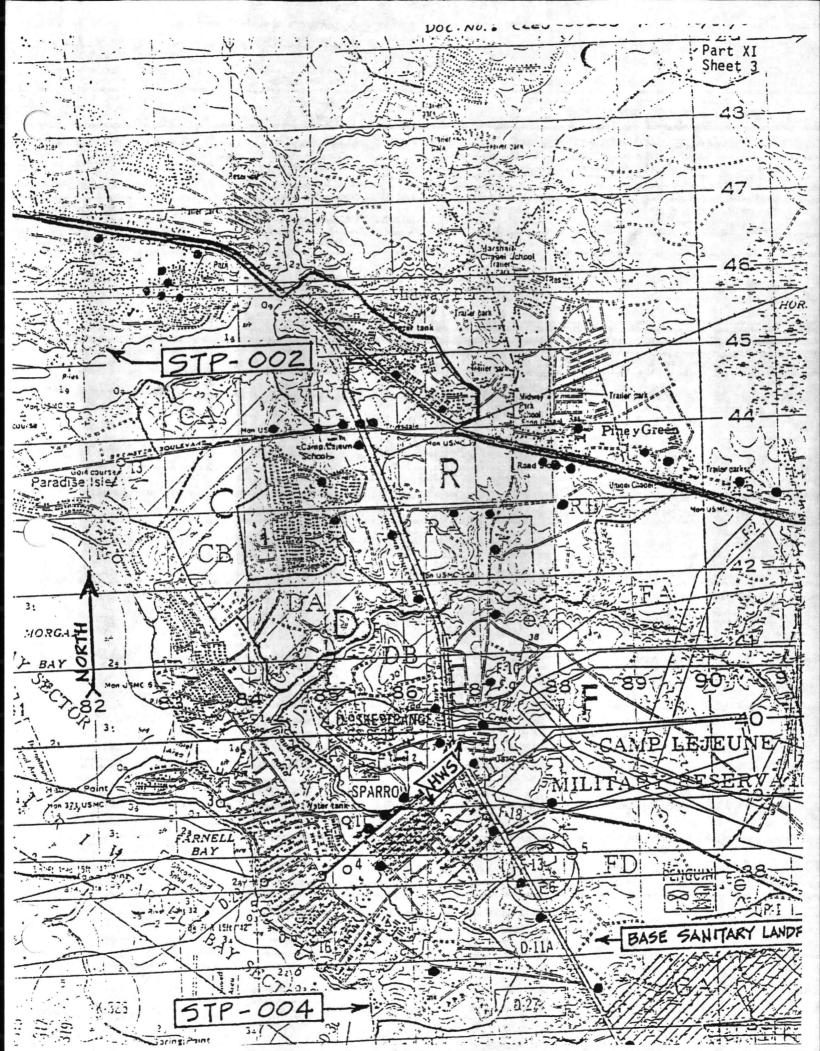


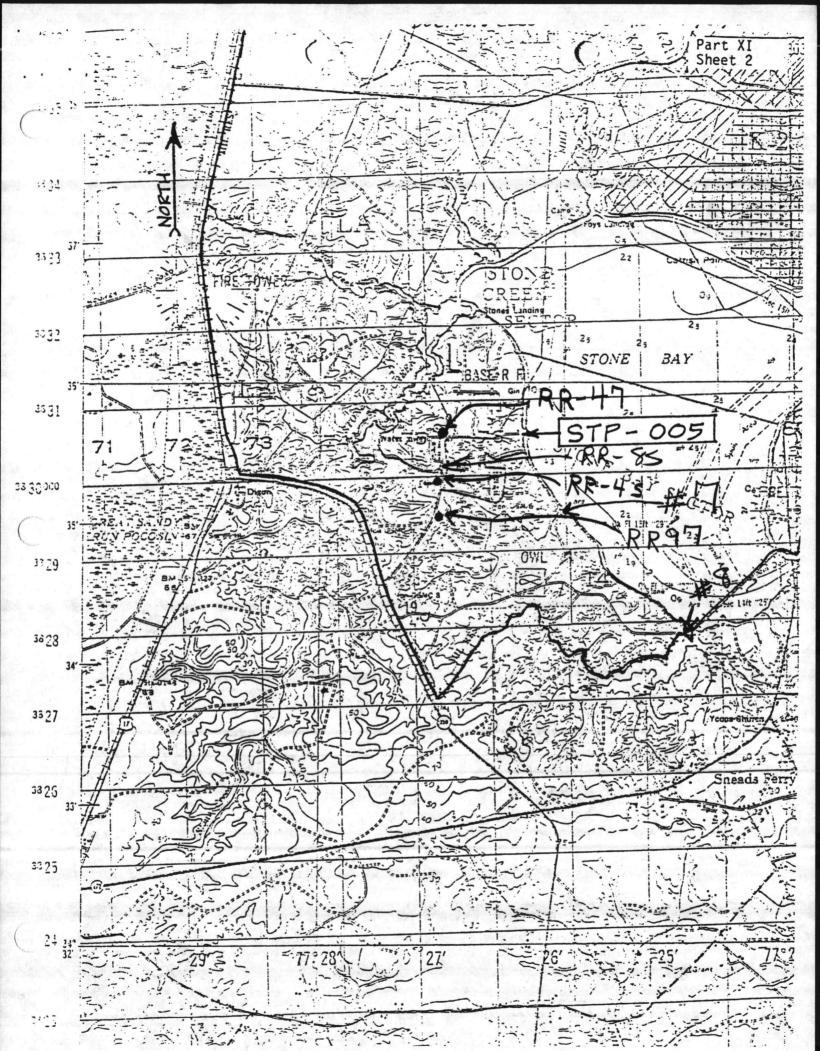


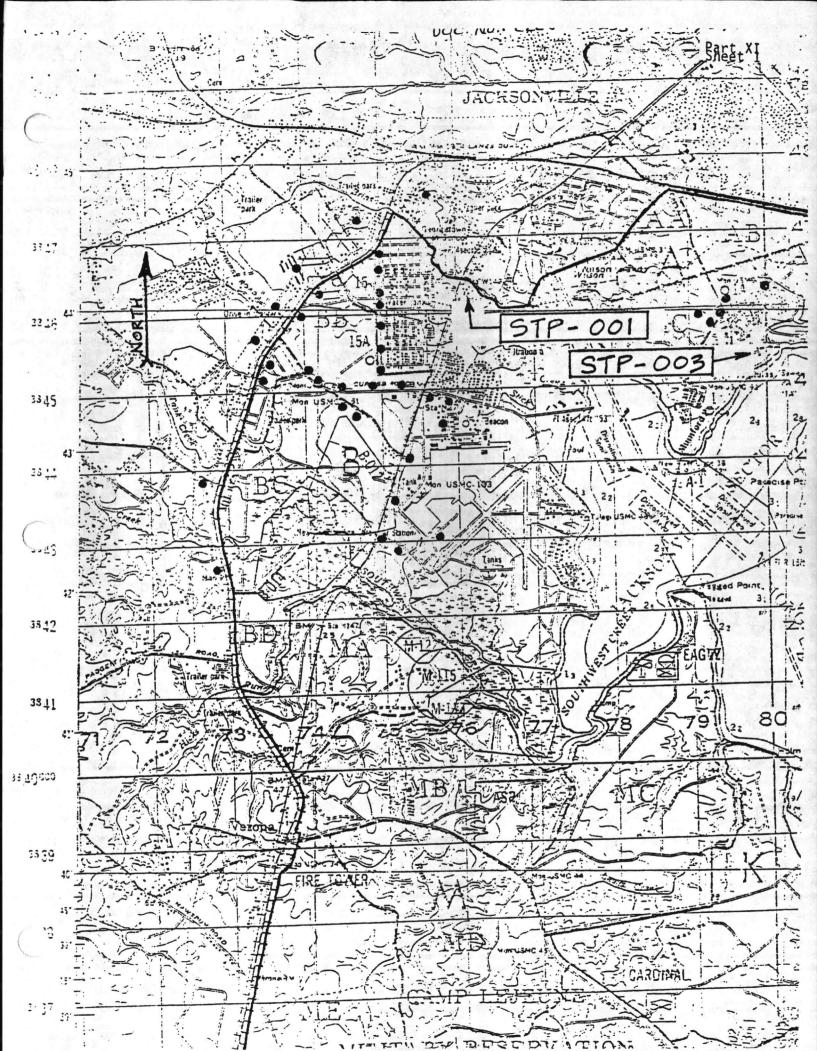












Part XI, EPA Form 3510-1 (6-80)

Topographic Map Marine Corps Base Camp Lejeune, North **C**arolina

1. The attached maps were copied from the Camp Lejeune Special Map, 5th Edition, September 25, 1976, published by The Defense Mapping Agency Hydrographic Center, Washington, D. C. 20390.

2. Map Scale 1:50,000

1/2 O Statute Miles

3. Contour lines are marked in 10 feet intervals above mean high water level.

4. Symbols used to show requested information are as follows:

Symbol

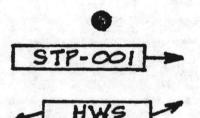
Feature

Facility Boundary

Public Drinking Water Well

Sewage Treatment Plant Location and NPDES ID Number

Facility Used to Store Hazardous Waste Awaiting Transfer to Approved Off Base Disposal Facilities



	or type in the unshaded areas are spaced for elite type, i.e.	, 12 characters).	J.				m Approved OMB No.	158-R	0175	
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questions, if the supp	you must submit this form	and the supplement If you answer "no"	tal fo to en instr	rm li sch o uctio	isted in the puestion, y ons. See also	submit any permit application parenthesis following the que ou need not submit any of the o, Section D of the insomition	stion. Mark "X" in the box in the forms. You may answer "no	the th if yi term:	ird cour and cour and cour and cour and cour and course	olumn ctivity
	SPECIFIC QUESTION	s de la compañía de l	-	NO	FORM ATTACHED	SPECIFIC G	UESTIONS	-	NO	FORMATTACH
	facility a publicity owned results in a discharge to w (2A)			x			nimal feeding operation or n facility which results in a		x	
	a facility which currently re		X	17	• *	D. Is this a proposed facility	lother than those described	10	30 V	- 21
	above? (FORM 2C)	those described in	A 22	22	-	in A or B above) which waters of the U.S.? (FOR)	will result in a discharge to M 2D)	13	X 20	
	r will this facility treat, st	tore, or dispose of	x		x	F. Do you or will you injec municipal effluent below	t at this facility industrial or the lowermost stratum con-	and the second	x	
hazardo	ous wastes? (FORM 3)		20	1.00	30	taining, within one qua underground sources of d	rter mile of the well bore, rinking water? (FORM 4)	31	32	33
	or will you inject at this fac			29	14	H. Do you or will you inject				
in conn	ection with conventional oil , inject fluids used for enh	or natural gas pro-		X		process, solution mining	ning of sulfur by the Frasch of minerals, in situ combus-		X	
oil or n	atural gas, or inject fluids for arbons? (FORM 4)		1		38	tion of fossil fuel, or rec (FORM 4)	overy of geothermal energy?		3.8	3.9
. Is this	facility a proposed stational the 28 industrial categorie		H	X	i a pitate.	J. Is this facility a propose	d stationary source which is strial categories listed in the	1		1
structio	ans and which will potentia ar of any air pollutant re-	ally emit 100 tons		^	1.15	instructions and which w	ill potentially emit 250 tons ant regulated under the Clean	1.53	x	
Clean A	Air Act and may affect or ent area? (FORM 5)			41	42		r be located in an attainment		44	
	F FACILITY				· · · · · · ·	the factor of the first of the first of				27. E
SKIP M	ARINECOR	PSBAS	E	Ċ	AMP	LEJEUNE		1		i.
10 - 10 33	Y CONTACT	and which a tree	0.00	-		and the second second	and the second state where the	60 		555
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				title,		the second states of the second states and the second states and the second states and the second states and the		1. 1. 1. 1. 1.		
DAN	NY SHARPE	ECOL		1	ST		9 4 51 5 0 0 3			. · ·
.11			0 .G	1	ST	91	9 4 51 5 0 0 3			
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FACILIT	Y MAILING ADDRESS	STREET OR P.O.	0 G	1	S T					
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C A M FACILIT	Y MAILING ADDRESS I N E C O R P S 	STREET OR P.O. S B A S E OR TOWN NO. OR OTHER SI S B A S E TY NAME	O G	I	S T	C.STATE D. ZIP COD N C 2 8 5 4				

## DOC 100: CLOU - 00048 - 1.00 - 10131180

JENNINGS LABORATORIES, INC.

	PESTICIDES/PCB's (Continued)	DETECTION LIMITS µg/
Aroclor 1016	None Detected	.04
Aroclor 1221	None Detected	.10
Aroclor 1232	None Detected	.10
Aroclor 1242	None Detected	.06
Aroclor 1248	None Detected	.08
Aroclor 1254	None Detected	.08
Aroclor 1260	None Detected	.15
2,3,7,8-Tetrachlo	prodibenzo-p-dioxin (TCDD) None De	tected .003
		the second s

	METALS		DETECTION LIMITS mg,
Antimony	0.2	mg/l	0.2
Arsenic	<0.002	mg/l	0.002
Beryllium	<0.005	mg/l	0.005
Cadmium	0.006	mg/l	0.002
Chromium	<0.02	mg/l	0.02
Copper	<0.01	mg/l	0.01
Lead	<0.005	mg/l	0.005
Mercury	<0.002	mg/l	0.002
Nickel	<0.02	mg/l	0.02
Selenium	0.008	mg/l	0.002
Silver	<0.01	mg/l	0.01
Challium	<0.1	mg/l	0.1
linc	0.005	mg/l	0.005
	MICODIANS		

	MISCELLANEOUS	
Total Cyanides	None Detected	0.01
Asbestos (fibrous)	None Detected	
Total Phenols	None Detected	0.005

LAB# 2518

by E. R. ( CHEMIST

## 10 " 100. ULEJ -00248 - 1.02 - 10/31/80

JENNINGS LABORATORIES, INC.

## ACID EXTRACTABLE ORGANIC COMPOUNDS

and the second	na 1. pagatega na sangan dalam kangan 1. pagatega na sangan dalam kangan kangan dalam kangan kangan dalam kangan kangan dalam kangan kangan kangan ka	ne og skiller og skille Skiller og skiller og sk Skiller og skiller og s	Ŷ	DETECTION	LIMITS	µg/1
Phenol	NONE	DETECTED		1.4	ang sa	
2-Nitrophenol	None	Detected		2.5		
4-Nitrophenol	None	Detected	la de la feri Recent	2.5		
2,4-Dinitrophenol	None	Detected		7.0		
4,6-Dinitro-o-cresol	None	Detected		2.0		
Pentachlorophenol	None	Detected		10.0		
p-Chloro-m-cresol	None	Detected		.01		
2-Chlorophenol	None	Detected		2.0		
2,4-Dichlorophenol	None	Detected	en de la	2.1		
2,4,6-Trichlorophenol	None	Detected	Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Constant Con	3.0		
2,4-Dimethylphenol	None	Detected		1.7		
	PESTICID	ES/PCB's	- 142 F.,			
				병사망 등 전 가격을 가격했다.		

a-Endosulfan	None Detected	.005
β-Endosulfan	None Detected	.01
Endosulfan sulfate	None Detected	.03
α-BHC	None Detected	.002
β-BHC	None Detected	.004
δ-внс	None Detected	.004
ү-внс	None Detected	.002
Aldrin	None Detected	.003
Dieldrin	None Detected	.006
4,4'-DDE	None Detected	.006
4,4'-DDD	None Detected	.012
4,4'-DDT	None Detected	.016
Endrin	None detected	.009
Endrin Aldehyde	None Detected	.023
Heptachlor	None Detected	.002
Heptachlor Epoxide	None Detected	.004
Chlordane	None Detected	.04
Toxaphene	None Detected	.40

LAB # 2518

BY CHEMIST

## NOC NO: ULE -00248 -1.02-1013/180

JENNINGS LABORATORIES, INC.

BASE/NEUTRAL EXTRACTABLE ORGANIC COMPOUNDS (continued)

4-Bromophenyl phenyl ether	None Detected	DETECTION 1.1
bis(2-Ethylhexyl)phthalate	None Detected	.02
Di-n-octyl phthalate	None Detected	.11
Dimethyl phthalate	None Detected	.11
Diethyl phthalate	None Detected	.13
Di-n-butyl phthalate	None Detected	.02
Fluorene	None Detected	.04
Fluoranthene	None Detected	.04
Chrysene	None Detected	.04
Pyrene	None Detected	.04
Phenathrene	None Detected	.04
Anthracene	None Detected	.04
Benzo(a)anthracene	None Detected	.04
Benzo(b)fluoranthene	None Detected	.04
Benzo(k)fluoranthene	None Detected	.04
Benzo(a)pyrene	None Detected	.04
Ideno(1,2,3-c,d)pyrene	None Detected	.10
Dibenzo(a,h)anthracene	None Detected	.10
Benzo(g,h,i)perylene	None Detected	.10
-Chlorophenyl phenyl ether	None Detected	2.2
3,3'-Dichlorobenzidine	None Detected	.04
Benzidine	None Detected	.04
is (2-Chloroethyl) ether	None Detected	.04
,2-Diphenylhydrazine	None Detected	.04
Aexachlorocyclopentadiene	None Detected	.04
N-Nitrosodiphenylamine	None Detected	1.0
Acenaphthylene	None Detected	.04
Acenaphthene	None Detected	.04
Butyl benzyl phthalate	None Detected	.04
N-Nitrosodimethylamine	None Detected	.2
I-Nitrosodi-n-propylamine	None Detected	.5
ois(2-Chloroisopropyl) ether	None Detected	.9

LAB # 2518

P. Danglon Chemist BY E.R.

## NOC NO: CLOJ-00248-1.02-10/31/60 JENNINGS LABORATORIES, INC.

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PURGEABLE	ORGANICS (continued)	DETECTION LIMITS µ
Chloroform	None Detected	.010
1,2-Dichloropropane	None Detected	.004
1,3-Dichloropropane	None Detected	.006
Methylene Chloride	None Detected	.010
Methyl Chloride	None Detected	.009
Methyl Bromide	None Detected	.03
Bromoform	None Detected	.02
Dichlorobromomethane	None Detected	.006
Trichlorofluoromethane	None Detected	.03
Dichlorodifluoromethane	None Detected	.01
Chlorodibromomethane	None Detected	.01
Tetrachloroethylene	None Detected	.007
Trichloroethylene	.005 µg/l	.005
Vinyl Chloride	.01 µg/l	.01
1,2-trans-Dichloroethylene	.006 µg/1	.006
bis(chloromethyl)ether	.003 µg/l	.003

## BASE/NEUTRAL EXTRACTABLE ORGANIC COMPOUNDS

		the state of the s
1,2-Dichlorobenzene	None Detected	.04
1,3-Dichlorobenzene	None Detected	.04
1,4-Dichlorobenzene	None Detected	.04
Hexachloroethane	None Detected	.001
Hexachlorobutadiene	None Detected	.001
Hexachlorobenzene	None Detected	.002
1,2,4-Trichlorobenzene	None Detected	.006
Bis(2-Chloroethoxy)methane	None Detected	.40
Naphthalene	None Detected	.04
2-Chloronaphthalene	None Detected	.04
Isophorone	None Detected	5.0
Nitrobenzene	None Detected	5.0
2,4-Dinitrotoluene	None Detected	.06
2,6-Dinitrotoluene	None Detected	.06
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2518 LAB

BY E

# JENNINGS LABORATORIES, INC.

1118 CYPRESS AVENUE • P. O. BOX 851 • VIRGINIA BEACH, VA 23451 • PHONE (804) 425-1498

VA (FPA) CERTIFIED LABORATORY for Drinking Water Analysis Microbiological, Inorganic and Organic

ASBESTOS ANALASIS - MOSH 582

Official Referee Chemists for. AMERICAN OIL CHEMISTS SOCIETY NATIONAL SOYBEAN PROCESSORS ASSOCIATION Laboratory Certified by VA. STATE WATER CONTROL BOARD for Analysis of Effluents for NPDES PERMITS CERTIFIED OFFICIAL U.S.D.A. LABORATORY FOR MEAT ANALYSIS

#### CERTIFICATE OF ANALYSIS

Mr. Dave Goodwin Building N-23 Atlantic Division Naval Facilities Engineering Command Norfolk, Virginia 23511

DATE. October 31, 1980

SAMPLE OF WATER SAMPLES (8) - Blank made on each analysis.Bromochloromethane,

MARKED 2-bromo-1-chloropropane, 1-4 dichlorobutane used as internal standard.

GC/MS calibrated with perfluorotributylamine, SIM MODE. All test run according t EPA TEST PROCEDURES. OFFICIAL SAMPLE BY:

PURGEAB	LE ORGANICS	DETECTION LIMITS µg/
None	Detected	2.0
None	Detected	2.0
None	Detected	10.0
None	Detected	10.0
None	Detected	10.0
None	Detected	.007
None	Detected	.03
None	Detected	.006
.005	µg/l	.005
.004	µg/1	.004
.006	µg/1	.006
.006	µg/1	.006
.006	µg/1	.006
.01	µg/1	.01
.08	µg/1	.08
	None None None None None None .005 .004 .006 .006 .006 .006	.004 μg/l .006 μg/l .006 μg/l .006 μg/l .01 μg/l

Respectfully submitted, JENNINGS LABORATORIES, INC.

Laboratory Anaiysis No 2518

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## Doc NO: CLEJ - 00248 - 1.02 - 10/3/180

JENNINGS LABORATORIES, INC.

	PESTICIDES/PCB's (Continued)	DETECTION LIMITS ug/1
Aroclor 1016	None Detected *	.04
Aroclor 1221	None Detected	.10
Aroclor 1232	None Detected	.10
Aroclor 1242	None Detected	.06
Aroclor 1248	None Detected	.08
Aroclor 1254	None Detected	.08
Aroclor 1260	None Detected	.15
2,3,7,8-Tetrachlo	rodibenzo-p-dioxin (TCDD) None De	tected .003

	METALS		DETECTION LIMITS m	- /1
Antimony	0.2	mg/l		Ig/J
Arsenic			0.2	
Beryllium	<0.002	mg/l	0.002	
5 OF 2-1	<0.005	mg/l	0.005	
Cadmium	0.006	mg/l	0.002	
Chromium	<0.02	mg/l	0.02	
Copper	<0.01	mg/l	0.01	
Lead	<0.005	mg/l	0.005	
Mercury	<0.002	mg/l	0.002	
Nickel	<0.02	mg/l	0.02	
Selenium	0.008	mg/l	0.002	
Silver	<0.01	mg/l	0.01	
Thallium	<0.1	mg/l	0.1	
Zinc	0.005	mg/l	0.005	
	MISCELLANEOU	IS		
Total Cyanides	None De	tected	0.01	
Asbestos (fibrous)	None De	tostad	and a second	

Asbestos (fibrous)	None Detected	
Total Phenols	None Detected	0.005

LAB# 2518

CHEMIST

## NOC 100: ULEJ -00248 -1.02 -10/3/180 JENNINGS LABORATORIES.INC.

ANALYTICAL AND CONSULTING CHEMISTS

1118 CYPRESS AVENUE • P. O. BOX 851 • VIRGINIA BEACH, VA. 23451 • PHONE (804) 425-1498

VA (EPA) CERTIFIED LABORATORY for Drinking Water Analysis - Microbiological, Inorganic and Organic

**ASBESTOS ANALYSIS - NIOSH 582** 

Official Referee Chemists for: AMERICAN OIL CHEMISTS SOCIETY NATIONAL SOYBEAN PROCESSORS ASSOCIATION

Laboratory Certified by VA. STATE WATER CONTROL BOARD for Analysis of **Effluents for NPDES PERMITS CERTIFIED OFFICIAL U.S.D.A. LABORATORY** FOR MEAT ANALYSIS

#### **CERTIFICATE OF ANALYSIS**

Mr. Dave Goodwin TO: Building N-23 Atlantic Division Naval Facilities Engineering Command Norfolk, Virginia 23511

DATE: October 31, 1980

WATER SAMPLES (8) FOR COMPOSITE FOR PRIORITY POLLUTANT SCAN SAMPLE OF

Listed below MARKED

Samples picked up October 1, 1980

**OFFICIAL SAMPLE BY:** 

EIGHT (8) SAMPLES OF WATER TO BE COMPOSITED AS PER INSTRUCTIONS:

SAMPLE	MARKED	QUARTS	LOCATION	QUAN	TITY
#1		2	Hadnot Point Bldg 20	1552	ml
#2		1 1 Jacom	Hadnot Point Bldg 670	708	ml
#3		1	Tarawa Terrace TT-38	452	ml
#4		<b>1</b>	Monford Point M-178	220	ml
#5		1	MCAS(H) Bldg 110	664	ml
#6		1	Courthouse Bay BB-190	132	ml
#7		1	Rifle Range RR-85	220	ml
#8		1	Onslow Beach BA-138	52	ml
				4000	ml

Respectfully submitted, JENNINGS LABORATORIES, INC.

Laboratory 2518 Analysis No.

Doc No: CLEJ -00040 - 1.02 - 10/31/50

JENNINGS LABORATORIES, INC.

#### ACID EXTRACTABLE ORGANIC COMPOUNDS

		DETECTION LIMITS ug/1
Phenol	NONE DETECTED	1.4
2-Nitrophenol	None Detected	2.5
4-Nitrophenol	None Detected	2.5
2,4-Dinitrophenol	None Detected	7.0
4,6-Dinitro-o-cresol	None Detected	2.0
Pentachlorophenol	None Detected	10.0
p-Chloro-m-cresol	None Detected	.01
2-Chlorophenol	None Detected	2.0
2,4-Dichlorophenol	None Detected	2.1
2,4,6-Trichlorophenol	None Detected	3.0
2,4-Dimethylphenol	None Detected	1.7

#### PESTICIDES/PCB's

a-Endosulfan	None Detect	ted .005
β-Endosulfan	None Detect	ted .01
Endosulfan sulfate	None Detect	ted .03
a-BHC	None Detect	.002
β-внс	None Detect	.004
ô-BHC	None Detect	.004
ү-внс	None Detect	.002
Aldrin	None Detect	.003
Dieldrin	None Detect	.006
4,4'-DDE	None Detect	.006
4,4'-DDD	None Detect	.012
4,4'-DDT	None Detect	.016
Endrin	None detect	.009
Endrin Aldehyde	None Detect	.023
Heptachlor	None Detect	.002
Heptachlor Epoxide	None Detect	.004
Chlordane	None Detect	.04
Toxaphene	None Detect	.40

LAB 2518

BY E. R. Confor

## JENNINGS LABORATORIES, INC.

## BASE/NEUTRAL EXTRACTABLE ORGANIC COMPOUNDS (continued)

4-Bromophenyl phenyl ether	None Detected	DETECTION LIM
bis(2-Ethylhexyl)phthalate	None Detected	.02
Di-n-octyl phthalate	None Detected	.11
Dimethyl phthalate	None Detected	.11
Diethyl phthalate	None Detected	.13
Di-n-butyl phthalate	None Detected	.02
Fluorene	None Detected	.04
Fluoranthene	None Detected	.04
Chrysene	None Detected	.04
Pyrene	None Detected	.04
Phenathrene	None Detected	.04
Anthracene	None Detected	.04
Benzo(a)anthracene	None Detected	.04
Benzo(b)fluoranthene	None Detected	.04
Benzo(k)fluoranthene	None Detected	.04
Benzo(a)pyrene	None Detected	.04
Ideno(1,2,3-c,d)pyrene	None Detected	.10
Dibenzo(a,h)anthracene	None Detected	.10
Benzo(g,h,i)perylene	None Detected	.10
-Chlorophenyl phenyl ether	None Detected	2.2
3,3'-Dichlorobenzidine	None Detected	.04
enzidine	None Detected	.04
is(2-Chloroethyl)ether	None Detected	.04
,2-Diphenylhydrazine	None Detected	.04
exachlorocyclopentadiene	None Detected	.04
-Nitrosodiphenylamine	None Detected	1.0
cenaphthylene	None Detected	.04
cenaphthene	None Detected	.04
utyl benzyl phthalate	None Detected	.04
-Nitrosodimethylamine	None Detected	.2
-Nitrosodi-n-propylamine	None Detected	.5
is(2-Chloroisopropyl) ether	None Detected	.9

LAB # 2518

E.R. (0 BY ny

## DOC NO: CLEU - UDDY8 - 1.02 -10/31/80

JUNITED CABORATORIES, INC.

PURGEABLE	ORGANICS (continued)	DETECTION LIMITS
Chloroform	None Detected	.010
1,2-Dichloropropane	None Detected	.004
1,3-Dichloropropane	None Detected	.006
Methylene Chloride	None Detected	.010
Methyl Chloride	None Detected	.009
Methyl Bromide	None Detected	.03
Bromoform	None Detected	.02
Dichlorobromomethane	None Detected	.006
Trichlorofluoromethane	None Detected	.03
Dichlorodifluoromethane	None Detected	.01
Chlorodibromomethane	None Detected	.01
Tetrachloroethylene	None Detected	.007
<b>Trichloroethylene</b>	.005 µg/l	.005
Vinyl Chloride	.01 µg/1	.01
1,2-trans-Dichloroethylene	.006 µg/1	.006
bis(chloromethyl)ether	.003 µg/1	.003

## BASE/NEUTRAL EXTRACTABLE ORGANIC COMPOUNDS

None Detected	.04
None Detected	.04
None Detected	.04
None Detected	.001
None Detected	.001
None Detected	.002
None Detected	.006
None Detected	.40
None Detected	.04
None Detected	.04
None Detected	5.0
None Detected	5.0
None Detected	.06
None Detected	.06
	NoneDetectedNoneDetectedNoneDetectedNoneDetectedNoneDetectedNoneDetectedNoneDetectedNoneDetectedNoneDetectedNoneDetectedNoneDetectedNoneDetectedNoneDetectedNoneDetectedNoneDetectedNoneDetectedNoneDetectedNoneDetected

LAB # 2518

E.1 2 a BY

# JENNINGS LABORATORIES, INC.

AVALY FIGAL AND CONSULTING CHEMISTS

#### THEO YPELSS AVENUE + P.O. BOX 851 + VIRGINIA BEACH, VA. 23451 + PRONE 304) 125 (199)

VA (FPA) (FR1111FD1 ABORATORY ) a Drinking Water Anaty is Mariohooda ) a nor\_cone and Organic

ASBESTOS ANALASIS MOSH 582

Official Reference Chemisty for AMERICAN OIL CHEMISTS SOCIETY NATIONAL SOYBEAN PROCESSORS ASSOCIATION Liberatory Certified by VA, STATE WATER CONTROL BOARD for Analysis of Etiliants for NPDES PERMITS CERTIFIED OFFICIAL U.S.D.A. LABORATORY FOR MEAT ANALYSIS

#### CERTIFICATE OF ANALYSIS

Mr. Dave Goodwin
 Building N-23 Atlantic Division
 Naval Facilities Engineering Command
 Norfolk, Virginia 23511

DATE October 31, 1980

SAMPLE OF WATER SAMPLES (8) - Blank made on each analysis. Bromochloromethane,

MARKED 2-bromo-1-chloropropane, 1-4 dichlorobutane used as internal standard.

GC/MS calibrated with perfluorotributylamine, SIM MODE. All test run according to EPA TEST PROCEDURES. OFFICIAL SAMPLE BY:

	PURGEAB	LE ORGANICS	DETECTION LIMITS µ	Id/1
Acrolein	None	Detected	2.0	.9/ +
Acrylonitrile		Detected	2.0	
Benzene	None	Detected	10.0	
Toluene	None	Detected	10.0	
Ethylbenzene	None	Detected	10.0	
Carbon Tetrachloride	None	Detected	.007	
Chlorobenzene	None	Detected	.03	
1,2-Dichloroethane	None	Detected	.006	
1,1,1-Trichloroethane	.005	µg/1	.005	
1,1-Dichloroethane	.004	ug/1	.004	
1,1-Dichloroethylene	.006	µg/1	.006	11 201
1,1,2-Trichloroethane	.006	µg/1	.006	
1,1,2,2-Tetrachloroethane	.006	µg/1	.006	
Chloroethane	.01	µg/1	.01	
2-Chloroethyl vinyl ether	.08	µg/1	.08	

Respectfully submitted, [INNINGS1 ABOR ATORIES, INC.

E.R. (20

Laboration, Attaction Mar. 2518 NOC. NO. CLUN - ULATO 1.UN 10/01/80

#### JENNINGS LABORATORIES, INC. ANALYTICAL AND CONSULTING CHEMISTS

1118 CYPRESS AVENUE • P. O. BOX 851 • VIRGINIA BEACH, VA. 23451 • PHONE (804) 425-1498

VA (EPA) CERTIFIED LABORATORY for Drinking Water Analysis - Microbiological, Inorganic and Organic

ASBESTOS ANALYSIS - NIOSH 582

Official Referee Chemists for:

AMERICAN OIL CHEMISTS SOCIETY

NATIONAL SOYBEAN PROCESSORS ASSOCIATION Laboratory Certified by VA. STATE WATER CONTROL BOARD for Analysis of Etfluents for NPDES PERMITS

CERTIFIED OFFICIAL U.S.D.A. LABORATORY FOR MEAT ANALYSIS

#### CERTIFICATE OF ANALYSIS

Mr. Dave Goodwin TO Building N-23 Atlantic Division Naval Facilities Engineering Command Norfolk, Virginia 23511

DATE: October 31, 1980

WATER SAMPLES (8) FOR COMPOSITE FOR PRIORITY POLLUTANT SCAN SAMPLE OF

Listed below MARKED

Samples picked up October 1, 1980

OFFICIAL SAMPLE BY:

EIGHT (8) SAMPLES OF WATER TO BE COMPOSITED AS PER INSTRUCTIONS:

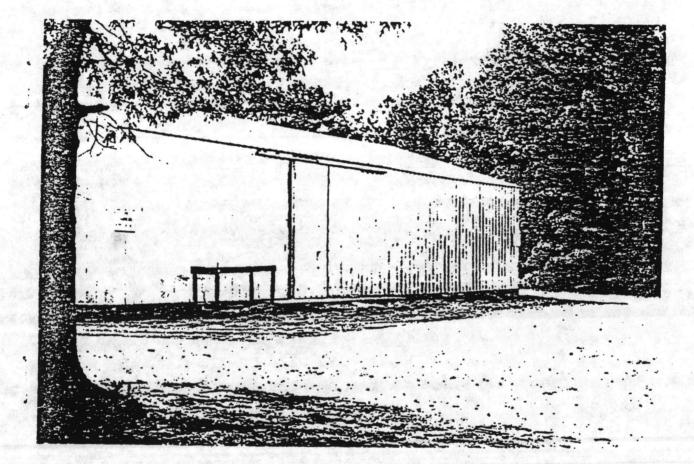
SAMPLE MARKED	QUARTS	LOCATION	QUAN'	TITY
#1	2	Hadnot Point Bldg 20	1552	ml
#2	1	Hadnot Point Bldg 670	708	ml
# 3	1.000	Tarawa Terrace TT-38	452	ml
#4	1	Monford Point M-178	220	ml
#5	1	MCAS(H) Bldg 110	664	ml
#6	1	Courthouse Bay BB-190	132	ml
#7	1	Rifle Range RR-85	220	ml
#8	1	Onslow Beach BA-138	52	ml
	18 A.		4000	ml

Respectfully submitted, JENNINGS LABORATORIES, INC.

Laboratory 2518 Analysis No.

Part VI, EPA Form 3510-3 (6-80) Marine Corps Base, Camp Lejeune EPA ID No. NC 6170022580

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PHOTOGRAPH #3 Bldg TP-451 Taken - 26 October 1980

DOC. NU.

Part VI, EPA Form 3510-3 (6-8 Marine Corps Base, Camp Lejeu EPA ID No. NC 6170022580

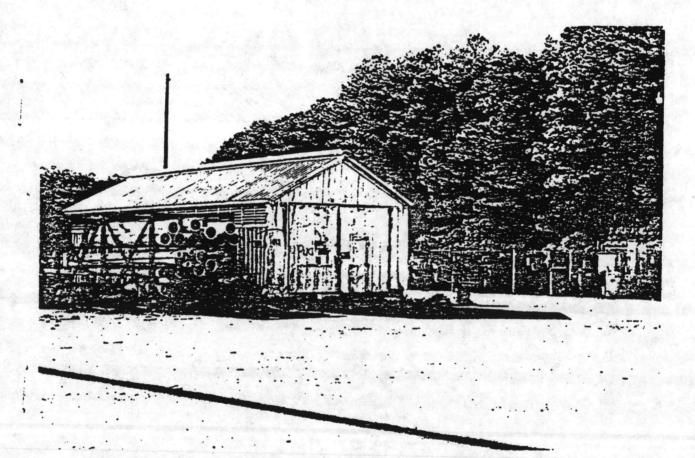


PHOTOGRAPH #2 Bldg TP-451 Taken - 26 October 1980

DOC.NO .: CLEU

Part VI, EPA Form 3510-3 (6-8 Marine Corps Base, Camp Lejeu EPA ID No. NC 6170022580

10/31/00



PHOTOGRAPH #1 Lot 140 Taken - 26 October 1980

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#### Continued from the front.

#### III. PROCESSES (continued)

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESSES (code "T04"). FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

1)	. DESCRIPTION OF HAZARDOUS WASTES
A.	EPA HAZARDOUS WASTE NUMBER - Enter the four-digit number from 40 CFR, Subpart D for each listed hazardous waste you will handle. If you
	handle hazardous wastes which are not listed in 40 CFR, Subpart D, enter the four-digit number(s) from 40 CFR, Subpart C that describes the characteris-
	tics and/or the toxic contaminants of those hazardous wastes.

- B. ESTIMATED ANNUAL QUANTITY For each listed waste entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.
- C. UNIT OF MEASURE For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH	1	u	N	17	<b>r</b>	Q	E	N	tE	A	S	U	R	E		2		_	_	_	_	_	1	C	ODE	
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If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

#### D. PROCESSES

1. PROCESS CODES: For listed hazardous waste: For each listed hazardous waste entered in column A select the code(s) from the list of process codes contained in Item III to indicate how the waste will be stored, treated, and/or disposed of at the facility.

For non-listed hazardous wastes: For each characteristic or toxic contaminant entered in column A, select the code/s/ from the list of process codes contained in Item III to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed hazardous wastes that possess that characteristic or toxic contaminant.

Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of Item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code/s).

2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER - Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

- 1. Select one of the EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns B,C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
- In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In column D(2) on that line enter "included with above" and make no other entries on that line.
- 3. Repeat step 2 for each other EPA Hazardous Waste Number that can be used to describe the hazardous waste.

EXAMPLE FOR COMPLETING ITEM IV (shown in line numbers X-1, X-2, X-3, and X-4 below) — A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

ARD.	B. ESTIMATED ANNUAL QUANTITY OF WASTE	OF MEA.		
code)	QUANTITY OF WASTE	SURE (enter code)	1. PROCESS CODES (enter)	2. PROCESS DESCRIPTION (if a code is not entered in D(1))
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02	400	P	T 0 3 D 8 0	
0 1	. 100	P	TOJD80	
02				included with above
0	1			

#### V. DESCRIPTION OF HAZARDOUS WASTES (continued) E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM ITEM D(1) ON PAGE 3.

Note #1 (From Pages 1 & 3 of 5): Asbestos is generated aboard this Facility during repair or demolition of buildings and utilities. Asbestos wastes are disposed of at the Base Saniry Landfill in accordance with instructions provided by Solid Waste Disposal Regulations of .e State of North Carolina and personnel of the North Carolina Department of Human Resources

Note #2 (From Pages 1 & 3 of 5): Sludges from base sewage treatment plants are not included because there are no industrial or manufacturing operations located aboard base. Steps are underway to analyze sludges for contents.

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EPA I.D. NO. (enter from page 1)			
NC61700225806			
V. FACILITY DRAWING	- Carl Brite States States State State	a a she a she a she a far a a she a she a she	War to we way and to be a single the state
All existing facilities must include in the space provi	ded on page 5 a scale drawing of the f	acility (see instructions for mor	e detail).
VI. PHOTOGRAPHS		and the second attack in the	the sector of the sector have
All existing facilities must include photograph treatment and disposal areas; and sites of future for the second s	ns (aerial or ground—level) that cl are storage, treatment or disposal	early delineate all existing s areas (see instructions for n	tructures; existing storage, nore detail & SFF ATTACHMENT B
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VIII. FACILITY OWNER	and the second second second second	and the state of the state	The second states and the states
B. If the facility owner is not the facility opera 1. NAME OF NA	tor as listed in Section VIII on Form 1 FACILITY'S LEGAL OWNER	, complete the following items	2. PHONE NO. (area code & no.)
s 16			<u>55 56 - 38 59 - 41 62 - 45</u>
3. STREET OR P.O. BOX	4. CIT	Y OR TOWN	5. ST. 6. ZIP CODE
NA	G NA		
IX. OWNER CERTIFICATION		40	ETHERE ENDER THE PARTY OF THE PARTY OF THE
I certify under penalty of law that I have perso documents, and that based on my inquiry of to submitted information is true, accurate, and co including the possibility of fine and imprisonm	onally examined and am familiar v hose individuals immediately resp omplete. I am aware that there are	onsible for obtaining the init	formation, I believe that the
A. NAME (print or type) D. B. BARKERD MGEN USIAC	B. SIGNATURE BBB	len	C. DATE SIGNED S 1 CCT 1380
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certify under penalty of law that I have perso documents, and that based on my inquiry of the 'tted information is true, accurate, and co ding the possibility of fine and imprisonm	nose individuals immediately response to the second	onsible for obtaining the inf	formation, I believe that the
A. NAME (print or type)	B. SIGNATURE		C. DATE SIGNED
NA ,	NA		
A Form 3510-3 (6-8")			CONTINUE ON DACE

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EPA Form 3510-3 (6-80)

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CONTINUE ON REVERSE

Waste Quantity:	Facility Type	Total Facility Waste Amount
Place an X in the appropriate boxes to indicate the facility types found at the site.	1.  Piles Land Treatment	cubic feet
n the "total facility waste amount" space	3. 🗆 Landfill	gallons Unknown
give the estimated combined quantity volume) of heardous wastes at the site	4. 🗆 Tanks	Total Facility Area
using cubic feet or gallons.	5. I Impoundment	square feat
n the "total facility area" space, give the	6. Underground Injection	a second for the second for second the second for
estimated area size which the facilities	7XII Drums, Above Ground	acres 70
occupy using square feet or acres.	8. Drums, Below Ground	
	9xt Other (Specify) Miscella	neous containers

#### Known, Suspected or Likely Releases to the Environment:

Place an X in the appropriate boxes to indicate any known, suspected, or likely releases of wastes to the environment.

C Known C Suspected C Likely C None See Section I Below

Note: Items Hand I are optional. Completing these items will assist EPA and State and local governments in locating and assessin nazardous waste sites. Although completing the items is not required, you are encouraged to do so.

#### Sketch Map of Site Location: (Optional) 4

Sketch a map showing streets, highways, routes or other prominent landmarks near the site. Place an X on the map to indicate the site location. Draw an arrow showing the direction north. You may substitute a publishing map showing the site location.

SEE ATTACHED MAP .

# Description of Site: (Optional)

Describe the history and present conditions of the site. Give directions to the site and describe any nearby wells, springs, lakes, or housing. Include such information as how waste was disposed and where the waste came from. Provide any other information or comments which may help describe the site conditions.

Records indicate that the materials were stored on these two lots in a manner which could have resulted in discharges in excess of amounts specified in this regulation. Action is underway to determine if DDT residues are present in significant amounts.

#### Signature and Title: 3

The person or authorized representative (such as plant managers, superintendents, trustees or attorneys) of persons required to notify must sign the form and provide a mailing address (if different than address in item A). For other persons providing notification, the signature is optional. Check the boxes which best describe the relationship to the site of the person required to notify. If you are not required o notify check "Ather"

Name	D. B. Barker, MAJC Commanding General Marine Corps Base		AL		- 10 Owner, Present
City	Camp Lejeune	State NC	Zip Coda	28542	<ul> <li>Operator, Present</li> <li>Operator, Past</li> </ul>
Signatu	D. B. BARKER		Date	8 JUN 19	00 Other 981

Doc. No.: CLE	J-00122-1.02-06/	Ice/81	Agency Washington DC 20460
This initial notification information is	Please type or print in ink. If you need additional space, use separate sheets of	all and a star and from	

Person Required to Notif	hr.	Chine Service	Contraction of the second	-	and a second	A.	<u> 1997 - 1997 -</u>	1.1.1.1.1.1.1	
Enter the name and address	Charles and the second	Name	Commandi	ng General					
or organization required to n	otify.	Street	Marine Co	orps Base	hite a sug	the second	9 A. 199	n an	and the state
		City	Camp Leje	eune	and the gat	State	NC	Zip Code	28542
Site Location:	<u>na sector en e</u> Sector de la composición br>Sector de la composición					1000	1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 19		
Enter the common name (if k actual location of the site.	nown) and	Name o	I Site Store	age Lots 20	Di & 203 (	Site 1	2) -		
	연락 성 다양이	Street	Marine	Corps Bas	1e		-		
		City		jeune County	Onslow	State	NC	Zip Code	28542
Person to Contact:		1.1.1	ina ay a Y		Contraction (Section)				
Enter the name, title (if applic	cable), and	Name (L	ast, First and Titl	e) Wooten,	Julian	, Dir	, Nat	ural H	Resources
business telephone number of to contact regarding information submitted on this form.	of the person ion	Phone	(919) 49	51-5003					
Dates of Waste Handling:									
Enter the years that you estim							•		
treatment, storage, or disposa	began and	From (Ye	ar) 1970	To (Year)	1981				
ended at the site.				and a strend strend		Providence in the	1	1.000	
								1. Albert 1.	
encouraged to describe the sit General Type of Waste: Place an X in the appropriate boxes. The categories listed overlap. Check each applicable category.	Source of Place an X boxes.	Waste		Specific T EPA has as listed in th appropriate	e regulations	r-digit n under S umber in	the box	3001 of R	zardous wast CRA. Enter th ed. A copy of
				contacting located.	the EPA Regi	ion servi	ng the s	State in w	hich the site
1. Organics	1. 🗆 Mini	ng		IUCAISU.	Aleren der al	P gest set i	12 4		
2. Inorganics	2. 🗆 Cons	Sec.	n	Para Parata Santa				<b></b>	
3. Solvents	3. 🗆 Texti		St. and the						
4. 22 Pesticides	4. 🗆 Ferti		and (september) of the	ndig general a sint and the	and the second second	r è la politique	approprint the	the test of the system	and another property dates
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8. C PCBs	7. Iron/			and Mary 28-		AP Lat			
9. I Mixed Municipal Waste	8. Chen		State of the second			Salation.			1.000
10. Unknown	9. D Platin								
11. Other (Specify)	10. 🗆 Milita		and the second	and with a start	and the second second	Sel Se	1.00	C. B. Garris	e . a constant
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and the second	13. 🗆 Utilin 14. 🗆 Sanit								
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	for 10%		ALC SALE OF						
Form Approved OMB No. 2000-0133			terials						

6.94 Form 3900-1

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•	Waste Quantity:	Facility Type	Total Facility Waste Amount
	Place an X in the appropriate boxes to indicate the facility types found at the site.	1.  Piles Land Treatment	cubic feet
	In the "total facility waste amount" space	3. 🗆 Landfill	galions Unknown
	give the estimated combined quantity (volume) of hazardous wastes at the site using cubic feet or gallons.	4. 🗆 Tanks 5. 🗆 Impoundment	Total Facility Area
	In the "total facility area" space, give the estimated area size which the facilities occupy using square feet or acres.	<ol> <li>G Underground Injection</li> <li>Drums, Above Ground</li> <li>Drums, Below Ground</li> </ol>	acres 1/2
		9. XX Other (Specify) Fire Tra:	ining Pit
3	Known, Suspected or Likely Releases to	o the Environment:	

Place an X in the appropriate boxes to indicate any known, suspected, or likely releases of wastes to the environment. □ Known □ Suspected □ Likely □ Nor See Section I Below

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Note: Items Hand I are optional. Completing these items will assist EPA and State and local governments in locating and assessin hazardous waste sites. Although completing the items is not required, you are encouraged to do so.

#### - Sketch Map of Site Location: (Optional)

Sketch a map showing streets, highways, routes or other prominent landmarks near the site. Place an X on the map to indicate the site location. Draw an arrow showing the direction north. You may substitute a publishing map showing the site location.

SEE ATTACHED MAP

## Description of Site: (Optional)

!

Describe the history and present conditions of the site. Give directions to the site and describe any nearby wells, springs, lakes, or housing. Include such information as how waste was disposed and where the waste came from. Provide any other information or comments which may help describe the site conditions.

Used cil containing undetermined amounts of degreasers and solvents were burned for fire fighting training. Accidental discharges of water and residues of above mixtures were likely to have occurred. Upgrading the site to provide pollution abatement structures is underway.

#### J Signature and Title:

The person or authorized representative (such as plant managers, superintendents, trustees or attorneys) of persons required to notify must sign the form and provide a mailing address (if different than address in item A). For other persons providing notification, the signature is optional. Check the boxes which best describe the relationship to the site of the person required to notify. If you are not required

Name	D. B. BARKER, MAJOR GEN	IERAL	_ Owner, Present
Street	Commanding Ceneral Marine Corps Base		Owner, Pr     Transporter
City	Camp Lejeune State	NC Zip Code 28542	<ul> <li>Operator, Presen</li> <li>Operator, Past</li> </ul>
Signatu	D. B. BARKER	Date - 8 JUN	1981 Other

	Dec.	No.: CI	LEJ-COIZZ	1.02 -	ce la	8./8.1	Agency	imental Protectio
(	This initial notification inform required by Section 103(c) of hensive Environmental Responsation, and Liability Act of 19 be mailed by June 9, 1981.	nation is the Compre- inse, Compen	Please type or prin additional space, us	t in ink. If you n	eed		<u>vvasiiii</u>	300 20 20400
1	Person Required to Notify	<i>/</i> :		and the second s				and the second
	Enter the name and address or organization required to no	of the cerson	Name Commandir	ng General				
	or organization required to no	tiry.	Street Marine Co	orps Base	an hender fan i			
			City Camp Leje	eune	ng ratha sabbay	State NC	Zip Code	28542
3	Site Location:							
	Enter the common name (if kr	iown) and	Name of Site Fire f	ighting Tra	ining F	it (Site 1	L)	
	actual location of the site.	an ann an thailte An an an thailte	Street Marine	Corps Base				
			City Camp Lejeun	e County O	nslow	State NC	Zip Code	28542
;	Person to Contact:							
	Enter the name, title (if applica	ible), and	Name (Last, First and Title	Wooten, J	ulian,	Dir, Natura	l Resour	ces Divisi
	business telephone number of to contact regarding informatic submitted on this form.	the person on	Phone (919) 451	-5003				
)	Dates of Waste Handling:							
	Enter the years that you estimate treatment, storage, or disposal ended at the site.	ate waste began and	From ('/əər) 1967	To (Year)	Prese	nt		
	aste Type: Choose the op Option I: Select general waste you do not know the general w	types and so aste types or	urce categories. If sources, you are	Option 2: Th Resource Co	his option	is available to n and Recovery	persons fam	iliar with the Section 3001
	encouraged to describe the site General Type of Waste: Place an X in the appropriate- boxes. The categories listed overlap. Check each applicable category.	Source of		regulations ( Specific Typ EPA has ass listed in the appropriate f the list of ha	40 CFR P igned a for regulation our-digit zardous v	art 261).	r to each ha n 3001 of R poxes provid es can be ob	cardous waste CRA. Enter the ed. A copy of tained by
	1. Organics	1. 🗆 Min	ing	located.				and determined
	2. Inorganics	2. 🗆 Con		C. C	-	Carlos and C	1	
	3.2 Solvents	3. 🗆 Text	iles		-			
	4. D Pesticides	4. C Fert	ilizer	and the growth of the second s		alle an	en en el <del>recenterio</del>	
	5. C Heavy metals	5. C Pape	er/Printing			all-second second	in the second second second	
	6. C Acids		her Tanning	and the state of the state		San	and the second second second	and a state of a
	7. C Bases		/Steel Foundry			and the second second	and the second	All and the second
	8. C PCBs		mical, General	a a de la composición				
	9. I Mixed Municipal Waste		ng/Polishing					
	10.2 Unknown		ary/Ammunition				and the second	10 NO 1 NO
- and	11. C Other (Specify)		trical Conductors	en en del marco e del del controlo El	and the state of the		n seconda a	the state of the second
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(	NAL MADE AND	16. 🗆 Lab/	the set we are build to be a set of the					
(		17. Unkr 18. <sup>2</sup> Othe	r (Specify)					
		Shop	<u>cle Maintenance</u>					
	erm Approved							
	NIS NO. 2000-0133	Sec. 1						
11	PA Form 3300-1							

F	Waste Quantity:	Facility Type	Total Facility Waste Amount
	Place an X in the appropriate boxes to indicate the facility types found at the site.	1.  Piles 2. Land Treatment	cubic feet
	In the "total facility waste amount" space	3. 🗆 Landfill	gallons
	give the estimated combined quantity (volume) of hazardous wastes at the site using cubic feet or gallons.	4. 🗆 Tanks 5. 🗆 Impoundment	Total Facility Area
	In the "total facility area" space, give the estimated area size which the facilities occupy using square feet or acres.	<ol> <li>G. Underground Injection</li> <li>Drums, Above Ground</li> <li>Drums, Below Ground</li> </ol>	acres
		9x2 Other (Specify) Flammable	storage Warehouse

# Place an X in the appropriate boxes to indicate any known, suspected,

C Known X Suspected C Likely No

Note: Items Hand I are optional. Completing these items will assist EPA and State and local governments in locating and assess hazardous waste sites. Although completing the items is not required, you are encouraged to do so.

## H Sketch Map of Site Location: (Optional)

or likely releases of wastes to the environment.

Sketch a map showing streets, highways, routes or other prominent landmarks near the site. Place an X on the map to indicate the site location. Draw an arrow showing the direction north. You may substitute a publishing map showing the site location.

See Attached Map

## Description of Site: (Optional)

Describe the history and present conditions of the site. Give directions to the site and describe any nearby wells, springs, lakes, or housing. Include such information as how waste was disposed and where the waste came from. Provide any other information or comments which may help describe the site conditions.

In 1977 a structural fire destroyed the flammable storage warehouse (Building TP-452) which contained stocks of flammable materials as indicated in Section E above. Records indicate that because of the nature of the fire, the structure and contents were allowed to burn. Consequently, it is the opinion of this Command that although discharges likely exceeded 55 gallons total volume released was minor. Between 1977 and 1980, Building TP-451 was utilized as interim storage facility for flammable materials until a new facility to replace Building TP-452 was constructed. Building TP-451 is currently used as hazardous waste storage facility.

### J Signature and Title:

The person or authorized representative (such as plant managers, superintendents, trustees or attorneys) of persons required to notify must sign the form and provide a mailing address (if different than address in item A). For other persons providing notification, the signature is optional. Chack the boxes which best describe the relationship to the site of the person required to notify. If you are not required to notify check "Other".

Nama	D. B.	BARKER,	MAJOR	GEN	ERAI			Downer, Present
		ding Gen Corps						Owner, P Transport
		Lejeune		State			28542	<ul> <li>Operator, Prese</li> <li>Operator, Past</li> </ul>
Signatu	, D. E	BARKE	R			- 8 Date	JUH 198	1 Other
Signatu	re			in a la		Date		1

Dec. No. : CI	EJ-00122-1.02-06/08/81	Agency Washington DC 20460
This initial notification information is required by Section 103(c) of the Compre- hensive Environmental Response, Compen- sation, and Liability Act of 1980 and must be mailed by June 9, 1981.	Please type or print in ink. If you need additional space, use separate sheets of paper. Indicate the letter of the item which applies.	
Person Required to Notify: Enter the name and address of the person	Name Commanding General	

Person Required to Notify:		1.000	0	1210					1.00						Sea. alter
Enter the name and address of	the person -	lame	Con	man	aing	Ge	neral	-	- North	1.12	1000	1	1.1.1		
or organization required to noti	ry.	treet	Mar	ine	Cor	ps 1	Base					A STREET			
	<u>q</u>	ity	Can	φL	ejeu	ne	N.		1.1	in the	State	NC	Zip Code	285	542
Site Location:		1.101		11-14				1			and a second		1997 - 1997 1997 - 1997 1997 - 1997	1000 - 1000 1000 - 1000	
Enter the common name (if kno	wn) and	ame of	Sita	Bu	ildi	ng '	TP452	Sit	;e &	TP-	451	(Site	10)	11-11-	
actual location of the site.	a state of	treet	Mar	ine	Cor	ps 1	Base				line e Stora				
	<u>c</u>	ity Ca	mp I	le.je	une		County	Or	nslo	W	State	NC	Zip Code	285	542
Person to Contact:		ale de la						1	1. 9 <sup>(21)</sup>	9.96		1.19.19	The second		1. A. S.
Enter the name, title (if applicat		ama (La	ast, Firs	t and	Title) V	loot	en, i	Juli	an,	Dir	, Na	tural	Resourc	es D	ivisio
business telephone number of t to contact regarding information submitted on this form.	he person	попе	453	L-50	03									-1	
Dates of Waste Handling: Enter the years that you estimat	e waste	om (Yea	10	rly			) (Year)		Pres	ent					
treatment, storage, or disposal b ended at the site.	a a a a a a a a a a a a a a a a a a a										and a second				
Ista Type: Choose the opti Uption I: Select general waste t you do not know the general wa	vpes and sour	e cata	ecorie	s. If	1	Opt	ion 2:	This	optio	n is i	availa	ble to p	ersons fan Act (RCRA	niliar w	with the
encouraged to describe the site	in Item I-Des	riptio	n of S	ite.	33	regi	lation	s (40	CFR	Part	261).	covery	ICI (ACAA	Jecu	50 3001
General Type of Waste: Place an X in the appropriate boxes. The categories listed overlap. Check each applicable category.	Source of V Place an X i boxes.			priat	8	EPA liste app the cont	d in the opriat list of acting	ne reg e fou hazar	ed a julation r-digit r-digit	four- ons u t nun wast	nder nber ies al	Section in the bo nd codes	to each ha 3001 of F xes provid can be ol State in v	ICRA. I led. A stained	Enter the copy of by
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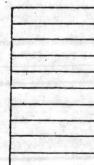
- 6. X Acids

1

- 7.13 Bases 8. C PC8s
- 9. C Mixed Municipal Waste
- 10. TUnknown
- 11. C Other (Specify)

Form Approved OMB No. 2000-0138 EPA Form 8300-1

- 5. D Paper/Printing
- 6. C Leather Tanning
- 7: Iron/Steel Foundry
- 8XA Chemical, General
- 9. D' Plating/Polishing
- 10. D Military/Ammunition
- 11. D Electrical Conductors
- 12. C Transformers
- 13. Utility Companies
- 14. C Sanitary/Refuse 15. D Photofinish
- 16. D Lab/Hospital
- 17. Unknown
- 18.20 Other (Specify) Structural Fire
- of Storage Warehouse



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a state to the second	

•	Waste Quantity:	F	acility Type	Total Facility Wast	e Amount
	Place an X in the appropriate boxes to indicate the facility types found at the site.		. 🗆 Piles	cubic feet See Sect	tion I Below
	In the "total facility waste amount" space		. 🗆 Land Treatment	gallons	
	give the estimated combined quantity (volume) of hazardous wastes at the site	Section Section	. 🗆 Tanks	Total Facility Area	
	using cubic feet or gallons.		.  Impoundment Injection	square feet	
	In the "total facility area" space, give the estimated area size which the facilities		. D Drums, Above Ground	acres 40	a contractor
	occupy using square feet or acres.	8. 9	.  D Drums, Below Ground Conter (Specify)	& Destruction of	of Ordnance
	Known, Suspected or Likely Releases	to the	Environment:		a din material
	Place an X in the appropriate boxes to indica or likely releases of wastes to the environme		known, suspected, C See Section	]Known □ Suspect 1 I Below	ed 🗆 Likely 🗆 None
	Note: Items Hand I are optional. Completin hazardous waste sites. Although completin	ng these ng the i	e items will assist EPA and State and tems is not required, you are encoura	local governments in iged to do so.	locating and assessin
+	Sketch Map of Site Location: (Option	al)			
	Sketch a map showing streets, highways, routes or other prominent landmarks near the site. Place an X on the map to indicate the site location. Draw an arrow showing				······································
	the direction north. You may substitute a publishing map showing the site location.				
			and the second		
	SEE ATTACHED MAP				
			and the second		
					· · · · · · · · · · · · · · · · · · ·
	Description of Site: (Optional)				
	Describe the history and present conditions of the site. Give directions to the site and describe any nearby wells,				
	springs, lakes, or housing. Include such information as how waste was disposed			e de barger	
	and where the waste came from. Provide any other information or comments which		1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1		
	may help describe the site conditions.				
	Site is located in a restricted	area	of the base. Disposal of	ordnance is acc	omplished -
	by trained personnel. There is	no ir	nformation available at thi	s time which in	dicates
	release of hezardous wastes to t	the er	wironment.		
					State in the
J	Signature and Title:		an a	100 (100 (100 (100 (100 (100 (100 (100	and a second
	The person or authorized representative	Name	D. B. BARKER, MAJOR GENER	AL X	Owner, Present
	(such as plant managers, superintendents, trustees or attorneys) of persons required	Street	Commanding General Marine Corps Base		Owner, Par
	to notify must sign the form and provide a mailing address (if different than address is its address and a second providing the second provide the second prov	Stradt		08510	Transporte     Operator, Present
	in item A). For other persons providing notification, the signature is optional. Check the boxes which best describe the	City	Camp Lejeune State NC	Zip Code 28542	<ul> <li>Operator, Past</li> <li>Other</li> </ul>
	relationship to the site of the person required to notify. If you are not required to notify check "Other".	Signatur	D. B. BARKER	Date B JUN 10	

$\overline{D}$	occ. Ne.	CLEJ-CON	22-1.0	02-0E	108/81	Agency Washing	ton DC 20460
This initial notification inform required by Section 103(c) of the hensive Environmental Responsation, and Liability Act of 198 be mailed by June 9, 1981.	ation is he Compre- ise, Compen-	Please type or print additional space, us	t in ink. If you e separate shi	need eets of			
	in the second	<u> </u>	Contract Contract				
Person Required to Notify:			and the second second	the all the second second	化40% 开始。这是这	an an the second	All and a second
Enter the name and address of	the person	Name Commandin	g General	La contraction of the			Land in the
or organization required to noti	Street Marine Co	rps Base					
		States and the second	and the second states		ALL STREET		09510
		City Camp Leje	une		State NC	Zip Code	28542
Site Location:					Production of the	align georges	1
Enter the common name (if kno	wn) and	Name of Site G4A R	ange (Site	91			
actual location of the site.		Street Marine C	orps Base	i the state			
		City Camp Lejeun	0	Onslow	NC NC	and the second	28542
		City Camp Lejeun	e County	OIISTOW	State NO	Zip Code	
Person to Contact:				10.00	and the set		
Enter the name, title (if applical		Name (Last, First and Title	Wooten,	Julian,	Dir, Natur	al Resou	rces Divis
business telephone number of t to contact regarding information		Phone (919) 451.	-5003				
submitted on this form.	1.5 1 1 K R 1	A State States - Barris					
	<u></u>					•	
Dates of Waste Handling:				i na s			
Enter the years that you estima		From (Year) 1974	To (Year)	Preseb	t series	and and	dia .
treatment, storage, or disposal t ended at the site.	began and	From(rear) 1914	Io (rear)	TICDCA			
					김 씨의 영양이	and a street	
encouraged to describe the site General Type of Waste: Place an X in the appropriate boxes. The categories listed overlap. Check each applicable category.	Source of	State of the second second	regulation Specific T EPA has a listed in th appropriat the list of	s (40 CFR P ype of Was ssigned a for regulation e four-digit hazardous v	te: our-digit numbe ns under Sectio number in the vastes and code	r to each ha n 3001 of R boxes provic es can be ob	izardous wasti CRA. Enter th led. A copy of stained by
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EPA Form 8900-1							

	Waste Quantity:		Total Facility Waste Amount
	Place an X in the appropriate boxes to indicate the facility types found at the site.		ubic feet See Section I Below -
	In the "total facility waste amount" space	2.  Land Treatment 3.  Landfill	allons
	give the estimated combined quantity (volume) of hezardous wastes at the site		Total Facility Area
	using cubic feet or gallons.	5. 🗆 Impoundment	square feet
	In the "total facility area" space, give the estimated area size which the facilities		icres 4
	occupy using square feet or acres.	8. Drums, Below Ground 9. Sc Other (Specify) Detonation & 1	Destruction of Ordnance
1	Known, Suspected or Likely Releases to		
	Place an X in the appropriate boxes to indicate or likely releases of wastes to the environment		Known 🗆 Suspected 🗆 Likely 🗆 Non. e Section I Below
	Note: Items Hand I are optional. Completing hazardous waste sites. Although completing	these items will assist EPA and State and lo the items is not required, you are ancourage	cal governments in locating and assessined to do so.
+	Sketch Map of Site Location: (Optional	)	
	Sketch a map showing streets, highways, routes or other prominent landmarks near		المحقب ويستنقص الجريد والمحصيب
	the site. Place an X on the map to indicate	A state of the second sec	
	the site location. Draw an arrow showing the direction north. You may substitute a	· · · · · · · · · · · · · · · · · · ·	
	publishing map showing the site location.		
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I	Description of Site: (Optional)		the second second second
	Describe the history and present conditions of the site. Give directions to		and the second as a second
	the site and describe any nearby wells,		
	springs, lakes, or housing. Include such information as how waste was disposed		
	and where the waste came from. Provide any other information or comments which	and the second	
	may help describe the site conditions.		
		The base Disposil of D	rdnance is accomplished
	Site is located in a restricted a	no information available at thi	s time which indicates
	by trained personnel. There is release of hazardous wastes to the	e environment.	
	Telease of Mazardous, "Dere		
	승규가 많은 것이 같은 것이 같아요.	A CARLES AND A CARLES	
1	Signature and Title:		and the second second second second second
Ĩ.	The person or authorized representative	Name D. B. BARKER, MAJOR GENERAL	Owner, Present
	(such as plant managers, superintendents, trustees or attorneys) of persons required	Commanding General	Owner, Pa
	to notify must sign the form and provide a mailing address (if different than address	Sureet Marine Coros Base	Transport     Transport     Operator, Present
	in the AL For other percent providing	City Camp Lejeune State NC	Zip Code 28542 □ Operator, Past
	relationship to the site of the person required to notify. If you are not required	Bignature D. B. BARKER	Bate 8 JUN 1981
	to notify check "Other"		

Dec. 1	NC. : CLE	5-00122	-1.02-06/08	1/81	Agency Washington DC 20460
This initial notification inform required by Section 103(c) of t hensive Environmental Respor sation, and Liability Act of 198 be mailed by June 9, 1981.	ation is he Compre- hse, Compen-	Please type or prin additional space, us	t in ink. If you need se separate sheets of		
Person Required to Notify:	a state of the state of the	一、"有了你 考虑"	No. and the second s	and the group	
Enter the name and address of	the person	Name Commandir	ng General		and the state of the state of the
cr organization required to not	ify.	Street Marine Co	orps Base	The second second	approxy approximation and
		City Camp Leje	eune	State NC	Zip Code 28542
Sita Location:				The Martin Story	
Enter the common name (if kno actual location of the site.	own) and	Name of Site K-32	26 Range (Site 8)		
include focation of the site.		Street Marine	e Corps Base	and the second	and the second
		City Camp Lejeu	ine County Onslow	State NC	Zip Coda 23542
Person to Contact:			19 1 H 19 1		
Enter the name, title (if applical business talephone number of to contact regarding information submitted on this form.	the person	Name (Last, First and Titl Phone (919) 45		Dir, Natural	Resources Divisi
Dates of Waste Handling:	<u></u>				
Enter the years that you estimate treatment, storage, or disposal is ended at the site.		From(Year) 1974	To (Year) Presen	t	
encouraged to describe the site General Type of Waste: Place an X in the appropriate boxes. The categories listed overlap. Check each applicable category.	Source of	Contract Mathematica	listed in the regulation appropriate four-digit the list of hazardous	ste: four-digit number ons under Section number in the be wastes and codes	to each hazardous waste 3001 of RCRA. Enter the oxes provided. A copy of a can be obtained by State in which the site i
1. D Organics	1. 🗆 Min	ina	located.		
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	and the second	E. Serverser -		and a strange in a	
Form Approved OMB No. 2000-0133 SPA Form 3300-1					unanter de preside

Waste Quantity:	Facility Type	Total Facility Waste Amount * .
Place an X in the appropriate boxes to	1. D Piles	cubic feet Unknown
indicate the facility types found at the site.	2. D Land Treatment	gallons
In the "total facility waste amount" space give the estimated combined quantity	3. Landfill	
(volume) of hazardous wastes at the site	<ol> <li>4. □ Tanks</li> <li>5. □ Impoundment</li> </ol>	Total Facility Area
using cubic feet or gallons.	6. Underground Injection	square faet 20,000
In the "total facility area" space, give the estimated area size which the facilities	7. Drums, Above Ground	acres
occupy using square feet or acres.	8. C Drums, Below Ground	and the second
	9. ExOther (Specify)Used trans	former storage area
Known, Suspected or Likely Releases to	the Environment:	
Place an X in the appropriate boxes to indicate or likely releases of wastes to the environmen	any known, suspected,	C Known C Suspected X2 Likely C No
Note: Items Hand I are optional. Completing hazardous waste sites. Although completing	these items will assist EPA and State the items is not required, you are enc	and local governments in locating and assess ouraged to do so.
Sketch Map of Site Location: (Optional	)	
Sketch a map showing streets, highways,		والمستعد سيسار المراجع بمراجع والمراجع والمراجع والمراجع
routes or other prominent landmarks near the site Place an X on the map to indicate		
the site location. Draw an arrow showing		
the direction north. You may substitute a publishing map showing the site location.		
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Description of Site: (Optional)		and the second
Describe the history and present conditions of the site. Give directions to		
the site and describe any nearby wells.		
springs, lakes, or housing. Include such information as how waste was disposed		
and where the waste came from. Provide	· -	
any other information or comments which		
any other information or comments which may help describe the site conditions.		
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Site is an open lot where transf Prior to current PCB control reg discharged onto soil in the area	. Recent soil samples of su	urface layer of soil (Top 6")
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Site is an open lot where transf Prior to current PCB control reg discharged onto soil in the area	. Recent soil samples of su	urface layer of soil (Top 6")

The person or authorized representative	
(such as plant managers, superintendents,	
trustees or attorneys) of persons required	
to notify must sign the form and provide a	
mailing address (if different than address	
in item A). For other persons providing	
notification, the signature is optional.	
Check the boxes which best describe the	
relationship to the site of the person	
required to notify If you are not required	

Name	D. B. BARKER, MAJOR	R GENERA	L		XI Owner, Present
General de la composition de La composition de la compositi	Commanding General Marine Corps Base	al comp			D Owner, P
City	Camp Lejeune	State NC	Zip Code	23542	<ul> <li>Operator, Presen</li> <li>Operator, Past</li> </ul>
Signatu	D. B. BARKER		Date	JUN 1981	D Other

	. Mc. : (	Longer Mith Marries	In the second second second second				ිස/ප	31	Agency Washin	gton DC 20460
This initial notification inform required by Section 103(c) of thensive Environmental Responsation, and Liability Act of 198 be mailed by June 9, 1981.	the Compre- nse. Compen-	additio paper.	type or prin nal space, u Indicate the applies.	se sepa	rate she	eets of				
Person Required to Notify	:				<u></u>		1			the second second
Enter the name and address o		Name	Command	ing Ge	eneral			1. 1. 1.		
or organization required to not	tity.	Street	Marine	Corps	Base	a and the	the states			
		City	Camp Le,	jeune	,		Sta	te NC	Zip Code	28542
Site Location:			Site Lot 1	ио на	adnot	Point A	rea (s	Site 7)		
Enter the common name (if kn actual location of the site.	own) and	Name of	Site DOC 1	+0, m						
actual location of the site.		Street	Marine Co	orps I	Base	Section .				
		City (	amp Leje	une	County	Onslow	Sta	te NC	Zip Code	28542
Person to Contact:									2.0 0000	1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.
Enter the name, title (if applica	bie), and	Name (Li	ast, First and Tit	le) Woo	oten.	Julian	Dir.	Natura	l Resour	ces Divis
business telephone number of	the person	Phone	(919) 451				$(q_{i}) \in \mathbb{R}^{n}_{\mathrm{reg}}(\mathbb{R})$	Company Int	erre blever	and the second
to contact regarding information submitted on this form.			<u></u>			in the		1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -		e
Dates of Waste Handling:										
Enter the years that you estimate	te waste			1.1		പപ്പ	resent	11.22	·· · · ·	
treatment, storage, or disposal ended at the site.	began and		w Pre-1960		lo (Year)					
ste Type: Choose the op Option I: Select general waste you do not know the general w encouraged to describe the site General Type of Waste: Place an X in the appropriate boxes. The categories listed overlap. Check each applicable category.	types and so aste types or in Item I—De Source of	urce cat sources, escriptio Waste:	egories. If you are n of Site.	Re reg Sp EP list app the cor	source ( julations ecific T A nas a ed in th propriate list of I macting	Conservat 40 CFR ype of W ssigned a e regulati four-dig nazardous	ion and Part 26 aste: four-dig ons und it numbe wastes	Recovery 1). git number ler Section er in the b	Act (RCRA) to each ha 3001 of R oxes provic s can be ob	iliar with th Section 300 
1. C Organics	1. 🗆 Min	ing		loc	ated.			and a start	17 P. 4. 4	
2. Inorganics	2. 🗆 Con	struction	<b>1</b>		an a		<b></b>	100		
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	Waste Quantity:	Facility Type	Total Facility Wasta Amount					
	Place an X in the appropriate boxes to indicate the facility types found at the site.	1. D Piles 2. D Land Treatment	cubic feet See Section I below					
	In the "total facility waste amount" space give the estimated combined quantity (volume) of hazardous wastes at the site using cubic feet or gallons.	3. 🗆 Landfill 4. 🗆 Tanks 5. 🗆 Impoundment	gallons Total Facility Area square feet 2500					
	In the "total facility area" space, give the estimated area size which the facilities occupy using square feet or acres.	<ul> <li>6. Underground Injection</li> <li>7. Drums, Above Ground</li> <li>8. Drums, Below Ground</li> <li>9.33 Other (Specify)</li></ul>	acres					
	Known, Suspected or Likely Releases to	the Environment:						
	Place an X in the appropriate boxes to indicate or likely releases of wastes to the environment	e any known, suspected, It.	□ Known □ Suspected □ Likely □ None See Section I					
	Note: Items H and I are optional. Completing hazardous waste sites. Although completing	these items will assist EPA and State the items is not required, you are end	and local governments in locating and assessin couraged to do so.					
-	Chatal Alex of City Logations (Ontional							

### - Sketch Map of Site Location: (Optional)

Sketch a map showing streets, highways, routes or other prominent landmarks near the site. Place an X on the map to indicate the site location. Draw an arrow showing the direction north. You may substitute a publishing map showing the site location.

SEE ATTACHED MAP

## Description of Site: (Optional)

Describe the history and present conditions of the site. Give directions to the site and describe any nearby wells, springs, lakes, or housing. Include such information as how waste was disposed and where the waste came from. Provide any other information or comments which may help describe the site conditions. Between 1947 and 1976, the facility carried out research on animals utilizing low-level radioactive materials. Animal carcasses contaminated with low-level radioactivity were buried on site. The area was thoroughly examined during January 1981. Five 55-gallon barrels of soil, animal residues, and 499 beta buttons (400 <u>microcuriesper</u> button) were collected. Materials are being disposed of in accordance with existing Department of Defense guidelines. Area believed to be decontaminated. Awaiting final determination by Navy Energy and Environmental Support Activities. Port Hueneme, California.

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#### J Signature and Title:

The person or authorized representative (such as plant managers, superintendents, trustees or attornays) of persons required to notify must sign the form and provide a mailing address (if different than address in item A). For other persons providing notification, the signature is optional. Check the boxes which best describe the relationship to the site of the person required to notify. If you are not required to notify check "Other".

Name	D. B. BARKER, MA	JOR GEN	IERAL		XI Owner, Present
Street	Commanding Gener Marine Corps Bas				Owner, Pas Transporte
City	Camp Lejeune	State	NC Zip Code	28542	<ul> <li>Operator, Present</li> <li>Operator, Past</li> </ul>
Signatu	We DIE BADVER		B.	.j ^	Other

Dec. N	Jo. : CLE	= ]-0	-22100	1.02-06/08	3/81	Agency	tion DC 20460
This initial notification inform required by Section 103(c) of t hensive Environmental Respon sation, and Liability Act of 198 mailed by June 9, 1981.	ation is he Compre- ise, Compen-	Please addition paper.	type or print nal space, us	t in ink. If you need e separate sheets of etter of the item	- <u>7</u>		<u>,</u>
Person Required to Notify:			10 and			and the second second	
Enter the name and address of		Name	Commandir	ng General			
or organization required to not			Marine Co	orns Base	and a substantial of the		9
	Street	ALT ALL ALL ALL ALL	and the second second second		99		
		City	Camp Leje	eune	State NC	Zip Code	28542
Site Location:		. Marian		and the second second second		Sec. Sec. 1	
Enter the common name (if kno	own) and	Name of	Site Build	ling Pt. 37 (Site N	10.6)	1. P.	
actual location of the site.		Street	Marin	e Corps Base			
					NO		205/0
		City C	amp Lejeun	e County Onslow	State NC	Zip Code	28542
Person to Contact:		Name (L	ast, First and Title	) Wooten, Julian,	Din Natural	Resourc	es Divisio
Enter the name, title (if application business telephone number of	ble), and the person	10. 500 0	and the second second	and the second second second second	DII, Natural	. nesour (	C3 DIVISIO
to contact regarding information		Phone	(919) 451-	5003			
submitted on this form.							
Dates of Waste Handling:							
Enter the years that you estima treatment, storage, or disposal tended at the site.	te waste began and	From (Yea	ar) 1947	To (Year) 1976			<u>.</u>
Option I: Select general waster you do not know the general was encouraged to describe the site General Type of Waste: Place an X in the appropriate	in Item I—De Source of	sources, escriptic Waste:	, you are n of Site.	Option 2: This option Resource Conservatio regulations (40 CFR P Specific Type of Was	n and Recovery / art 261). te:	Act (RCRA)	Section 3001
boxes. The categories listed overlap. Check each applicable category.	boxes.	t in the	appropriate	EPA has assigned a for listed in the regulation appropriate four-digit the list of hazardous v contacting the EPA Re	ns under Section number in the bo vastes and codes	3001 of R oxes provid s can be ob	CRA. Enter the ed. A copy of tained by
1. Organics	1. 🗆 Mini	ing	Street States	located.			
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8. 🗇 PCBs	8. D Cher						100 million (100 million)
9. D Mixed Municipal Waste	9. 🗆 Plati	and the second second	And a start of the second start of the		and the second s		
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11.2 Other (Specify)	11. C Elect	trical Co	onductors	en e		North Contractory	
Low-level	12. 🗆 Tran	sformer	s			Contraction of	
radioactive wastes	13. 🗆 Utilit	y Comp	anies				
	14. 🗆 Sani	Contraction of the second second	fuse				
	15. D Phote		A CONTRACTOR OF STREET				
	16X2 Lab/		Section 19				
	17. Unkr						
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			Contraction of the		Alt Providence and the second		
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OMB No. 2000-0138 EPA Form 9300-1			Charles and		1. A.		

Waste Quantity:	Facility Type	Total Facility Waste Amount				
Place an X in the appropriate boxes to indicate the facility types found at the site.	1.  Piles 2.  Land Treatment	cubic feet				
In the "total facility waste amount" space give the estimated combined quantity (volume) of hazardous wastes at the site	3. andfill gallons Unknown					
	4. 🗆 Tanks	Total Facility Area				
using cubic feet or gallons.	5. 🗆 Impoundment	squara feet				
In the "total facility area" space, give the	6. Underground Injection					
estimated area size which the facilities	7. Drums, Above Ground	acres 100 total				
occupy using square feet or acres.	8. Drums, Below Ground					
	9. O Other (Specify)	40 used				

Place an X in the appropriate boxes to indicate any known, suspected, or likely releases of wastes to the environment.

□ Known □ Suspected □ Likely □ Non:

See Section I below

Note: Items Hand I are optional. Completing these items will assist EPA and State and local governments in locating and assessin hazardous waste sites. Although completing the items is not required, you are encouraged to do so.

# - Sketch Map of Site Location: (Optional)

Sketch a map showing streets, highways, routes or other prominent landmarks near the site. Place an X on the map to indicate the site location. Draw an arrow showing the direction north. You may substitute a publishing map showing the site location.

SEE ATTACHED MAP

## Description of Site: (Optional)

Describe the history and present conditions of the site. Give directions to the site and describe any nearby wells, springs, lakes, or housing. Include such information as how waste was disposed and where the waste came from. Provide any other information or comments which may help describe the site conditions. Disposal of hazardous wastes (except asbestos) is prohibited by Base instructions. This facility has been operated along guideline issued by the State of North Carolina. The site has been approved and an operating permit is expected to be issued during calendar year 1982. While total volume of regulated materials disposed of is likely in excess of \_ 55 gallons, there is no available information indicating that these materials have leached from or otherwise left\_ the site.

#### Signature and Title:

J

The person or authorized representative (such as plant managers, superintendents, trustees or attorneys) of persons required to notify must sign the form and provide a mailing address (if different than address in item Å). For other persons providing notification, the signature is optional. Check the boxes which best describe the relationship to the site of the person required to notify. If you are not required

Name	D. B. BAFKER, MA	JOR GE	NERAL		D Owner, Present
Street	Commanding Gener Marine Corps Bas				D Owner, Pa
City	Camp Lejeune	State	NC Zip Code	28542	<ul> <li>Operator, Present</li> <li>Operator, Past</li> </ul>
Signatu	, D. B. BARKER		Date	JUN 1901	C Other

This initial notification inform		EJ-00122	The second second second	1		vvast	nington DC 20460
required by Section 103(c) of hensive Environmental Responsation, and Liability Act of 198 be mailed by June 9, 1981.	the Compre- nse, Compen	Please type or prin additional space, us - paper. Indicate the l which applies.	e separate she	ets of			
12	and the states	C. B. athenis	in a start a s	and			
Person Required to Notify Enter the name and address o	f the person	Name Commandin	g General		na na plate na k	an a	
or organization required to not	tify.	Street Marine Co.	rps Base		ni estadore		
		<u>City</u> Camp Leje	une	tering solo d	Stata N	C Zip Co	<sub>da</sub> 28542
Sita Location:	gu			and the state		te teckar	
Enter the common name (if kn sctual location of the site.	own) and	and the second	Sanitary L		Site No	. 5)	
		Street Marin City Camp Lejeund	e Corps Ba	Onslow	State NC	- Zip Cod	de 28542
Parson to Contact:	the second second	<u></u>		011310#	State Ito		20342
Enter the name, title (if applica	ble) and	Name (Last, First and Title	Wooten.	Julian.	Dir. Nat	ural Reso	ources Divis
business telephone number of	the person	Phone (919)	451-5003	<u> </u>			
to contact regarding informatio submitted on this form.	n	-1016 (919)	+)1=)005			1	
				1		de la	
Dates of Waste Handling:				•			iya sainin ingawan
Enter the years that you estima treatment, storage, or disposal	te wasta	From (Year) 1972	To (Year)	Present			San Sector Sector
ended at the site.	began and	The second second second	8 9 19 19 19 19 19 19 19 19 19 19 19 19 1	and the state of the	and the second sec		
	Sec. A parts						
Option I: Select general waste rou do not know the general waste encouraged to describe the site	aste types or	sources, you are	Resource C	This option is conservation (40 CFR Par	and Recove	o persons fa ery Act (RCR	amiliar with the A) Section 3001
General Type of Waste: Place an X in the appropriate- boxes. The categories listed overlap. Check each applicable sategory.	Source of Place an 2 boxes.	f Waste: X in the appropriate	EPA has as listed in the appropriate the list of h	four-digit nu	r-digit num under Sec umber in th stes and co	tion 3001 of e boxes prov des can be	hazardous waste RCRA. Enter the vided. A copy of obtained by which the site is
1.  Organics	1. 🗆 Min	ing	located.	All Mart	C. Marte	-	
2. Inorganics	2.x2 Con	Party and the second state of the second state	-				Part and the second
3. D Solvents	3. 🗆 Text	and the second	A Participant		an ann an Anna		
4. D Pesticides	4. C Fert		Carlos and Carlos				
5. D Heavy metals	5. 🗆 Pap	er/Printing	-	the second			and the second
6. 🗆 Acids	6. 🗆 Lea	ther Tanning					the second second
7. 🗆 Bases	7. 🗆 Iron	/Steel Foundry					
8. D PCBs	8. 🗆 Che	mical, General					the second second
9xx Mixed Municipal Waste	9. 🗆 Plat	ing/Polishing					Section Providence
Ox Unknown	10. 🗆 Milin	tary/Ammunition	de la contraction de				
1. C Other (Specify)	11. C Elec	trical Conductors					the second s
	12. 🗆 Tran	sformers	AND AND ADDRESS				1
	13. 🗆 Utili	ty Companies					
in the second	14. Sani	itary/Refuse					
		ofinish					Service and the
The Anna and a start of the second	15. 🗆 Phot						
	15. D Phot 16.x52 Lab/	Hospital					
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	16.x52 Lab/	nown					
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orm Approved MB No. 2000-0133	16.x52 Lab/ 17.x52 Unki 18.x52 Othe Vehicle	nown er (Specify)					and the period

10	Waste Quantity:	Facility Type	Total Facility Waste Amount
	Place an X in the appropriate boxes to indicate the facility types found at the site.	1.  Piles 2.  Land Treatment	cubic feet
	In the "total facility waste amount" space give the estimated combined quantity (volume) of hazardous wastes at the site using cubic feet or gallons.	<ul> <li>3. □ Land freatment</li> <li>3. □ Landfill</li> <li>4. □ Tanks</li> <li>5. □ Impoundment</li> </ul>	gallons Total Facility Area
	In the "total facility area" space, give the estimated area size which the facilities occupy using square feet or acres.	6. Underground Injection 7. Drums, Above Ground 8. Drums, Below Ground 9.x3 Other (Specify) Open D	square faet acres 20
3	Known, Suspected or Likely Releases to Place an X in the appropriate boxes to indicate or likely releases of wastes to the environment	e any known, suspected,	C Known C Suspected XX Likely C Non

Note: Items Hand I are optional. Completing these items will assist EPA and State and local governments in locating and assessir hazardous wasta sites. Although completing the items is not required, you are encouraged to do so.

## + Sketch Map of Site Location: (Optional)

Sketch a map showing streets, highways, routes or other prominent landmarks near the site. Place an X on the map to indicate the site location. Draw an arrow showing the direction north. You may substitute a publishing map showing the site location.

SEE ATTACHED MAP

#### Description of Site: (Optional)

Describe the history and present conditions of the site. Give directions to the site and describe any nearby wells, springs, lakes, or housing. Include such information as how waste was disposed and where the waste came from. Provide any other information or comments which may help describe the site conditions. Site was open dump for refuse, trash and other wastes generated aboard Marine Corps Air Station (H), New River, and Marine Corps Base, Camp Lejeune property located west of New River. Area was graded after use discontinued.

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#### Signature and Title:

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The person or authorized representative (such as plant managers, superintendents, trustees or attorneys) of persons required to notify must sign the form and provide a mailing address (if different than address in item A). For other persons providing notification, the signature is optional. Check the boxes which best describe the relationship to the site of the person required to notify. If you are not required

Nama	D. B. BARKER, MAJ	OR GENERA	AL	XII Owner, Pref
Street	Commanding Cenera Marine Corps Base	1		Owner, Pas Transporter
City	Camp Lejeune	State NC	Zip Code 28542	<ul> <li>Operator, Present</li> <li>Operator, Past</li> </ul>
Signatu	J. B. BARKER		Date Ju.	D Other

LXc	x, No. ! (	LEJ-0012			8/81	Agency Washington DC 20460
This initial notification inform required by Section 103(c) of hensive Environmental Responsation, and Liability Act of 19 he mailed by June 9, 1981.	nation is the Compre-	Please type or prin additional space, us	it in ink. If you r	need		
Person Required to Notify	<i>ı</i> :	<u>an an a</u>		and and a second se		
Enter the name and address of	of the person	Name Commandi	ing General			
or organization required to no	tify.	Street Marine C	Corps Base			
		City Camp Lef	ieuene		State NC	Zip Code 28542
3 Site Location:					All and a second	
Enter the common name (if kr	nown) and	Name of Site Camp	Geiger Dum	p (Site	No. 4)	
actual location of the site.		Street Mari	ne Corps Ba	se		
		City Camp Lejeun	e County	Onslow	State NC	Zip Code 28542
Person to Contact:						28542
Enter the name, title (if applica	able), and	Name (Last, First and Title	Wooten, J	ulian,	Dir, Natural	L Resources Divisi
business telephone number of to contact regarding informatic submitted on this form.	the person on	Phone (919) 451-	5003			
Dates of Waste Handling:	<del></del>		·	<u>. Angeler</u>	1	
· 이상 사용이 가지 않아? 아이지 않는 것 같아요. 이는 사용한 가지 바람이 있는 것 같아?						
Enter the years that you estimate treatment, storage, or disposal ended at the site.	began and	From (Year) 1946	To (Year)	1971		
Aste Type: Choose the op Option I: Select general waste						<u></u>
you do not know the general w encouraged to describe the site	aste types or	SOUTCAS VOU STA	Resource Co regulations (	nservation	and Recovery	ersons familiar with the Act (RCRA) Section 3001
General Type of Waste: Place an X in the appropriate boxes. The categories listed overlap. Check each applicable category.	Source of Place an X boxes.	Waste: ( in the appropriate	listed in the appropriate f the list of ha	igned a fo regulation four-digit r zardous w	ur-digit number s under Section number in the be astes and codes	to each hazardous wast 3001 of RCRA. Enter th oxes provided. A copy of a can be obtained by State in which the site
1. 🗆 Organics	1. 🗆 Mini	ina	located.		,	
2. D Inorganics	2. XX Con		and the second second		· · · · · · · · · · · · · · · · · · ·	
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5.  Heavy metals	5. 🗆 Pape	er/Printing	we wanted			
6. 🗆 Acids	6. 🗆 Leat	her Tanning	Constant and the second se			and the second second second
7. 🗆 Bases	7. 🗆 Iron,	Steel Foundry				
8. 🗆 PCEs	8.XX Cher	nical, General	100 Store			1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -
9XX Mixed Municipal Waste	9. 🗆 Plati	ng/Polishing				
10XXI Unknown	10. 🗆 Milit	ary/Ammunition		- Cheller -		
11. C Other (Specify)	11. 🗆 Elect	rical Conductors	na la sua sua sua sua sua sua sua sua sua su			
		y Companies				
		tary/Refuse				
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		and Aircraft				
	And a state of the second s	ance Shops				He and the second second
Form Approved					A State of State	
OMB No. 2000-0133	Bar Ster Line					
EPA Form 3300-1						

-	Prosto Lucituty.	гасшту туре	Total Facility Was	te Amourt
	Place an X in the appropriate boxes to	1.  Piles	cubic faet	
	indicate the facility types found at the site.	2.  Land Treatment	and the second second	
	In the "total facility waste amount" space give the estimated combined quantity	3.  Landfill 4.  Tanks	gallons	
	(volume) of hazardous wastes at the site using cubic feet or gallons.	5. Impoundment	Total Facility Area	
	In the "total facility area" space, give the	6. Underground Injection	square feet	
	estimated area size which the facilities occupy using square feet or acres.	7. Drums, Above Ground	acres 15	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1
	occupy using square reat of acres.	8. Drums, Below Ground 9x2 Other (Specify) Open D	ump	
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G	Known, Suspected or Likely Releases t			
	Place an X in the appropriate boxes to indicat or likely releases of wastes to the environment	a any known, suspected,		ted Ø Likely D Nor
	Note: Items Hand I are optional. Completing hazardous waste sites. Although completing	these items will assist EPA and State and the items is not required, you are encou	nd local governments in iraged to do so.	n locating and assessiv
Н	Sketch Map of Site Location: (Optiona	0	A State Course	and the second
	Sketch a map showing streets, highways, routes or other prominent landmarks near		ې د رو در وه در د د وه د د د د و د رو د وه در د د د د د د د د	· ·
	the site. Place an X on the map to indicate the site location. Draw an arrow showing		Service and the service states	Presidente de la composition de la comp
	the direction north. You may substitute a			
	publishing map showing the site location.			
		SEE ATTACHED MAP		
			a starter and	
	and a second	e e é estat a paña e	a an an an an an an an	
}	Description of Site: (Optional)			
	Describe the history and present	Site was dump for refuse, the		
	conditions of the site. Give directions to the site and describe any nearby wells,	generated throughout Hadnot housing areas, and other an		
	springs, Takes, or housing. Include such information as how waste was disposed		re burned and res	the second se
	and where the waste came from. Provide any other information or comments which	covered. Area has been grad	ted and landscape	ed.
	may help describe the site conditions.			
		· · · · · · · · · · · · · · · · · · ·	아이는 식물을 감독하는 것이다.	
1	Signature and Title:	The part of the second s		
		Name D. B. BARKER, MAJOR GENER	AL	XX Owner, Present
	(such as plant managers, superintendents, trustees or attorneys) of persons required	Cormanding General		Owner, Par
	to notify must sign the form and provide a	Sweet Marine Corps Base	n in der sig i de ser ser ser ser ser ser ser ser ser se	Transport
	mailing address (if different than address in item A). For other persons providing	City Camp Lejeune State NC	Zip Code 28542	Operator, Present     Operator, Present
	Check the boxes which best describe the	and the second	a ka shi ka sa	<ul> <li>Operator, Past</li> <li>Other</li> </ul>
	relationship to the site of the person	Signature DEB. Brit	Date 8 JUN 198	1
	required to notify. If you are not required to notify check "Other".			10 2 10 m

-	This initial notification infor	mation is		122-1.02-06/08/8	Washington DC 20460
(	required by Section 103(c) of hensive Environmental Resoc sation, and Liability Act of 19 be mailed by June 9, 1981.	the Compre-	additional concern	at in ink. If you need se separate sheets of letter of the item	
1	Person Required to Notify	/:			
	Enter the name and address of	of the person	Name Commandir	g General	
	or organization required to no	tify.	Street Marine Co	rps Base	
A CAR	A. A		City Camp Leje	une State N	NC Zip Code 28542
3	Site Location:		- 6		
	Enter the common name (if kr actual location of the site.	iown) and	Name of Site Hadno	t Point Burn Dump (Site No.	. 3)
	in the site.		Street Marin	e Corps Base	
_			City Camp Lejeu	ne County Onslow State N	IC Zip Code 28543
;	Person to Contact:	191	· · · · · · · · · · · · · ·	and the second	2034/
	Enter the name, title (if application business telephone number of	ble), and	Name (Last, First and Title	Wooten, Julian, Dir, Natu	ral Resources Division
	to contact regarding informatic	the person	Phone (919) 45	1-5003	
	submitted on this form.				
1	Dates of Waste Handling:				
	Enter the years that you estimate	te waste		성격 전문 걸었는 것 같은 것 같아요. 것	
	treatment, storage, or disposal ended at the site.	began and	From (Year) 1946	To (Year) 1971	
	enced at the site.				a make the set of above to
-	A CARL CARLES				
(	aste Type: Choose the op	tion you prei	er to complete	P. Constant States and the	
	Option I: Select general waste				
	you do not know the general waste encouraged to describe the site	aste types or s	AUTCAS VOU STA	Option 2: This option is available Resource Conservation and Recov regulations (40 CFR Part 261).	to persons familiar with the ery Act (RCRA) Section 3001
	General Type of Wasts:	Source of	Waste:	Specific Type of Waste:	R. L. MARINE MARINE
	Place an X in the appropriate boxes. The categories listed overlap. Check each applicable category.	Place an X boxes.	in the appropriate	EPA has assigned a four-digit num listed in the regulations under Sec appropriate four-digit number in th the list of hazardous wastes and c contacting the EPA Region serving	tion 3001 of RCRA. Enter the boxes provided. A copy of odes can be obtained by
	1. Organics	1. 🗆 Mini	na	located.	t the State in which the Site
	2. Inorganics	2.xtd Cons	and the second		
	3. D Solvents	3. 🗆 Texti	es		
	4.  Pesticides	4. 🗆 Fertil	izer		-
	5.   Heavy metals	5. 🗆 Pape	/Printing		
	6. 🗆 Acids	6. C Leath	er Tanning		
	7. 🗆 Bases	7. 🗆 Iron/	Steel Foundry		
	8. E PCBs		ical, General		
	9. 式 Mixed Municipal Waste		g/Polishing		
	0. XX Unknown		ry/Ammunition		
1	1. C Other (Specify)		ical Conductors		
	and all all and a second	12.  Trans 13. Utility	ALL AND A REAL PROPERTY AND A R	A Law many many many	all states for the second
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	orm Approved MB No. 2000-0138		State "	Constant IS of the second	

Waste Quantity:	Facility Type		otal Facility Waste Amount
Place an X in the appropriate bo ndicate the facility types found	ixes to		bic feet
n the "total facility wests amou ive the estimated combined qui volume) of hazardous westes a	anti' space 3. 🗆 Landfill antity 4. 🗆 Tanks	<u>9</u> T	nions unknown
sing cubic feet or gallons. In the "total facility ares" space stimated area size which the fi coupy using square feet or account	ecilities 7. Drums, Above	Injection Ground	uare feet
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	Releases to the Environment:		and month which was a first
lace an X in the appropriate be r likely releases of westes to th	nes to indicate any known, suspected	4 O K	See 1 below
lote: Items Hand I are optional	L Completing these items will assist	EPA and State and loc	al governments in locating and as
azardous wasta sites: Althou	git completing the items is not requi	ed, you are encourage	to do so.
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ketch Map of Site Location ketch a map showing stress outes or other prominent lends he site. Place an X on the map he site location. Driver at arrow he direction north. You may su	n: (Optional) highweye marks near to indicate showing batitute a	ed, you are encourage	
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Waste off containing Dadatermined amounts of degressars, and tolvenrs vere burned for fire fighting trainings Macrimeral discharges of water and residers of above attraces have occurred which likely contained memerities of solvents, degressers, and other uncertains, Supprading site to provide pollution abatement structures is underway. Current sould like attack of the burnburge. any substance other then vasue is interview is plt. conditions of the site. Give directions to the site and describe any nearby we springs, lakes, or housing include suc information as how wests was dispos and where the weste came from: Pro any other inform ROF COMMENTER may help desc 200

#### Signature and Title: 3

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The person of authorized representative (such as plant managers, superintendents, trustees or attorneye) of persons required to notify must sign the form and provide a mailing address (if different than address in item A). For other persons providing notification, the signature is optional. Check the boxes which best describe the relationship to the site of the person . . . . ....

14. ..... 124.57

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Name	D. B. BARKER, M		Owner, Pr
	Commanding Gene	eral 🔁 🗧 🔤 🖘 🗖 🖸	Owner, Pas
Street	Marine Corps Ba	se 🗌 🗌	Transporter .
and a	State 200	and the second state of th	Operator; Present
City	Camp Lejeune	State NC Zip Code 28542	Operator, Past

VERA Notification	of Hazardou	s Waste Site	United States Environmental Protection Agency
Lec. N	0, CLEJ-00122	2-1.02-06/08/81	Washington DC 20460
This initial notification information required by Section 103(c) of the Co inside Environmental Response, Co ition, and Liability Act of 1980 and be mailed by June 9, 1981.	mpre- additional space, us	nt in ink. If you need se separate sheets of letter of the item	
Person Described to Notife		al constant of the company of the re-watter a second	di Daharta da santara A walatara w
Person Required to Notify:	Name Commandi	ing General	
Enter the name and address of the p or organization required to notify.	erson Name Commandi	ting General	
	Street Marine (	Corps Base	
	City Camp Le	jeune State NC	Zip Code 28542
Site Location:			
Enter the common name (if known) a actual location of the site.	nd Name of Site Fire F	ighting Training Pit (Site N	lo. 2)
actuar location of the site.	Street Marine	Corps Air Station (H), New	River
	City Jacksonvill	· · · · · · · · · · · · · · · · · · ·	
Person to Contact:	Jacksonvill	e county ourside State NC	Zip Code 28541
Enter the name, title (if applicable) a	nd Name (Last, First and Title	Wooten, Julian, Dir, Natur	ral Resources Divisi
business telephone number of the pe to contact regarding information	Phone (919) 453	1-5003	
submitted on this form.			Mary strength 1 strengt
Dates of Waste Handling:			
Enter the years that you estimate was		김 모양이 아름다가 걸 못했다. 그	
treatment, storage, or disposal began	and From (Year) 1975	To (Year) Present	
ended at the site.	and the second		
Waste Type: Choose the option yo Option I: Select general waste types a	and source categories. If	Option 2: This option is available to	persons familiar with the
you do not know the general waste ty encouraged to describe the site in Iten	n I-Description of Site.	Resource Conservation and Recover regulations (40 CFR Part 201);	y Act (RCRA) Section 3001
Place an X in the appropriate place boxes. The categories listed boxes overlap. Check each applicable category.	ince of Waste: te an X in the appropriate	Specific Type of Waster EPA has assigned a four-digit numb listed in the regulations under Section appropriate four-digit number in the the list of hazardous waster and cod contacting the EPA Region serving the located.	on 3001 of RCRA. Enter the boxes provided. A copy of les can be obtained by he State in which the site is
	1 Mining	KCCare C	
	Construction		
	] Fertilizer	and the	
	Paper/Printing		
	Leather Tanning		
	I Iron/Steel Foundry		4
	Chemical, General	the second s	
	] Plating/Polishing	and the second design of the	and the set of the set
그는 그는 것 같은 것 같	Military/Ammunition		
	Electrical Conductors		
	] Transformers		
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18x£	Other (Specify)		
	icle and		
이 것 같은 것 같	craft Maintenance		
From Innormal	Real Property of the second second		

:	Waste Quantity:	Facility Type	Total Facility Wasts Amount
	Place an X in the appropriate boxes to indicate the facility types found at the site.	1. 🗆 Piles	cubic feet Unknown
	In the "total facility waste amount" space	2. Land Treatment	gallons
	give the estimated combined quantity	3×30 Landfill 4. □ Tanks	Section and the section of the secti
	(volume) of hazardous wastes at the site using cubic feet or gallons.	5. D Impoundment	Total Facility Area
	In the "total facility area" space, give the	6. Underground Injection	square feet
	estimated area size which the facilities occupy using square feet or acres.	7. Drums, Above Ground	acres 3
	occupy using square root of cores.	8x2 Drums, Below Ground 9x2 Other (Specify) <u>Miscell</u>	aneous containers buried undergro
ì	Known, Suspected or Likely Releases	s to the Environment:	
	Place an X in the appropriate boxes to indi or likely releases of wastes to the environm		XXX Known C Suspected C Likely No
	Note: Items Hand I are optional. Completi hazardous waste sites. Although complet	ing these items will assist EPA and State ting the items is not required, you are enco	and local governments in locating and assess puraged to do so.
+	Sketch Map of Site Location: (Optio	inal)	
	Sketch a map showing streets, highways, routes or other prominent landmarks near the site. Place an X on the map to indicate the site location. Draw an arrow showing the direction north. You may substitute a	동물법과 이유 수집에는 것 같아요. 그 이가 것 같아. 것 같아?	
	publishing map showing the site location.	이 아이는 것이 아이는 것이 같아요. 말했다.	
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	Description of Site: (Optional)	and the second	
	Describe the history and present conditions of the site. Give directions to the site and describe any nearby wells, springs, lakes, or housing. Include such information as how waste was disposed and where the waste came from. Provide any other information or comments which may help describe the site conditions		
	may help describe the site conditions.		[24] (요즘 너희 아이들 것 :
	During operation, containe	ers of various waste chemicals	and other items, as
		ove, were buried and covered wi	th soil. The area has
	revegetated to trees, shrubs	and other plants.	
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	<ul> <li>A state of the sta</li></ul>		
1	Signature and Title:		
	The person or authorized representative	Name D. B. BARKER, MAJOR GENE	RAL
	(such as plant managers, superintendents,	Commanding General	DAL Star Owner, Present
	trustees or attorneys) of persons required to notify must sign the form and provide a	Street Merine Corps Base	D Transporter
	mailing address (if different than address in item A). For other persons providing	Comp Laiouna N	C 7: 28542 Operator, Presen
	notification, the signature is optional. Check the boxes which best describe the		
	relationship to the site of the person required to notify. If you are not required	D. B. BARKER	Date 8 JUN 1981 Other

-			ter. No.i	LLEJ	00.22	- 1.01	00/08	101	vvasning	ton DC 20460
	This initial notification inform required by Section 103(c) of hensive Environmental Responsation, and Liability Act of 19 be mailed by June 9, 1981.	nation is the Compre- inse. Compen-	Please typ additional	e or prin space, us cate the	nt in ink. If you se separate sh letter of the it	need		<del>,</del>		
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	Parson to Contact:			and the Seaso	a - Sandhagan siya	al engeneries es	and the second second	ang Maria	a Par an	
	Enter the name, title (if applica	ble), and	Name (Last, Fir	rst and Title	e) Wooten,	Julian,	Dir, Nat	ural	Resourc	es Divisi
	business telephone number of to contact regarding information	the person	Phone (9	19) 45	51-5003					a na falais
	submitted on this form.		and the second	diana di se						an a
R	Dates of Waste Handling:									
	Enter the years that you estimate									gi desi gatik d
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# UNITED STATES MARINE CORPS MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA 28542

MAIN/DDS/th 6240

8 JUN 1981

U. S. Environmental Protection Agency (EPA) Region IV Sites Notification Atlanta, Georgia 30308

Dear Sir:

Enclosed are EPA Forms 8900-1 for locations aboard Marine Corps Base, Camp Lejeune and Marine Corps Air Station (Helicopter), New River which are possibly subject to Section 103(c) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980. An intensive study of each site will be conducted by the Naval Energy and Environmental Support Activity (NEESA), Port Hueneme, California during Fiscal Year 1982.

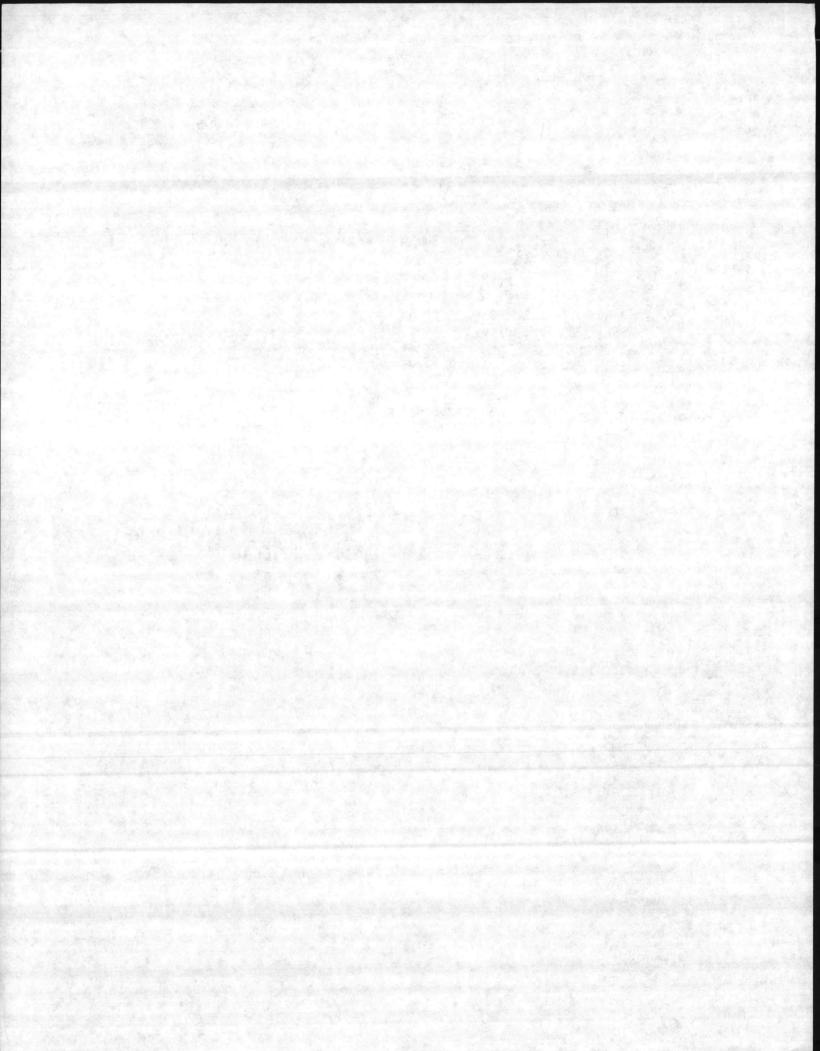
Questions regarding these matters may be addressed to Mr. Julian Wooten, Director, Natural Resources and Environmental Affairs Division, Base Maintenance Department, telephone (919) 451-5003/2083.

Sincerely,

D. B. BARKER DOR GENERAL, U. S. MARINE CORPS COMMANDING GENERAL

Encl

Copy to: CMC (Code LFF-2) NEESA MANTDIV (Code 114)



# NOC NO . CLEJ - 00225 - 1.02 - 04/7/81 JENNINGS LABORATORIES.INC. ANALYTICAL AND CONSULTING CHEMISTS

1118 CYPRESS AVENUE • P. O. BOX 851 • VIRGINIA BEACH, VA. 23451 • PHONE (804) 425-1498

VA (EPA) CERTIFIED LABORATORY for Drinking Water Analysis - Microbiological, Inorganic and Organic

ASBESTOS ANALYSIS - NIOSH 582

Official Referee Chemists for: AMERICAN OIL CHEMISTS SOCIETY

NATIONAL SOYBEAN PROCESSORS ASSOCIATION

Laboratory Certified by VA. STATE WATER **CONTROL BOARD** for Analysis of **Effluents for NPDES PERMITS** CERTIFIED OFFICIAL U.S.D.A. LABORATORY FOR MEAT ANALYSIS

## CERTIFICATE OF ANALYSIS

TO: Mr. Dave Goodwin Building N-23 Atlantic Division Naval Facilities Engineering Command Norfolk, Virginia 23511

DATE: April 9, 1981

WATER SAMPLES from (Test Well #15, Roadside of Chemical Dump) Test Well SAMPLE OF #16, Creek Side of Chemical Dump) (Luke, Pool of Water) (Ens.Kalisch-MARKED Radiation Pool) taken 3/30/81 at Camp Lejeune, Marine Corps Base, North Carolina and delivered to laboratory 4/01/81 BETZ & LUKE OFFICIAL SAMPLE BY: TEST WELL #15 POOL OF WATER Carbon Tetrachloride ... bon Tetrachloride . . . . 3,560 PPB 1,840 PP PPB 1,1 Dichloroethane ..... 38 PP \_ Dichloroethane ..... 65 15,520 Chloroform ..... Chloroform ..... PPB 880 PP 9.640 PP Methylene Chloride ..... Methylene chloride ..... 4,154 PPB RADIATION POOL TEST WELL #16 Carbon Tetrachloride ... 1,189 PP 122 PPB 1,1 Dichloroethane ..... 1.1 Dichloroethane ..... 38 PF 13,260 PPB Chloroform ..... 7,380 PP PPB Chloroform ..... Carbon Tetrachloride ..... 2,920 20,460 Methylene Chloride ..... PPB Methylene Chloride ..... 7,693 PF 1,2 Dichloroethane ..... 154.6 PPB 423.6 PPB 1,1 Dichloroethylene ..... Toluene ..... 242. PPB

> Respectfully submitted, JENNINGS LABORATORIES, INC.

Laboratory #109 Analysis No.

Doc No: CLE -00225-1.02-417181

JENNINGS LABORATORIES, INC.

PESTICIDES/PCB's

DETECTION LIMITS µg/1

Aroclor 1016	None Detected	.04
Aroclor 1221	None Detected	.10
Aroclor 1232	None Detected	.10
Aroclor 1242	None Detected	.06
Aroclor 1248	None Detected	.08
Aroclor 1254	None Detected	.08
Aroclor 1260	None Detected	.15
2,3,7,8-Tetrachlorodibe	nzo-p-dioxin(TCDD)-None Detected	.003

	METALS	DETECTION LIMITS mg/1
Antimony	<0.20	0.2
Arsenic	<0.002	0.002
Beryllium	<0.005	0.005
Cadmium	0.01	0.002
romium	0.11	0.02
Copper	<0.01	0.01
Lead	0.12	0.005
Mercury	<0.002	0.002
Nickel	0.09	0.02
Selenium	0.004	0.002
Silver	<0.01	0.01
Thallium	<0.10	0.1
Zinc	27.23	0.005
Barium	0.13	
	MISCELLANEOUS	
Total Cyanides	<0.01	0.01
Asbestos (fibrous)	None Detected	
Total Phenols	<0.005	0.005

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# JENNINGS LABORATORIES, INC.

# ACID EXTRACTABLE ORGANIC COMPOUNDS DETECTION LIMITS µg/1

Phenol	None Detected	1.4
2-Nitrophenol	None Detected	2.5
4-Nitrophenol	None Detected	2.5
2,4-Dinitrophenol	None Detected	7.0
4,6-Dinitro-o-cresol	None Detected	2.0
Pentachlorophenol	None Detected	10.0
p-Chloro-m-cresol	None Detected	.01
2-Chlorophenol	None Detected	2.0
2,4-Dichlorophenol	None Detected	2.1
2,4,6-Trichlorophenol	None Detected	5.0
2,4-Dimethylphenol	None Detected	1.7

# PESTICIDES/PCB's

n Endeaulfan	None Detected	.005
a-Endosulfan	None Detected	.01
β-Endosulfan dosulfan sulfate	None Detected	.03
u-BHC	None Detected	.002
β-BHC	None Detected	.004
δ-BHC	None Detected	.004
ү-внс	None Detected	.002
Aldrin	None Detected	.003
Dieldrin	None Detected	.006
4,4'-DDE	None Detected	.006
4,4'-DDD	None Detected	.012
4,4'-DDT	None Detected	.016
Endrin	None Detected	.009
Endrin Aldehyde	None Detected	.023
Heptachlor	None Detected	.002
Heptachlor Epoxide	None Detected	.004
Chlordane	None Detected	.04
Toxaphene	None Detected	.40

BY

Chemist

DOC NO: CLEU -00225 - 1.02 -4/7/81

JENNINGS LABORATORIES, INC.

BASE/NEUTRAL EXTRACTABLE	ORGANIC COMPOUNDS	DETECTION LIMITS µg/1
-Bromophenyl phenyl ether	None Detected	1.1
bis(2-Ethylhexyl)phthalate	None Detected	.02
Di-n-octyl phthalate	None Detected	.11
Dimethyl phthalate	None Detected	.11
Diethyl phthalate	None Detected	.13
Di-n-butyl phthalate	None Detected	.02
Fluorene	None Detected	.04
Fluoranthene	None Detected	.04
Chrysene	None Detected	.04
Pyrene	None Detected	. 04
Phenathrene	None Detected	.04
Anthracene	None Detected	.04
Benzo(a) anthracene	None Detected	.04
Benzo(b)fluoranthene	None Detected	.04
Benzo(k)fluoranthene	None Detected	.04
Benzo(a)pyrene	None Detected	.04
Ideno(1,2,3-c,d)pyrene	None Detected	.10
ibenzo(a,h)anthracene	None Detected	.10
Benzo(g,h,i)perylene	None Detected	.10
4-Chlorophenyl phenyl ether	None Detected	2.2
3,3'Dichlorobenzidine	None Detected	.04
Benzidine	None Detected	.04
Bis(2-Chloroethyl)ether	None Detected	.04
1,2-Diphenylhydrazine	None Detected	.04
Hexachlorocyclopentadiene	None Detected	.04
N-Nitrosodiphenylamine	None Detected	1.0
Acenaphthylene	None Detected	.04
Acenaphthene	None Detected	.04
Butyl benzyl phthalate	None Detected	.04
N-Nitrosodimethylamine	None Detected	.2
N-Nitrosodi-n-propylamine	None Detected	.5
bis(2-Chloroisopropyl)ether	None Detected	. 9

BY Chemist

LAB # 109

Doc NO: CLEJ -00225 -1.02 - 417/81

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STREES STREET to detto ( attravt)

STTECTION LIMITS µg/1

Chloroform	11,267.0 ppb	. 010
1,2-Dichloropropane		.004
I, 3-Dichloropropane	None Detected	.006
Methylene Chloride	.1,859.0 ppb	.010
Methyl Chloride	None Datected	.009
Methyl Bromide	None Detected	.03
aromo form	None Detected	.02
Ichlorobromomethane	None Detected	.006
richlorofluoromethane	None Detected	.03
Mchlerodifluoromethane	None Detected	.01
algrodibromomethane	None Detected	.01
<b>trachloroethylene</b>	None Detected	.007
richloroethylene	None Detected	.005
Chloride	None Detected	.01
Trans-Dichloroethylene	None Detected	.006
fictioromethyl) ether	None Detected	.003

BASE/NEUTRAL E.	XTRACTABLE ORGANIC COMPOUN	DS
1.2. Dichlorobenzene	None Detected	.04
17 3-Dichlorobenzene	None Detected	.04
1,4-Dichlorobenzene	None Detected	.04
<b>Mexachlorgethane</b>	None Detected	.001
Hexachlorobutadiene	None Detected	.001
Hexachlorobenzene	None Detected	.002
1,2,4-Trichlorobenzera	None Detected	. 006
Bis(2-Chloroethoxy)methane	None Detected	.40
Naphthalene	None Detected	.04
2-Chloronaphthalene	None Detected	.04
Isophorone	N re Detected	5.0
Nitrobenzene	Lane detected	5.0
2,4-Din:trot lucie	None Detected	.06
2,6-Dimitratolasta	N Les Detceted	.06

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# JENNINGS LABORATORIES, INC. ANALYTICAL AND CONSULTING CHEMISTS

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**PROCESSORS ASSOCIATION** 

Laboratory Certified by VA. STATE WATER CONTROL BOARD for Analysis of Effluents for NPDES PERMITS CERTIFIED OFFICIAL U.S.D.A. LABORATORY FOR MEAT ANALYSIS

## **CERTIFICATE OF ANALYSIS**

Mr. Dave Goodwin
 <sup>TO:</sup> Building N-23 Atlantic Division
 Naval Facilities Engineering Command
 Norfolk, Virginia 23511

DATE: April 7, 1981

SAMPLE OF WATER SAMPLES from (Test Well #15, Roadside of Chemical Dump) (Test Well

MARKED #16, Creek side of Chemical Dump) (Luke, Pool of Water) (Ens. Kalisch-Radiation

Pool) taken 3/30/81 at Camp Lejeune, Marine Corps Base, North Carolina and delivered to laboratory 4/01/81

FFICIAL SAMPLE BY:	BETZ & LUKE	and the state of the state of the
	PURGEABLE ORGANICS	DETECTION LIMITS µg/
Acrolein	None Detected	2.0
Acrylonitrile	None Detected	2.0
Benzene	None Detected	10.0
Toluene	61.75 ppb	10.0
Ethylbenzene	None Detected	10.0
Carbon Tetrachloride	2,583.0 ppb	.007
Chlorobenzene	None Detected	.03
1,2-Dichloroethane	43.77 ppb	.006
1,1,1-Trichloroethane	None Detected	.005
1,1-Dichloroethane	68.92 ppb	.004
l,l-Dichloroethylene	124.0 ppb	.006
1,1,2-Trichloroethane	None Detected	.006
1,1,2,2-Tetrachloroethane	None Detected	.006
Chloroethane	None Detected	.01
2-Chloroethyl vinyl ether	None Detected	.08

Respectfully submitted, JENNINGS LABORATORIES, INC.

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Navy Laboratory Analysis No. 109

DOC. NO.: CLEJ - GO648.0102 -02/20/8.

> MCBul 6280 11 Dec 1980

	ACTIVITY Marine Corps Base,	States Williams	
		67001	
	SITE NUMBER	.11	
	ents or complaints concerning this site?	Explain.	
No.			
	· · · · · · · · · · · · · · · · · · ·		
ow close is the site to t	he activity's boundaries?		
3½ miles .			
	•		
		•	
dditional comments		•	
		-	
	Particular and a second se	····	
	······································		
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Appendix A to FICLOSURE (1)

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MCBul 6280 11 Dec 1980

	UIC	67001
	SITE NUMBER	11 .
Describe the site's hypogeology, inclu- water table depth, gradwater quality, Same as Site #10	uding information on terrain, , nearby surface waters, etc.	, soile,
Same as Sile #10	and the second	
	· · · · · · · · · · · · · · · · · · ·	
		· · · · ·
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		• •
Briefly describe anicalend plant life s peculiarities (e.g., ding plants).	urrounding the site, including	ng any
None apparent.	And the second second	
and the second second second second	<ul> <li>Souther states when the part of the state of</li></ul>	ed to something ones
o personnel live or wir near the site?	Please explain. Yes.	
The site is located on the frin	nges of the Hadnot Point	Industrial
Area. Military personnel are lo		
	ng on surrounding ground	

Appendix A to ENCLOSURE (1)

> MCBul 6280 11 Dec 1980

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Appendix A to ENCLOSURE (1)

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ACTIVITY Marine Corps Base, Camp Lejeune,	N.	C.	
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UIC \_\_\_\_\_\_ 67001

SITE NUMBER 11

SECTION III. DETAILED DISPOSAL INFORMATION

This section should be completed only if active or past disposal sites were identified in section II. Section III should be completed for each site. As an example, say your activity has three sites. Make three copies of section III and complete them. Assign a number to each site (1, 2, and 3) and enter it in the upper right-hand corner.

1. Is this disposal site currently in operation or has it been closed? \_\_\_\_\_

Currently in operation.

Years of operation: From 1967 To present.

2. What is/was the name of the site (e.g., slurry pit)?

Fire Fighting training Pit (Piney Green Road)

868398 adjacent to site #10.

4. Describe how the site is/was operated.

Flammable liquids poured into pit and burned. Did not have oil

water separators and other pollution abatement.equipment now

considered as essential. Operated by Marine Corps Base Fire Department.

Doc. no. : CLEJ-00648-01.02-02/20/

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	ACTIVITY_	Marine Corps Camp Lejeune	N. C.	
			.nc <sup>–</sup>	67001
19 A.	North States	SIT	E NUMBER	10
Have there been any in Yes - See Section			this site?	Explain
			•	
			. Charles and	
Approximately 3½ m	iles.	boundaries?		
			-	
Approximately 3½ m				
dditional comments				
dditional comments				
dditional comments				

Appendix A to ENCLOSURE (1)

DOC. NO .: CLEJ-00648-01.02-02/20/

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	ACTIVITY Marine Corps Base, Camp Lejeun
	UIC SITE NUMBER1O
	water table depth, groundwater quality, nearby surface waters, etc.
	Soils are Baymeade with characteristics similar to Site #1. The
	site is located at approximately 30 feet above sea level. Has
	excellent surface drainage. Approximately 250 meters to Bearhead
	Creek, a tributary to Wallace Creek.
•	
•	
	The second se
	and the second
	Briefly describe enimal and plant life surrounding the site, including any eculiarities (e.g., dying plants). None Observed.
	personnel live or work near the site? Please explain.
	The Site is located on the fringes of the Hadnot Point industrial
	area. Military personnel are located adjacent to the site and are
	actively involved in training on surrounding grounds.
	sarrounding grounds.

Appendix A to ENCLOSURE (1)

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WOC.ND. . ULEJ-00648-01.02-02/29

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ACITATIA	Marine	Corps	Base,	Camp	Le	ieune	N.	С
			UIC	670	001			

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SITE NUMBER 10

5. If the site was closed, briefly describe the closure procedures.

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6. As well as possible, describe the wastes that entered the site.

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ACTIVAT Marine Corps Base, Camp Lejeune, N. C.

UIC 67001

Da. NO.: CLEJ-00648-01.02-02/20/81

SITE NUMBER 10

SECTION III. DETAILED DISPOSAL INFORMATE

This section should be completed why if active or past disposal sites were identified in section II. Section III should be completed for each site. As an example, say younctivity has three sites. Make three copies of section III and complete them. Assign a number to each site (1, 2, and 3) and enter it inste upper right-hand corner.

1. Is this disposal site currently in omnation or has it been closed?

In operation.

Years of operation: From Early 1970's To present.

2. What is/was the name of the site (e.g. slurry pit)? \_\_\_\_\_

Flammable storage warehouse, Bldg. TP-451, and 452.

3. Where is/was the site located (provide description and give activity map coordinates)? Between Piney Green Road and Holcomb Blvd. at map coordinates

867 398.

4. Describe how the site is/was operated.

Flammable supplies of all types were stored in Butler type Buildings. Bldg.

TP 452 burned in 1977. At that time the operation moved to TP 451.

TP 451 was vacated in October and will be upgraded for use for hazardous waste storage.

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ACTIVITY Marine Corps Base, Camp Lejeune N. C.

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·IIC \_ 67001

SITE NUMBER 9

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10. Have there been any incidents or complaints concerning this site? Explain.

11. How close is the site to the activity's boundaries?

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3.5 miles to nearest adjoining non-military land area.

.

.

12. Additional comments

.

No.

•

Dac. NO. : CLEJ-00648-01.02-0764

MCBul 6280 11 Dec 1980

	ACTIVITY Marine Corps Base, Camp Lejeune, N. ( UIC 67001
	SITE NUMBER 9
	y, including information on terrain, soils, quality, nearby surface waters, etc. Kureb-Lakeland which are excessionaly
drained. Water tables are	e below six feet. A small nature wond
is located immediately bes	ide site. Approximately 500 mer 3 to neare
perennial stream. Subsoil	materials are highly permeable
	and the state of the
	and the second
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	A CARLER OF THE ACCOUNT OF THE ACCOU
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riefly describe animal and plant culturities (e.g., dying plants)	life surrounding the site, including any
egetation has been killed	and damaged by heat and shrapnel. No
pparent damage due to poll	ution .
personnel live or work near the	site? Please explain.
- area is restricted.	
and the second second	
	and the second

Appendix A to ENCLOSURE (1)

DOC. NO. : CLEJ-0048-01.02-02/20/8

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	ACTIVITY Marine Corps Base, Cam	<u>p Lejeune, N</u> .
	_ 110	67001
	SITE NUMBER	9
the site was closed, bric	fly describe the closure procedures.	
		and a second
		and the second

6. As well as possible, describe the wastes that entered the site.

5. If

Type of Waste	Quanti	<u>.</u>	Origin	•
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	and the second second			
and the second second			ana ang kana tang kana sa	and an and a set
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	Second States and	en ante de la companya de la company		
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			and the state of the second	the straighter
			and the second	

DOC. NO. CLEJ-000418-01.02-02/00/8

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ACTIVITY Marine Corps Base, Camp Lejeune, N.C.

UIC \_67001

SITE NUMBER 9

SECTION III. DETAILED DISPOSAL INFORMATION

This section should be completed only if active or past disposal sites were identified in section II. Section III should be completed for each site. As an example, say your activity has three sites. Make three copies of section III and complete them. Assign a number to each site (1, 2, and 3) and enter it in the upper right-hand corner.

1. Is this disposal site currently in operation or has it been closed? Currently in operation.

Years of operation: From 1974 To Present.

2. What is/was the name of the site (e.g., slurry pit)? \_\_\_\_\_

G4A Range, Explosive Ordnance Disposal.

3. Where is/was the site located (provide a description and give activity map coordinates)? 1/2 mile northwest of Highway 172 (near G5/G5A Ranges) at map

coordinates 933 335.

4. Describe how the site is/was operated.

Miscellaneous unexploded ordnance is detonated or destroyed per

OP-S. Vol.#1, NAVSEASYSCOM Manuals.

Appendix A to ENCLOSURE (1)

Doc. no. : CLEJ-00648-0102-02/00/8

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	A . Salah an		.лс	67001	
		SITE	UMBER	8	
Have there been any inci					
	dents of complain	its concerning in	site?	Explain.	•
No.			Alar Service		
	Western Street		N Letter L. St.		
			1. 1. 1. 1. 1. 1.		
	Participant and a strain of the	1 - A. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	ant See	The stars	A.
		HAND IN THE		÷	
		*		enter State des	
		•		the second	
Eow close is the site to	the activity's b	oundaries?	alt daarte. Seksi seesi ta ta		
Approximatel's 6 -11-		A SANTA DAY SANTA	and the second		2.28
ADDICX1MALELY 0 mile	S to nearest	diciping non m	ilitam.		
Appreximately 6 mile					
Immediately adjacent					
	to shoreline			s <u>.</u>	
Immediately adjacent	to shoreline	of navigatible	Waters	s <u>.</u>	
	to shoreline	of navigatible	Waters	s <u>.</u>	
Immediately adjacent	to shoreline	of navigatible	Waters	s <u>.</u>	
Immediately adjacent	to shoreline	of navigatible	Waters	s <u>.</u>	
Immediately adjacent	to shoreline	of navigatible	Waters	s <u>.</u>	
Immediately adjacent	to shoreline	of navigatible	Waters	s <u>.</u>	
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Immediately adjacent	to shoreline	of navigatible	Waters	s <u>.</u>	
Immediately adjacent	to shoreline	of navigatible	Waters	s <u>.</u>	
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Immediately adjacent	to shoreline	of navigatible	Waters	s <u>.</u>	
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Immediately adjacent	to shoreline	of navigatible	Waters	s <u>.</u>	
Immediately adjacent	to shoreline	of navigatible	Waters	s <u>.</u>	

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DOC. NO. : CLEJ-00648-01.02-02/20/:

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•	- UIC <u>67001</u>
	SIZE BER 8
	Describe the site's hydrogeology, including information merrain, soils, water table depth, groundwater quality, nearby surface was, etc.
•	Soils and soil characteristics essentially thesame as Site #1. Elevati
•	is approximately 10-15 feet above sea level. The site is immediately
	adjacent to New River.
1	
-	
_	
-	
_	
-	
-	
Bi	riefly describe animal and plant life surrounding the sigincluding any aculiarities (e.g., dying plants).
N	one apparent. Site is surrounded by managed pine forests and drains
-	ontaining typical hardwood trees and shrubs.
	personnel live or work near the site? Please caplain.
1	te is in a remote area with restricted access
_	
	the second se

Appendix A to ENCLOSURE (1)

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ACTIVITMarine Corps Base, Camp Lejeune, N. C.

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UIC 67001

SITE NUMBER 8

5. If the site was closed, briefly describe the closure procedures.

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6. As all as possible, describe the wastes that entered the site.

. .

The of Waste	Quantity	Origin	
		Sector Providence of the sector	
			- George
1	Martin The State		
			- 14 g -
			N. C.

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ACTIVITY Marine Corps Base, Camp Lejeune, N. C.

UIC \_\_\_\_\_\_0

SITE NUMBER 8

SECTION III. DETAILED DISPOSAL INFORMATION .

This section should be completed only if active or past disposal sites were identified in section II. Section III should be completed for each site. As an example, say your activity has three sites. Make three copies of section III and complete them. Assign a number to each site (1, 2, and 3) and enter it in the upper right-hand corner.

1. Is this disposal site currently in operation or has it been closed?

Currently in Operation.

Years of operation: From 1974 (authorized) To Present.

2. What is/was the name of the site (e.g., slurry pit)? \_\_\_\_\_

K-326 Range, Explosive Ordnance Disposal

3. Where is/was the site located (provide a description and give activity map coordinates)? 500 meters north of Rhodes Point Road. (Verona Loop Area) at

map coordinates 818 365.

4. Describe how the site is/was operated.

Miscellaneous unexploded ordnance is detonated or destroyed

Per OP-5, Vol. 1, NAVSEASYSCOM Manuals.

# Doc. NO. CLES-00418-01.02-02/20/2

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ACTIVITY Marine Corps Base, Camp Lejeune, N. C. 'IIC' 67001 SITE NUMBER 7 10. Have there been any incidents or confinints concerning this site? Explain. Analysis of current transformers stored in area indicate high percentage with 50-500 ppm of TEB's. Analysis of top 4" of soil indicate only 1 or less than 1 ppm of PE. ÷ • • 11. How close is the site to the activitis boundaries? 4 miles to nearest adjacent las area. 12. Additional comments · · · · · ....

Da. No.: CLEJ-00648-01.02-04

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ACTIVITY Marine Corps Base, Camp Lejeune	N. C.
UIC _ 67001	-
SITE NUMBER 7	
7. Describe the site's hydrogeology, including information on terrain, soils, water table depth, groundwater quality, nearby surface waters, etc. The site is located on highly disturbed soils in a transition zone because and Poince to the second poinc	-
soils. Seasonal high water tak	
the state of and possibly somewhat shallower then site "	
and other conditions are very similar. The site is approximately 300	) meters
from nearest stream and is on a level area at approximately 300 feet a sea level.	bove
iever.	
The second se	
· · · · · · · · · · · · · · · · · · ·	
Briefly describe animal and plant life surrounding the site, including any peculiarities (e.g., dying plants).	
No vegetation in immediate area except weeds. No observed effects	
	disease a
Do personnel live or work near the site? Please explain.	
es. The area is located in an industrial area, access to lot is res	1.
ehicular and foot traffic is present on two dirt streets adjacent to	tricted lot.
to	lot.

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ACTIVITY Marine Corps Base, Camp Lejeune, N. C.

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UIC 67001

SITE NUMBER 7

5. If the site was closed, briefly describe the closure procedures. <u>The site is now used only for storage of transformers in accordance</u> with Toxic Substances Control Act. Analysis of top 4" of soil in <u>October 1980 indicated approximately 1 PPM of PCB's.</u>

6. As well as possible, describe the wastes that entered the site.

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Type of Waste		Quantity	Origin	•.
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# ACTIVITY Marine Corps Base, Camp Lejeune, N. C.

UIC 67001

SITE NUMBER 7

## SECTION III. DETAIL DISPOSAL INFORMATION

This section hand be completed only if active or past disposal sizes were identified in section II. Section III should be completed for each site. As example, say your activity has three sites. Make three copies disection III and complete them. Assign a number to each site (1, 2, abd) and enter it in the upper right-hand corner.

1. Is this disposabile currently in operation or has it been closed? \_\_\_\_\_\_ Open.

Years of operation: From Pre-1960

1960 To Present.

2. What is/was there of the site (e.g., slurry pit)? \_\_\_\_

Lot 140, HadnotFoint area.

3. Where is/was themite located (provide a description and give activ( map coordinates)? Located between Ash Street and Sneads Ferry Road, on Center Road

extension accordinates 863 391.

Describe how thesite is/was operated. This area was used as a maintenance area for transfirmers, prior to awareness of Polychlorinate Biphenyl
 (PCB) hazards. Significant quantities of transformer oil were dis-

charged onto the ground prior to the regulation of PCB's.

13 DEC 80

1300: Debriefing held by RASO Rep and attended by:

1. MCDONOUGH, James, C., LTJG, MSC, USN, 215-66-6127 Industrial Hygiene Officer

DOC.NO.: CLEJ - 00048-01.02-02/20

2. KALISCH, Bert, ENS, MSC, USNR 485-72-8407 Environmental Health Officer

3. SAURINI, Joseph HM1, USN 088-44-5748 Radiation Saftey Officer

RASO Rep made the following recommendations:

1. Store radioactive material in enclosed secure area and mark area in accordance with Title 10 CFR part 20.

2. Contact Naval Supply Center, Norfolk, Va. for proper packaging and disposition of radioactive material.

3. Take soil samples in grids 1 thru 15. Three from each grid one from surface, one six inches from surface and one one foot from surface. Send samples to Port Huenneme for isotopic analysis ASAP.

4. Grids 1 thru 15 retained as restricted area pending results of isotopic analysis from Port Huenneme.

5. Area to be released by RSO.

**6.** RSO take wet rag survey with E140N/DT304 or HP210 probe of work sites inside Bldg inside PT-37 compound.

11 DEC 80 Continued.

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1600: Released southeren portion of grid for unrestricted use and minimized restricted area to 26' 8" east to west by 16' north to south. In the northeast portion of the compound.

Doc. No. : CLEJ-00248

1630: Set up controlled area, following Individuals were allowed entry by RASO Rep:

> 1. MC DONOUGH, James, C., LTJG, MSC, USN 215-66-6127 Industrial Hygiene Officer

2. KALISCH, Bert, ENS, MSC, USNR 485-72-8407 Environmental Health Officer

3. SAURINI, Joseph, HM1, USN 088-44-5748 Radiation Saftey Officer

Individuals badged by RSO, briefed on radiological control procedures for handling radioactive material, donning and removing Anti C's and conducting whole body self frisking procedures.

1700: Commenced digging in grid #1. Fifteen Beta buttons found in depths from 1 Inch to 1½ feet. Soil samples taken from surface and at 1½ feet and sent to Port Huenneme for isotopic analysis. Radioactive material/storage area set aside on east side of gridded area. Radioactive storage log initiated.

1800: Commenced digging in grid #8 and recovered 25 Beta buttons and remains of 2 dogs at a depth of 2 feet. Soil immediatley adjacent to dog remains found to be contaminated. Two soil samples sent to Port Huenneme for isotopic analysis. Soil adjacent to animal remains placed in radioactive material storage container.

1900: Secured area for the day.

12 DEC 80

0800: Returned to area and commenced digging grid #2. Requested Back hoe and:sifter from Base Maintenance.

1000 to 2000: utilized Back hoe and sifter to systematically extricate Beta buttons from gridded area. No further animal remains found.

A total of 499 (Fourhundred ninetynine) Beta buttons recovered. No detectable soil contamination encountered.

Radiation contamination survey conducted on grids one through fifteen, no readings above background noted.

Back hoe and sifter surveyed by RASO Rep and released for unrestricted use. Anti-C's disposed of as Radioactive Waste.

ADDENDUM : 1330: Former research site custodian interviewed by Environmental Health Officer. This revealed the location of incinerator ash dump site. Soil sample taken and sent to Port Huenneme for isotopic

Dac. no. : CLEJ-00648-01.62-02/20/81

Ens. 15 DEC 80 Kolist

List of events of 18 NOV80 thru 13 DEC80 concerning Sr 90 Beta buttons. Finding and deanup procedures.

18 NOV 80: First findings

First contact with Port Huenneme, Cal. Imediatley area roped off 50' x 25'. Personnel cautioned. Mea visted by LTJG McDonough.

Twy Research and Development Command notified to find all old Tiles from research lab. All old files lost in St. Louis.

mitial problem stated from LTJG McDonough: 7 cases of Radium 226 meflectors buried in the area.

19,20,21 NOVEO: Contact with local people who worked the lab while it was in a working status.

1 DEC 80: Ressage received from Naval Nuclear Power Unit, Port Huenneme, Calf. From Mr Kip Rimm, Message # 012240Z. This announced a technical wisit from RASO.

DEC Thre HE DEC 80: Continued survailence of area to insure integrity of the sight.

11 DEC 80: Tr. Rimm arrived and at 0900 initiated investigation on site. Round area adequatley secured, no health hazard to personel working i adjacent areas. tea concerned is the north west cornerof Insect Vector Control Winter, Marine Corps Base, Camp LeJeune, N.C. Grdinents: 21degrees North Lat by 41 Degrees west Long.

> \$30: Preliminary Radiation / Contamination survey made by RASO Rep. Area roped off: 100! North to South by 25' East to West

> 100: RASO Rep briefed workers and supervisors at site on the significants of the problem and insured them no health hazards misted as long as they stayed out of roped off area.

300: Grid off area in 5' by 5" grids. Conducted radiation survey using PRM5/S3.

300: Advised by the foreman that on 18 NOV80, one button had been Frown in a southwesterly direction into the woods and one north-. asterly into woods by employees prior to knowledge of nature of material. ESO Rep conducted survey of contaminated area using E140N-304 The Beta. No loose surface contamination found in gridded area.

(ID): Recovered Beta buttons from woods which personel through to woods.

attons surveyed for loose surface contamination - none found.

100: Surveyed incinerator and areas adjacent to gridded area. and samples taken from incinerator and mailed to Port Huenneme isotopic analysis.

Doc. no .: CLEJ-000418-01.02-02/20/1

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ACTIVITY Marine Corps.Base, Camp Lejeune, N.C.

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SITE NUMBER 6

10. Have there been any Hidents or complaints concerning this site? Explain. On 18 Nov 1980 Sr. 90 Beta Buttons were discovered while grading parking lot. Preventive Medicine personnel from Naval Regional Medical Center, Camp Lejeune, NG, recovered contaminant items and surveyed the area. (See Appendix A to this form).

11. How close is the site of the activity's boundaries? <u>3 miles to nearest adjacent land area</u>. 500 meters to Navigatable waters.

12. Additional comments

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				. SITE N	UMBER 6	C. S. C. S.	
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Describe t water tabl	the site's le depth, g	hydrogeolog roundwater	y, including ; quality, near	information on by surface water	terrain, soils, rs, etc.		
Spils ar	é same as	Site #1.	Distance	to Beaver Dar	n Creek and	Wallace	Creek
				pproximately.			
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None obse	rved.						
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an an thair An thair an thair		State of the law		e explain.	and the second second	YEL GERMAN	
Do personnel	live or w	ork near th	e site? Pleas				
			to facility				

Appendix A to ENCLOSURE (1)

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Appendix A to ENCLOSURE (1)

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DOC. NO .: CLEJ - 00242 -1.02-04/16/86

Commanding General Page 2 April 16, 1986

and study. (4) I noticed several open electrical service panels. A standing policy should be established to close or secure these at the end of the work or shift change, especially in the water plant areas. (5) Many water systems utilizing dry feeders for fluoride prefer sodium silicofluoride (due to its cost) instead of sodium fluoride (dissolves only to 4% solution). (6) Records of operations (including total water treated, filter and softener operations; chemical feed and dosage rates, etc.) should be reported monthly for each facility to our office in Raleigh.

I understand that planning is in progress for the development of private operations contracts for the water treatment facilities. Our office, in cooperation with the NC Attorney General's office, would like to review the final contract proposal to determine the operation's responsibilities as well as the system's liabilities.

As always, I appreciate the cooperation and attitude of the Base towards the State's Water Supply Branch and regulations.

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If you have any questions or wish to discuss these comments further, please contact me.

Sincerely, .

J. Fred Hill Water Plant Consultant Water Supply Branch Environmental Health Section

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Enclosures

cc: C. E. Rundgren M. P. Bell



# North Carolina Department of Human Resources Eastern Regional Office • 404 Saint Andrews Drive • Greenville, N. C. 27834

James G. Martin, Governor April 16, 1986 C. Constant Science States Science 
Commanding General US Marine Corps Base Camp Lejeune, NC 28542

ATTN: Utilities Director G. S. Johnson, Jr.

Dear Sir:

I visited the potable water treatment facilities aboard USMCB Camp Lejeune on 10 and 11 April 1986. I was accompanied during this visit by Mr. B. M. Frazelle, Jr. (Water Treatment Operator Foreman). The purpose of this visit was to update our files and records concerning the facility operations, treatment capacities, and construction work in progress as well as offer any suggestions for improvements in the process or daily operation and maintenance at the treatment facilities.

The routine plant operation and equipment maintenance are well organized and carried out. I was very pleased with the expansion and upgrading work recently completed or now in progress at several facilities.

We discussed several specific plant situations including: (1) A light film on the water surface at the filters in the Holcomb Boulevard facility may be from oil lubricated well pumps. (2) The maintenance level at the Tarawa Terrace and Camp Johnson facilities has dropped below the others. This is understandable, however, considering these are to be abandoned when the Holcomb Boulevard project is completed (estimated late 1986). (3) The water flow pattern at the Onslow Beach system is different from other facilities utilizing similar treatment. Normally, water is pumped from the wells through filters then through the ion exchange softeners, not divided. Additionally, filter backwash water is usually from the treated water system, not untreated well water.

We also discussed several items which may be applicable to more than one facility. These include: (1) The filters and softeners should be inspected annually for media loss and condition as well as any structural or operational abnormalities. (2) Covers for the brine (NaCl) day tanks will reduce some of the problems with surface corrosion. Installation and operation of dehumidifiers will also help this problem. (3) The existing treatment process consisting of aeration, lime addition, sedimentation, filtration (sand media), ion exchange (softening), chlorination, and phosphate (at three plants) may be altered to reduce chemical costs while maintaining acceptable quality. An in-plant or laboratory trial of the process may prove effective, depending on more detailed water quality analysis

## APPENDIX I

#### EXECUTIVE SUMMARY

This report presents the results of an Initial Assessment Study (IAS) conducted at Marine Corps Base (MCB) Camp Lejeune and outlying fields. The purpose of an IAS is to identify and assess sites posing a potential threat to human health or the environment due to contamination from past hazardous materials operations.

Based on information from historical records, aerial photographs, field inspections, and personnel interviews, a total of 76 potentially contaminated sites were identified. Each of the sites was evaluated with regard to contamination characteristics, migration pathways, and pollutant receptors.

The study concludes that, while none of the sites pose an immediate threat to human health or the environment, 22 warrant further investigation under the Navy Assessment and Control of Installation Pollutants (NACIP) Program, to assess potential long-term impacts. A confirmation study, involving actual sampling and monitoring of the 22 sites, is recommended to confirm or deny the existence of the suspected contamination and to quantify the extent of any problems which may exist. Since the on-site survey, MCB Camp Lejeune has taken action to evaluate or mitigate Site No. 2, the Former Nursery/Day-Care Center, and Site No. 16, the Montford Point Burn Dump. The 22 sites recommended for confirmation are listed below in order of priority.

- Rifle Range Chemical Dump, Site No. 69; 1.
- 2. Storage Lots 201 and 203, Site No. 6;
- 3. MCAS Mercury Dumpsite, Site No. 48;
- 4. Former Nursery/Day-Care Center, Site No. 2;
- 5. Transformer Storage Lot 140, Site No. 21;
- 6. Camp Geiger Dump, Site No. 41;
- 7. Mess Hall Grease Disposal Area, Site No. 74;
- 8. MCAS Basketball Court Site, Site No. 75;
- 9. MCAS Curtis Road Site, Site No. 76;
- 10. Courthouse Bay Liquids Disposal Area, Site No. 73;
- 11. Fire Fighting Training Pit, Site No. 9;
- 12. Industrial Area Fly Ash Dump, Site No. 24;
- 13. Campbell Street Underground Avgas Storage and Adjacent JP Fuel Farm at Air Station, Site No. 45;
- 14. Hadnot Point Burn Dump, Site No. 28;
- 15. French Creek Liquids Disposal Area, Site No. 1;
- 16. Rifle Range Dump, Site No. 68;
- 17. Montford Point Burn Dump, Site No. 16 (Mitigation undertaken);
- 18. Industrial Area Tank Farm, Site No. 22;
- 19. Crash Crew Fire Training Burn Pit; Site No. 54;
- 20. Sneads Ferry Road--Fuel Tank Sludge Area, Site No. 30;
- 21. Camp Geiger Area Dump, Site No. 36;
- 22. Camp Geiger Area Fuel Farm, Site No. 35.

The results of the Confirmation Study will be used to evaluate the necessity of conducting mitigating actions or clean-up operations.

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# APDENDIX I

NAVY ASSESSMENT AND CONTROL OF INSTALLATION POLLUTANTS (NACIP) PROGRAM

> Marine Corps Base Camp Lejeune, North Carolina

The NACIP program is implemented in the following phases:

Initial Assessment Study (IAS) of the existence of potential contamination problems, which was provided to NCDEM, Raleigh, in December 1983. (Note: A copy of the IAS will be forwarded to NCDEM, Wilmington, by separate correspondence.)

<u>Confirmation Study</u> for onsite work to confirm, qualify, and recommend correction of contamination problems, which is currently underway.

<u>Corrective measures</u> to control or mitigate contamination, and to be funded under the Department of the Navy Pollution Abatement Program.

The <u>Confirmation Study</u> is a sequentially phased effort as described below:

Step

#### Description

IA Verification of existence of contamination.

IB Characterization of extent and rate of migration of contataminants, geohydrological, geophysical and other factors.

II Evaluate alternatives to achieve compliance, prepare cost

estimates and project effectiveness of alternatives. III Prepare site operation and draft Government project documentation with cost estimate satisfactory for project funding requests.

DOC. NO .: CLEJ - 00247-1.02 - 10/25/85

APPENDICES

DOC. NO .: CLEJ-00247-1.02 -10/25/85

Additionally, DEM will continue its effort to identify the off-base source which has contaminated the two Tarawa Terrace wells. Although the Solid and Hazardous Waste Management Branch, Department of Human Resources, is not actively involved in the NACIP program, it is requested that a copy of this report (when approved) be transmitted to Mr. Bill Meyer.

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#### Conclusions and Recommendations

The principal conclusions are as follows:

- There are thirty-eight (38) known pollution sites that are of concern to DEM;
- 2. The NACIP program is designed to remedy problems only at serious hazardous waste sites;
- Eight (perhaps nine) community supply wells have been contaminated by on-base sources;
- Two community supply wells have been contaminated by off-base sources;
- 5. Another eighteen community water supply wells are in jeopardy of being contaminated by on-base sources.
- 6. In part because of the contamination problem, the Marine Corps occasionally experiences problems in meeting peak water demand at the MCB.

Given the actual and potential severity of the quality problems at the MCB, the following recommendations are offered for consideration:

- Require the Marine Corps to initiate confirmatory studies at sixteen sites that are not NACIP priority sites, but are sites of concern to DEM;
- 2. At priority sites 2, 6, 9, 21, 22, 54, 68, 69, 74 and 76, where confirmatory studies have been performed, require the Marine Corps to expand the study so that the presence or absence of a plume can be confirmed;
- 3. At sites where significant contamination is discovered present in the Water Table Aquifer, require the Marine Corps to conduct confirmatory studies in the underlying Tertiary Sand Aquifer;
- At sites where significant contamination is documented, require the Marine Corps to define the direction and velocity of plume movement;
- Request the Marine Corps to submit a revised schedule of work which realistically specifies when these technical evaluations will be completed;
- 6. Request that the Marine Corps explain what circumstances mandate corrective measures at a pollution site, and in fact what activities constitute remedial actions.

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## Groundwater Resources Situation

Currently, the MCB extracts for use an average of 8.30 million gallons per day of groundwater from 103 wells. Except for the Rifle Range System, these wells are exposed to the Tertiary Sand Aquifer: at the Rifle Range the wells are exposed to the Tertiary Limestone Aquifer. Over all the MCB, the well depths range from 100 to 200 feet.

The Tertiary Sand Aquifer is highly vulnerable to contamination from pollution sources. Because the confining beds between the Water Table Aquifer and Tertiary Sand Aquifer are discontinuous (or absent), and because many sites are located close to active wells, the probability that potable water supplys can be contaminated is high. That this has happened already attests to the vulnerability of the aquifer for pollution.

The Marine Corps now experiences occasional problems in meeting peak water demand at the MCB. In part that is because ten (contaminated) wells were removed from the system, and in part because expansion of the MCB has resulted in increased demands for water. To evaluate the adequacy of the groundwater system to meet its long term demand, the Marine Corps is negotiating a quantity-related study with the United States Geological Survey.

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17. MCAS Mercury Dump, Site No. 48

18. Hadnot Point Burn Dump, Site No. 28

19. Montford Point Burn Dump, Site No. 16

20. Courthouse Bay Liquid Disposal Area, Site No. 73

Priority is based on a consideration of the toxicity of the waste, the probability of groundwater quality violations, the proximity of the site to community water supply wells, and the proximity of the site to surface waters.

The data do not suggest that any of the contaminant plumes from the 38 sites have migrated off the MCB. However, it is probable that in one case a contaminant plume(s) from a day cleaner(s) migrated onto the base and resulted in the contamination of two community water supply wells.

Eight (perhaps nine) community water supply wells at the MCB already have been impacted by these (and other unknown) waste sources. Additionally, another eighteen (18) wells are in jeopardy of being impacted.

It is evident, therefore, that DEM must commit the resources necessary to assure that the Marine Corps resolves its groundwater quality problems.

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## Discussion

The principal objective of the NACIP program is to correct the worst case hazardous waste sites at the MCB. Consequently, the NACIP program can not comply with DEM's mandate to remediate <u>all</u> significant sources of groundwater pollution. Broader in scope, the 15 NCAC 2L regulations allow for the management of non-hazardous as well as hazardous sites. After applying the 2L regulations to the 73 sites, there are thirty-eight sites that are of concern to DEM.

Table 1 summarizes the characteristics of each site. In order of priority, DEM is most concerned about the following sites:

1. Rifle Range Chemical Dump, Site No. 69

2. Camp Geiger Dump, Site No. 41

3. Industrial Area Tank Farm, Site No. 22

4. Storage Lots 201 and 203, Site No. 6

5. Transformer Storage Lot 140, Site No. 21

6. Former Day Care Center, Site No. 2

7. Mess Hall Grease Disposal Area, Site No. 74

8. MCAS Basketball Court Site, Site No. 75

9. MCAS Curtis Road Site, Site No. 76.

10. Fire Fighting Training Pit, Site No. 9

11. Base Sanitary Landfill, Site No. 29

12. Original Base Dump, Site No. 10

13. Campbell Street Avgas-JP Fuel Farm, Site No. 45

14. MCAS Direct Refuel Depot, Site No. 52

15. Camp Geiger Area Fuel Farm, Site No. 35

16. Rifle Range Dump, Site No. 68

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standards have been established for these constituents, the Marine Corps nevertheless discontinued use of the contaminated wells during December 1984.

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Believing that the ten contaminated wells obviated violations of 15 NCAC 2L regulations, DEM issued the MCB a notice of violation (NOV) to that effect on May 15, 1985. This NOV (see Appendix III) required the Marine Corps to submit to DEM a plan of action (with a schedule of compliance) that would: 1) identify the source(s) of contamination, 2) define the geometry of the plumes, 3) define the quality attributes of the plume(s), 4) project the future impacts of the source(s), and 5) propose remedial actions to restore the polluted groundwaters to GA standards. The Marine Corps response to this NOV was simply to expedite the implementation of the NACIP program: a copy of the 19 July 1985 response is Appendix IV.

Contamination of two of the ten wells on the MCB is related to civilian sources. The organic solvents present in the two wells at Tarawa Terrace I probably originate from nearby dry cleaner(s). During April 1985, DEM initiated a study to identify the source(s) of this plume(s), and while the field study is completed, the analytical studies are not, so no conclusions are yet possible. DOC. NO .: CLEJ - 00242 -1.02-04/16/06

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Commanding General Page 2 April 16, 1986

and study. (4) I noticed several open electrical service panels. A standing policy should be established to close or secure these at the end of the work or shift change, especially in the water plant areas. (5) Many water systems utilizing dry feeders for fluoride prefer sodium silicofluoride (due to its cost) instead of sodium fluoride (dissolves only to 4% solution). (6) Records of operations (including total water treated, filter and softener operations; chemical feed and dosage rates, etc.) should be reported monthly for each facility to our office in Raleigh.

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Sincerely, .

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Enclosures

cc: C. E. Rundgren M. P. Bell



# North Carolina Department of Human Resources Eastern Regional Office • 404 Saint Andrews Drive • Greenville, N. C. 27834

James G. Martin, Governor April 16, 1986 Avernor

Commanding General US Marine Corps Base Camp Lejeune, NC 28542

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This report presents the results of an Initial Assessment Study (IAS) conducted at Marine Corps Base (MCB) Camp Lejeune and outlying fields. The purpose of an IAS is to identify and assess sites posing a potential threat to human health or the environment due to contamination from past hazardous materials operations.

Based on information from historical records, aerial photographs, field inspections, and personnel interviews, a total of 76 potentially contaminated sites were identified. Each of the sites was evaluated with regard to contamination characteristics, migration pathways, and pollutant receptors.

The study concludes that, while none of the sites pose an immediate threat to human health or the environment, 22 warrant further investigation under the Navy Assessment and Control of Installation Pollutants (NACIP) Program, to assess potential long-term impacts. A confirmation study, involving actual sampling and monitoring of the 22 sites, is recommended to confirm or deny the existence of the suspected contamination and to quantify the extent of any problems which may exist. Since the on-site survey, MCB Camp Lejeune has taken action to evaluate or mitigate Site No. 2, the Former Nursery/Day-Care Center, and Site No. 16, the Montford Point Burn Dump. The 22 sites recommended for confirmation are listed below in order of priority.

- 1. Rifle Range Chemical Dump, Site No. 69;
- 2. Storage Lots 201 and 203, Site No. 6;
- 3. MCAS Mercury Dumpsite, Site No. 48;
- 4. Former Nursery/Day-Care Center, Site No. 2;
- 5. Transformer Storage Lot 140, Site No. 21;
- 6. Camp Geiger Dump, Site No. 41;
- 7. Mess Hall Grease Disposal Area, Site No. 74;
- 8. MCAS Basketball Court Site, Site No. 75;
- 9. MCAS Curtis Road Site, Site No. 76;
- 10. Courthouse Bay Liquids Disposal Area, Site No. 73;
- 11. Fire Fighting Training Pit, Site No. 9;
- 12. Industrial Area Fly Ash Dump, Site No. 24;
- Campbell Street Underground Avgas Storage and Adjacent JP Fuel Farm at Air Station, Site No. 45;
- 14. Hadnot Point Burn Dump, Site No. 28;
- 15. French Creek Liquids Disposal Area, Site No. 1;
- 16. Rifle Range Dump, Site No. 68;
- Montford Point Burn Dump, Site No. 16 (Mitigation undertaken);
- 18. Industrial Area Tank Farm, Site No. 22;
- 19. Crash Crew Fire Training Burn Pit; Site No. 54;
- 20. Sneads Ferry Road--Fuel Tank Sludge Area, Site No. 30;
- 21. Camp Geiger Area Dump, Site No. 36;
- 22. Camp Geiger Area Fuel Farm, Site No. 35.

The results of the Confirmation Study will be used to evaluate the necessity of conducting mitigating actions or clean-up operations.

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# APDENDIX I

NAVY ASSESSMENT AND CONTROL OF INSTALLATION POLLUTANTS (NACIP) PROGRAM

> Marine Corps Base Camp Lejeune, North Carolina

The NACIP program is implemented in the following phases:

Initial Assessment Study (IAS) of the existence of potential contamination problems, which was provided to NCDEM, Raleigh, in December 1983. (Note: A copy of the IAS will be forwarded to NCDEM, Wilmington, by separate correspondence.)

<u>Confirmation Study</u> for onsite work to confirm, qualify, and recommend correction of contamination problems, which is currently underway.

<u>Corrective measures</u> to control or mitigate contamination, and to be funded under the Department of the Navy Pollution Abatement Program.

The <u>Confirmation Study</u> is a sequentially phased effort as described below:

#### Step

#### Description

IA Verification of existence of contamination.

IB Characterization of extent and rate of migration of contataminants, geohydrological, geophysical and other factors.

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Evaluate alternatives to achieve compliance, prepare cost estimates and project effectiveness of alternatives. Prepare site operation and draft Government project documentation with cost estimate satisfactory for project funding requests.

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Additionally, DEM will continue its effort to identify the off-base source which has contaminated the two Tarawa Terrace wells. Although the Solid and Hazardous Waste Management Branch, Department of Human Resources, is not actively involved in the NACIP program, it is requested that a copy of this report (when approved) be transmitted to Mr. Bill Meyer.

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#### 8

# Conclusions and Recommendations

The principal conclusions are as follows:

- There are thirty-eight (38) known pollution sites that are of concern to DEM;
- 2. The NACIP program is designed to remedy problems only at serious hazardous waste sites:
- Eight (perhaps nine) community supply wells have been contaminated by on-base sources;
- 4. Two community supply wells have been contaminated by off-base sources;
- 5. Another eighteen community water supply wells are in jeopardy of being contaminated by on-base sources.
- In part because of the contamination problem, the Marine Corps occasionally experiences problems in meeting peak water demand at the MCB.

Given the actual and potential severity of the quality problems at the MCB, the following recommendations are offered for consideration:

- Require the Marine Corps to initiate confirmatory studies at sixteen sites that are not NACIP priority sites, but are sites of concern to DEM;
- 2. At priority sites 2, 6, 9, 21, 22, 54, 68, 69, 74 and 76, where confirmatory studies have been performed, require the Marine Corps to expand the study so that the presence or absence of a plume can be confirmed;
- At sites where significant contamination is discovered present in the Water Table Aquifer, require the Marine Corps to conduct confirmatory studies in the underlying Tertiary Sand Aquifer;
- At sites where significant contamination is documented, require the Marine Corps to define the direction and velocity of plume movement;
- Request the Marine Corps to submit a revised schedule of work which realistically specifies when these technical evaluations will be completed;
- 6. Request that the Marine Corps explain what circumstances mandate corrective measures at a pollution site, and in fact what activities constitute remedial actions.

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# Groundwater Resources Situation

Currently, the MCB extracts for use an average of 8.30 million gallons per day of groundwater from 103 wells. Except for the Rifle Range System, these wells are exposed to the Tertiary Sand Aquifer: at the Rifle Range the wells are exposed to the Tertiary Limestone Aquifer. Over all the MCB, the well depths range from 100 to 200 feet.

The Tertiary Sand Aquifer is highly vulnerable to contamination from pollution sources. Because the confining beds between the Water Table Aquifer and Tertiary Sand Aquifer are discontinuous (or absent), and because many sites are located close to active wells, the probability that potable water supplys can be contaminated is high. That this has happened already attests to the vulnerability of the aquifer for pollution.

The Marine Corps now experiences occasional problems in meeting peak water demand at the MCB. In part that is because ten (contaminated) wells were removed from the system, and in part because expansion of the MCB has resulted in increased demands for water. To evaluate the adequacy of the groundwater system to meet its long term demand, the Marine Corps is negotiating a quantity-related study with the United States Geological Survey.

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17. MCAS Mercury Dump, Site No. 48

18. Hadnot Point Burn Dump, Site No. 28

19. Montford Point Burn Dump, Site No. 16

20. Courthouse Bay Liquid Disposal Area, Site No. 73

Priority is based on a consideration of the toxicity of the waste, the probability of groundwater quality violations, the proximity of the site to community water supply wells, and the proximity of the site to surface waters.

The data do not suggest that any of the contaminant plumes from the 38 sites have migrated off the MCB. However, it is probable that in one case a contaminant plume(s) from a day cleaner(s) migrated onto the base and resulted in the contamination of two community water supply wells.

Eight (perhaps nine) community water supply wells at the MCB already have been impacted by these (and other unknown) waste sources. Additionally, another eighteen (18) wells are in jeopardy of being impacted.

It is evident, therefore, that DEM must commit the resources necessary to assure that the Marine Corps resolves its groundwater quality problems.

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## Discussion

The principal objective of the NACIP program is to correct the worst case hazardous waste sites at the MCB. Consequently, the NACIP program can not comply with DEM's mandate to remediate <u>all</u> significant sources of groundwater pollution. Broader in scope, the 15 NCAC 2L regulations allow for the management of non-hazardous as well as hazardous sites. After applying the 2L regulations to the 73 sites, there are thirty-eight sites that are of concern to DEM.

Table 1 summarizes the characteristics of each site. In order of priority, DEM is most concerned about the following sites:

1. Rifle Range Chemical Dump, Site No. 69

2. Camp Geiger Dump, Site No. 41

3. Industrial Area Tank Farm, Site No. 22

4. Storage Lots 201 and 203, Site No. 6

5. Transformer Storage Lot 140, Site No. 21

6. Former Day Care Center, Site No. 2

7. Mess Hall Grease Disposal Area, Site No. 74

8. MCAS Basketball Court Site, Site No. 75

9. MCAS Curtis Road Site, Site No. 76.

10. Fire Fighting Training Pit, Site No. 9

11. Base Sanitary Landfill, Site No. 29

12. Original Base Dump, Site No. 10

13. Campbell Street Avgas-JP Fuel Farm, Site No. 45

14. MCAS Direct Refuel Depot, Site No. 52

15. Camp Geiger Area Fuel Farm, Site No. 35

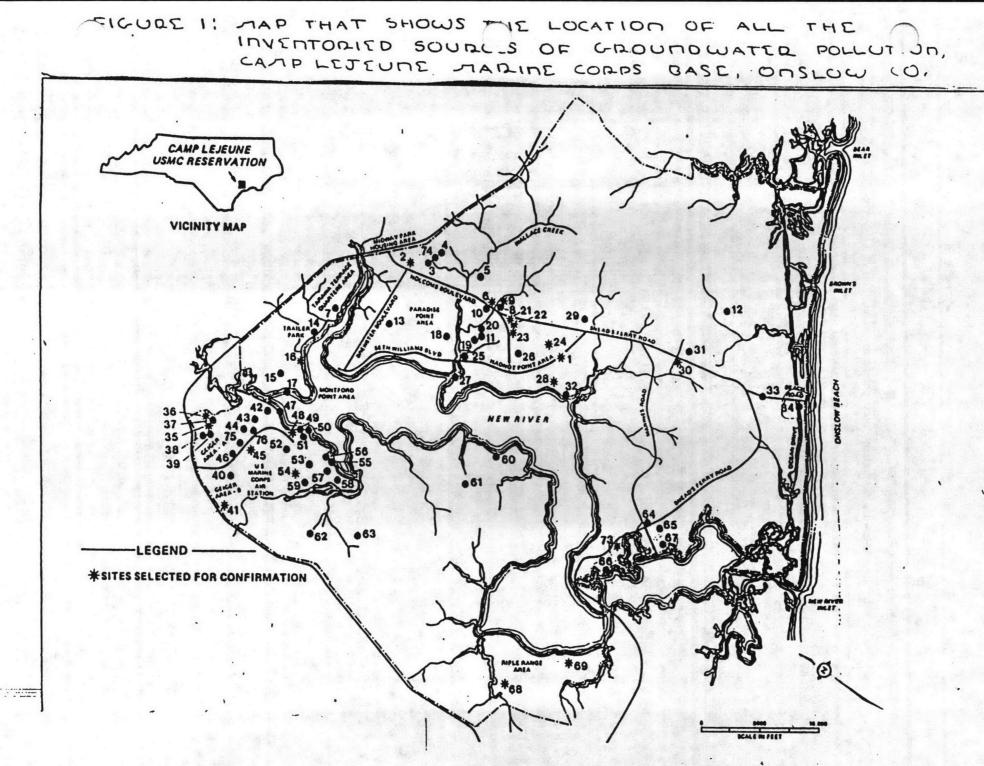
16. Rifle Range Dump, Site No. 68

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standards have been established for these constituents, the Marine Corps nevertheless discontinued use of the contaminated wells during December 1984.

Believing that the ten contaminated wells obviated violations of 15 NCAC 2L regulations, DEM issued the MCB a notice of violation (NOV) to that effect on May 15, 1985. This NOV (see Appendix III) required the Marine Corps to submit to DEM a plan of action (with a schedule of compliance) that would: 1) identify the source(s) of contamination, 2) define the geometry of the plumes, 3) define the quality attributes of the plume(s), 4) project the future impacts of the source(s), and 5) propose remedial actions to restore the polluted groundwaters to GA standards. The Marine Corps response to this NOV was simply to expedite the implementation of the NACIP program: a copy of the 19 July 1985 response is Appendix IV.

Contamination of two of the ten wells on the MCB is related to civilian sources. The organic solvents present in the two wells at Tarawa Terrace I probably originate from nearby dry cleaner(s). During April 1985, DEM initiated a study to identify the source(s) of this plume(s), and while the field study is completed, the analytical studies are not, so no conclusions are yet possible.



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# Chronology of Events

The initial assessment study was performed at the MCB from February 1982 to February 1983. Conducted by consultants with Water and Air Research, Inc., the study emphasized groundwater contamination sites. The findings and recommendations were incorporated into an April 1983 document titled <u>Initial Assessment Study of Marine Corps Base Camp</u> <u>Lejeune North Carolina</u>. Although seventy-three (73) contamination sites were identified at the MCB, the investigators concluded that further studies could be justified only at twenty-two (22) priority sites. Figure 1 shows the location of these 73 sites, and Appendix II provides an executive summary of the report.

During July 1984, confirmation studies were begun at eighteen (18) priority sites. The results of these groundwater studies were documented in a report provided to the Marine Corps in February 1985: as the Marine Corps disagrees with the conclusions in this report, it will not release a copy of it to any outside agency. Recently, however, the Marine Corps did agree to provide DEM copies of the technical data for review and interpretation.

As part of this confirmation study, it was recommended that volatile organic analyses (VOA) samples be collected from any community water supply well that is located proximal to a priority site. In July 1984, solvents and gasoline were discovered present in well HP-602, and expanded quality studies eventually verified the presence of organic contaminants in ten (10) wells. The organic contaminants included: tetrachloroethylene, trichloroethylene, dichloroethylene, methylene chloride, 1,1 - dichloroethane, benzene, toluene, and dichlorobenzene. Although no safe drinking water

## Background

The framework whereby the Marine Corps can remediate groundwater pollution at problem sites is the NACIP program. This acronym stands for "Naval Assessment and Control of Institutional Pollutants". Begun in September 1980, the NACIP program is the Navy's "superfund" program (federal installations are exempt from CERCLA coverage).

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The NACIP program, broadly defined, mandates the identification, study, and correction of pollution problems caused by past disposal practices of hazardous materials. Specifically, it consists of three phases: 1) the first phase requires the identification and prioritization of problem sites at the base (initial assessment study), 2) the second phase (confirmation study) authorizes technical studies at the priority sites to define the severity of the contamination problem, and 3) the third phase specifies remedial actions (corrective measures) at documented problem sites. Appendix I provides a detailed explanation of the NACIP program in progress at the MCB.

# TABLE I : A LIST OF SOUDCES AT CAMP LEJEUNE THAT ADE OF CONCEDN TO D.E.J.

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#### MILESTONE CHART

Milestone	Day
Government Issuance of Change Order	0
Submit POA&M and Safety/Contingency Plan for Characterization Effort	10
Government Approval of POA&M and Safety/Contingency Plan	17
Initiate Characterization On-Site Investigations for Hadnot Point Industrial Area	45
Initiate Round Two Sampling, Verification Step	45
Initiate Potable Well Sampling	45
Submit Report with Round Two Results, Potable Well Results	125
Return of Government Comments	155
Complete Characterization On-Site Investigation	260
Submit Preliminary Report with Hadnot Point Characterization Step Results	290
Return of Government Comments	320
Submit Characterization Step Draft Report for Hadnot Point	350
Submit Preliminary Feasibility Step Report for Hadnot Point	380
Return of Government Comments	410
Submit Feasibility Step Draft Report for Hadnot Point	440

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# SCOPE OF WORK FOR ADDITIONAL SOIL BORINGS, MCAS (H) NEW RIVER FUEL PIPELINE INVESTIGATION

1. Perform 23 soil borings to depths of 10' at the locations shown in Attachment A. (The attached sketch is from a 1983 Soil and Materials Engineering Study which was forwarded to you on 8 February 1984). A drill rig will be required for this effort, since previous attempts at hand augering have been unsuccessful. Note the presence or absence of fuel by visual inspection during the drilling. After a period of 24 hours, measure and record the depth to water or fuel in each borehole; sample the liquid and note the presence or absence of fuel and the thickness of the fuel lens.

2. Prepare a separate report on this investigation, to include boring logs and sketches, and submit three copies to this Command and three copies to MCB Camp Lejeune.

3. This investigation should be completed within ninety days of contract award.

Perform aquifer testing to determine aquifer characteristics and rate and direction of ground water and contaminant flow. Potable water wells shall be evaluated for various well pumping combinations. Access holes will be drilled, threaded and removable plugs installed in the tops of all potable wells to provide a means of logging the depths of the water levels in the wells. The elevations of these plug holes above mean-sea-level shall be accurately determined by surveying. The method described in Attachment C or another commonly used method/model, as approved by the EIC, shall be used to determine the flow characteristics and contaminant profiles of the aquifers under study.

Within 30 days of completion of the Characterization Step on-site investigation, submit the Step IB preliminary report of the study results. The report should include: a description of all sampling and chemical analytical methods used; a presentation and evaluation of the analytical and geotechnical data; an assessment of actual/potential migration; detailed surveyed site plan with surface elevations, well locations (horizontal and vertical) and water levels (0.01 ft. accuracy) in all wells; the location and levels of suspected contaminant plumes and/or contaminant sources; known toxicological information on contaminants found, and current standards/criteria for acceptable levels of contaminants found, including those issued/published by EPA, CDC, NIOSH, OSHA, State and local regulatory/health agencies, and/or any other established regulatory/advisory agencies as approved by the EIC. Requirements for preliminary and draft report submissions for Step IB are outlined in Section 3.

b. Conduct Step II Feasibility for the Hadnot Point industrial area. Specify and evaluate five each interim and long-term feasible alternatives for cleanup of contaminated aquifers; include projected effectiveness and cost estimate for each alternative in your evaluation.

Within 30 days of submission of the characterization step draft report, submit a preliminary report of the feasibility study. Preliminary and draft report submission requirements for Step II are outlined in Section 3.

3. Preliminary and Draft Confirmation Study Reports

In accordance with the completion dates established for each step, furnish the EIC with five copies and the activity with five copies of the preliminary report. Within 30 days, the Government will review and provide comments to the contractor via the EIC. Present EIC/Activity debriefing at the activity during the Government review period. Address the comments, and within 30 days provide five copies of the draft report to the EIC and five copies of the draft report to the regulatory agencies for their review.

Present the findings of the draft report for each study step to EPA Region IV and to the North Carolina Division of Environmental Management. These briefings shall be held at each agency's office as arranged by the EIC and in consort with the activity representative.

elevations and water levels (0.01 ft. accuracy) in all wells; boring logs; a detailed surveyed site plan showing the location of suspected contaminant sources, wells, etc.; known toxicity information on contaminants found; current standards/criteria for acceptable levels of contaminants found, including those issued/published by EPA, CDC, NIOSH, OSHA, State and local regulatory/health agencies and/or any other established regulatory/advisory agencies as approved by the EIC; and recommendations for immediate site clean up or third round monitoring... Government comments and recommendations will be made via the EIC within 30 calendar days after receipt of the progress report.

# 2. Characterization/Feasibility Step Efforts

a. In accordance with the original scope of work, conduct Step IB, Characterization, for the Hadnot Point industrial area (bounded by Sneads Ferry Road, Codgels Creek, the New River, and Wallace Creek) and for the deep potable water aquifer influenced by wells serving the Hadnot Point treatment plant. The pump houses for these wells are numbered:

601	613	633	642
602	614	634	650
603	615	635	651
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608	620	637	653 .
609	621	* 638	654
610	626	639(2)	655
611	627	640	LCH-4006
612	632	641	LCH-4007

The objectives of the characterization step are as follows:

1. Locate source of VOCs detected in deep water supply wells 601, 602, 608, 634, 637, and 642.

2. Determine concentration of detected parameters in source area(s).

3. Determine aquifer characteristics: transmissivity, hydraulic conductivity, permeability, storage coefficients and degree of confinement for both deep and shallow aquifers.

4. Determine rate and direction of groundwater and contaminant flow for the deep potable water supply aquifer influenced by wells listed above, and for the shallow aquifer in the Hadnot Point industrial area.

Conduct an extensive physical survey and document review for activities within the industrial area to identify potential sources of contamination. Perform a soil gas investigation to delineate the source areas; install additional wells to verify findings. We estimate fourteen additional shallow wells may be required in this area, including seven which will form pairs with potable wells 601, 602, 603, 608, 634, 637, and 642. Perform an estimated three rounds of sampling at the seventeen Site 22 shallow wells at 60-day intervals; add xylene, MEK, MIBK, and EDB to the round one verification step parameters.

r. Site 75, MCAS Basketball Court: Resample three shallow wells and analyze for VOA, chloropicrin, and dioxin.

s. Site 76, MCAS Curtis Road: Resample two shallow wells and analyze for VOA, chloropicrin, and dioxin.

t. Site A, MCAS (H) Officers Housing Area: Install three shallow wells along the perimeter of the site described in Attachment A. Sample wells twice at a 60-day interval; analyze for VOA, O&G, and free chlorine. Sample surface water and sediment and analyze for free chlorine (SW only), O&G, and VOA.

u. For all existing wells: Install two additional protective bollards and fill with concrete. Pour 5' x 5' concrete pad around well and bollards; paint well bollards day-glo orange. Use monitoring well construction specifications, Attachment B, for installation of new wells.

• v. Sample ail potable wells on MCB Camp Lejeune and MCAS New River (approx. 100). Composite samples from a maximum of ten wells serving the same water treatment plant (except for "contaminated" wells listed below) and analyze for priority pollutants, all the Safe Drinking Water Act (SDWA) parameters and xylene, MEK, MIBK, and EDB. If any parameter(s) from the composite exceed(s) regulatory limits or suggested guidelines for potable water, analyze samples for only that (those) parameters from the individual wells in the composite to pinpoint the source of contamination. For cost estimating purposes, include VOA analysis on only 20 individual wells. Scope and analysis to be adjusted as needed by the EIC pending composite sample results. These "contaminated" wells have been shut down by MCB Camp Lejeune: 601, 602, 608, 634, 637, 651, 652, 653, TT26, and TT New. Sample these wells individually and analyze for priority pollutants, SDWA parameters, xylene, MEK, and MIBK.

w. For the contaminated wells TT26, TTNew, 651, 652, and 653, conduct an extensive physical survey and document review to identify potential sources of contamination. Perform a soil gas investigation within a one-mile radius of each well to delineate potential contamination source areas; install additional shallow wells (up to six per potable well for cost estimating purposes) to verify findings. Perform two rounds of sampling at these wells; analyze samples for volatile organics, xylene, MEK, and MIBK.

x. Close out contaminated wells at Sites 36, 41, and 68 in accordance with state regulations (15 NCAC 2C). Submit an abandonment report including round one data and evaluation for these wells, to MCB Camp Lejeune for forwarding to the appropriate state agency.

y. Within 80 days of initiation of the on-site verification investigations, evaluate all data generated with the two sampling events and discuss quantitatively whether contamination has the potential to or is presently affecting the environment or human health. Present the findings as part of the monthly progress reports. Furnish the EIC with two copies and the activity with three copies of the progress report with the study results. The report should include: a description of all sampling and chemical analytical methods used; a presentation and evaluation of the analytical data; an assessment of actual/potential contamination and migration; ground level

3

i. Site 35, Camp Geiger Area Fuel Farm: Install three shallow two-inch wells in locations directed by the EIC. Sample twice at a 60-day interval. Sample surface water and sediments from Brinson Creek in two locations; analyze all samples for Pb, VOA, EDB, xylene, and O&G.

j. Site 36, Camp Geiger Area Dump: Install new upgradient well; sample twice at a 60-day interval. Resample four shallow wells; sample surface water and sediments from Brinson Creek and unnamed creek south of site in two locations. Analyze all samples for parameters listed in round one, o,m,p-rylene, MEK, MIBK, EDB, and hexavalent Cr.

k. Site 41, Camp Geiger Dump: Resample four shallow wells. Add new upgradient wells and sample twice at a 60-day interval. Sample surface water and sediment from Tank Creek in two locations and unnamed creek in two locations and analyze all samples for parameters listed in round one plus dioxin, o,m,p-xylene, MEK, MIBK, and hexavalent Cr.

1. Site 45, Campbell Street Underground Fuel Storage Area: Install new well south of fuel farm; sample twice at 60-day interval. Resample three shallow wells and surface water/sediment from the drainage ditch in two locations. Analyze water samples for Pb, O&G, VOA, EDB, and rylene. Sample soil in six locations along perimeter of fuel farm and avgas storage. Composite 5' borings into 3 samples, 0-1', 1-3', and 3-5', analyze soil and sediment samples for Pb, O&G.

m. Site 54, Crash Crew Fire Training Burn Pit: Install one upgradient and one downgradient well at site and sample twice at a 60-day interval. Resample Well 54GWl, drainage ditch surface water and sediments in three locations and analyze for round one parameters, o,m,p-xylene, MEK, MIBK, EDB, and hexavalent Cr.

n. Site 68, Rifle Range Dump: Resample three shallow wells and analyze for round one constituents plus o,m,p-xylene, MEK, MIBK, and EDB.

o. Site 69, Rifle Range Chemical Dump: Resample eight shallow wells and three surface water locations. Sample surface water and sediments from two unnamed guts southeast of site. Analyze all samples for parameters listed in round one plus droxin, o,m,p-xylene, MEK, MIBK, and EDB.

p. Site 73, Courthouse Bay Liquid Disposal Area: Relocate Well 73GW4 closer to Courthouse Bay to allow for construction activities in that area. Install new upgradient well and sample twice at a 60-day interval. Resample four shallow wells and sample Courthouse Bay surface water and sediments in three locations. Analyze all samples for parameters listed in round one, o,m,p-xylene, MEK, MIBK, EDB, and hexavalent Cr.

q. Site 74, Grease Pit and Pest Control Area: Install a third well west of site; sample twice at a 60-day interval. Resample two shallow wells and analyze all samples for OCP, OCH, PCBs, dioxin, and VOA.

2

NAVY ASSESSMENT AND CONTROL OF INSTALLATION POLLUTANTS (NACIP) PROGRAM

> Marine Corps Base Camp Lejeune, North Carolina

SCOPE OF WORK FOR ROUND TWO SAMPLING AND CHARACTERIZATION/FEASIBILITY, N62470-83-C-6106

#### 1. Verification Step Efforts

a. Site 1, French Creek Liquids Disposal Area: Sample and test surface water and sediments in two locations on Cogdels Creek; sample and test the six shallow wells. Add o,m,p-xylene, MEK, MIBK, EDB, and hexavalent Cr to the analytical parameters for round one.

b. Site 2, Former Nursery/Day Care Center: Sample and test Well 2GWL. Sample soil at four locations in the vicinity of sample 2S4; sample surface water and sediment from the drainage ditch in two locations; install four shallow two-inch wells in locations directed by the EIC. Sample new wells twice at an interval of 60 days. Analyze each sample for OCP, OCH, dioxin, and VOA.

c. Site 6, Storage lots 201 and 203: Install eight shallow two-inch wells in locations directed by the EIC. Sample wells twice at a 60-day interval. Sample surface water and sediment from Bearbead and Wallace Creeks adjacent to the site. Analyze all samples for DDT-R and VOA.

d. Site 9, Fire Fighting Training Pit: Resample and test the two shallow wells. Install a third well in a location directed by the EIC and sample twice at a 60-day interval. Analyze all samples for o,m,p-xylene, MEK, MIBK, EDB and hexavalent Cr in addition to round one parameters.

e. Site 21, Transformer Storage Lot 140: Sample soil at eight locations around perimeter of site, including two samples from drainage ditch. Sample four depths at each location (0-1', 1-3', 3-5', and at 5') and analyze for OCP, OCH, PCB, dioxin. Resample well GW21-1 and analyze for VOA, OCP, OCH, PCB, dioxin, xylene, MEK, MIBK, EDB, and oil and grease.

f. Site 24, Industrial Area Fly Ash Dump: Install two downgradient wells in locations directed by the EIC. Sample new wells twice at a 60-day interval. Sample five shallow wells, existing surface water locations and two new surface water/sediment locations on tributaries to Cogdels Creek and analyze all samples for metals A, VOA, and hexavalent Cr.

g. Site 28, Hadnot Point Burn Dump: Install new upgradient well and sample twice at a 60 day interval. Sample three existing shallow wells, New River surface water and sediments in four locations, and one new surface water/sediment location in Cogdels Creek near new upgradient well. Analyze all samples for round one parameters, dioxin, o,m,p-xylene, MIBK, MEK, and nexavaient Cr.

h. Site 30, Combat Town Training Area: Install another well downgradient and sample twice at a 60-day interval. Sample shallow well, surface water/sediment in French Creek and analyze all samples for same parameters as listed for round one plus xylene, MEK, MIBK, and EDB.

6280/9 FAC

For additional information on this matter, please feel free to contact Mr. Bob Alexander, MCB Environmental Engineer at \$19-451-3034.

Sincerely,

RA. Til

R. A. TIEBOUT Colonel, U. S.Marine Corps Assistant Chief of Staff, Facilities By direction of the Commanding General

Encl: (1) Plan of Action (2) NACIP Info (3) Milestone Chart

•

Copy to: CMC (LFL) (w/o maps to Encl (2)) LANTNAVFACENGCOM (Code 114) (w/o Encl) CO, NavHosp (PMU) (w/o maps to Encl (2)) N.C. Div of Health and Svcs, Greenville (w/o maps to Encl (2)) DOC. NO .: CLEY - W271- 1.02- 1423/83

# APP, DDIX IV

UNITED STATES MARINE CORPS Marine Corps Base Camp Lejeune, North Carolina 28542-5001



IN REPLY REFER TO 5280/9 FAC IS JUL 1985

N. C. Department of Natural Resources and Community Development
Division of Environmental Management
Attn: Mr. Charles Wakild
Wilmington Regional Office
7225 Wrightsville Ave.
Wilmington, NC 25405-3696

JUL 25 1985

WILMINGTON REGIONAL OFFICE

Re: Notice of Violation Groundwater Classification and Standards

Dear Mr. Wakild:

As stated in our letter of 5 June 1984, the plan of action to address groundwater contamination is provided in Enclosure (1). The plan implements the Navy Assessment and Control of Installation Pollutants (NACIP) program at Camp Lejeune.

The plan of action includes the verification step, characterization step, and feasibility study efforts. A brief description of these phases of the NACIP study is provided in Enclosure (2).

Contract negotiations continue for the detailed program of onsite groundwater monitoring and development of engineering reports. Upon completion of these negotiations, we anticipate the onsite study to begin in mid-September. Prior to starting field work, a coordination meeting with your office will be conducted.

The plan recommends a characterization effort for the contaminated wells, including two wells of the Tarawa Terrace system. This effort includes an investigation for potential VOC sources within a one-mile radius of each contaminated well. The study will assess potential sources outside the Camp Lejeune property boundary. Thus, your assistance in coordinating these efforts with the City of Jacksonville will be appreciated.

Enclosure (3) provides a milestone chart for the plan of action. From the anticipated start date in September, 1985, the projected completion dates for the characterization step and feasibility study are September and December, 1986, respectively. Of course, the final schedule as established during the contract negotiations will be provided to your office.

This Command appreciates the continued technical assistance provided by Mr. Shiver as well as the laboratory support. We believe the enclosed plan will provide clear answers to complex goundwater questions. We solicit your views and mutual support in implementing the plan.

Major General L.H. Buehl May 15, 1985 Page 2 of 2

> 3. Excluding those organic compounds which are classed as trihalomethanes, the presence of any other organic compound in GA classified groundwater (at the perimeter of compliance) constitutes a violation of standards' (either by definition and/or as determined by the director).

These violations to 15 NCAC 2L therefore require that the Marine Corps submit to the Division of Environmental Management within thirty (30) days after receipt of this letter a plan of action which contains the following elements:

- 1. The source(s) of contamination are identified;
- The horizontal and vertical geometry of the contaminant plume(s) are determined;
- The quality characteristics of the contaminant plume(s) are satisfactorily defined;
- 4. The future impacts of these source(s) are projected;
- 5. Appropriate remedial actions are proposed to restore those polluted groundwaters to GA standards.

Of course, this plan of action must include a schedule which specifies when the investigative phases will begin and end and when the proposed remedial actions will begin.

If you have questions, or need assistance, please do not hesitate to call Mr. Rick Shiver at the phone number shown on the letterhead.

Your cooperation in this matter is appreciated.

Sincerely,

Charles Wakild Regional Supervisor

CW/RS/sbm

cc: Mr. L.P. Benton Mr. Perry Nelson Central Files Wilmington Regional Office

APPENDIX . III



State of North Carolina Department of Natural Resources and Community Development Wilmington Regional Office

James C. Martin, Governor CERTIFIED MAIL RETURN RECEIPT REQUESTED S. Thomas Rhodes, Secretary DIVISION OF ENVIRONMENTAL MANAGEMENT

May 15, 1985

Major General L.H. Buehl Commanding General United States Marine Corps Marine Corps Base Camp Lejeune, NC 28542

> Subject: Notice of Violation Groundwater Classification and Standards Source(s) of Groundwater Pollution Camp Lejeune Marine Corps Base (MCB) Onslow County

Dear General Buehl:

As you know, recent studies performed as prescribed by stage 2 of the NAVCIP program have revealed that ten of the base's community water supply wells contain organic contaminants.

Specifically, the contaminated wells include: HP-601, HP-602, HP-603, HP-608, HP-634, HP-637, HP-642, HP-651, TT-26, and new TT. The organic contaminants include: tetrachloroethylene, trichloroethylene, 1,2-trans-dichloroethylene, methylene chloride, vinyl chloride, 1, 1 - dichloroethane, benzene, toluene, and dichlorobenzene. All the impacted wells are exposed to the Tertiary Sand Aquifer somewhere between 50 and 200 feet below land surface.

A copy of the North Carolina Groundwater Classification and Standards (15 NCAC 2L) is enclosed for your reference. In this instance, the regulations apply as follows:

- 1. The impacted wells are exposed to GA classified groundwater, which is defined as fresh (and usable) groundwater that occurs at depths greater than 20 feet below land surface.
- 2. The source(s) of contamination are such that violations of standards have occurred at the perimeter of compliance, or the sources are such that it can be reasonably predicted that violations of standards will occur at the perimeter of compliance. For existing sources, the perimeter of compliance is located 500 feet from the point of discharge, or the property boundary, whichever is less.

DIVISION OF ENVIRONMENTAL MANAGEMENT

October 8, 1985

MEMORANDUM

To: Pe

From:

Perry Nelson Chuck Wakild

Subject: Mr. Larry Fitzpatrick's Inquiry Groundwater Quality Problems Camp Lejeune Marine Corps Base Onslow County

Enclosed for your review and approval is a staff report titled "An Assessment of Groundwater Pollution Sources at the Marine Corps Base, Camp Lejeune, Onslow County". It was written by Rick Shiver.

Please review this information and give careful consideration to the recommendations contained in the report. I anticipate considerable public attention will be focused on this problem and how we deal with it. We should develop a course of action we think appropriate and discuss it with Camp Lejeune.

I promised Mr. Fitzpatrick a briefing on this matter. If you concur, I would like to give him a copy of this report at Thursday's EMC meeting.

If you have any questions call me or Rick.

CW/RSS/sf

cc: L. P. Benton Paul Wilms Wilmington Regional Office Central Files DOC.NO .: CLEJ - 00247-1.02-10/25/85



State of North Carolina Department of Natural Resources and Community Development Division of Environmental Management 512 North Salisbury Street • Raleigh, North Carolina 27611

James G. Martin, Governor S. Thomas Rhodes, Secretary

R. Paul Wilms Director

October 25, 1985

Mr. Larry Fitzpatrick 141 Brookview Court Jacksonville, N.C. 28540

Dear Mr. Fitzpatrick:

The attached report on groundwater pollution at Camp Lejeune was prepared by Rick Shiver of our Wilmington Regional Office. I hope it will be helpful to you.

You may note that our recommendations regarding future investigations or corrective action are "requested" when normally they would be "required". This is because there is some question as to the extent of our authority to correct groundwater pollution on federal installations under the Water and Air Resources Act (GS 143). The Oil Pollution and Hazardous Substances Control Act seems clearly to exclude discharges due to negligence on federal property from our jurisdiction.

We are now in the process of requesting the Attorney General to address these questions and provide us with their opinion of our legal authority on these properties.

Central office groundwater staff are in agreement with Rick's conclusions and recommendations and are taking immediate steps to implement them.

Should you wish to be kept informed periodically on progress at Camp Lejeune, please give me a call at (919) 733-5083.

Sincerely,

Perry F. Nelson, Chief Groundwater Section

PFN/tfa

Attachment:

cc: Paul Wilms Chuck Wakild

Pollution Prevention Pays

TELEPHONE CONVERSATION RECORD		6 December 1984					
TC: Chief of Starf		12:00-12:20					
ORTain-Tom (Mame: Strie, Succession Statestone Anther Starged) Mr. R. E. Alexander AC/S, Facilities 484-3034	<u>- M.T. 114</u>			11.50	1117:40		
PERSON DALLED (Name, Note, Docation & Telestone sumber Disret) Mr. Jim Bailey Chief, LANTDIV Envir Ofc	COMMENTS						
SUBJECT Monitoring of Hadnot Point Water Supply System							
COST OF CALL (MCB Units Only) CHARGEABLE TO STATION ALLOTMENT NOT CHARGEABLE TO STATION ALLOTMENT	de servici						

SUMMARY OF CONVERSATION

1. I returned Mr. Bailey's call of this a.m. and he indicated that data had been phoned in from the laboratory analysis of Well No. 602 and additional wells. The analysis was completed of samples collected and shipped on 3 December 1984 by NREAD staff in response to a request by Mr. Rakowski, LANTDIV manager of the N.A.C.I.P. Confirmation Study.

2. Mr. Bailey informed me that benzene was confirmed in Well No. 602, from which pumping has been stopped. Trichloroethylene (TCE) was also found in Well No's. 602, 601, 603, 608, and in the finished water at Bldg 20, the Hadnot Point Water Plant. TCE levels at Well No. 603 were so low as not to be of concern at the present time. The test for benzene in the Bldg 20 finished water revealed no detectable level. Well No. 634 was also examined and revealed no detectable levels of volatile organic compounds.

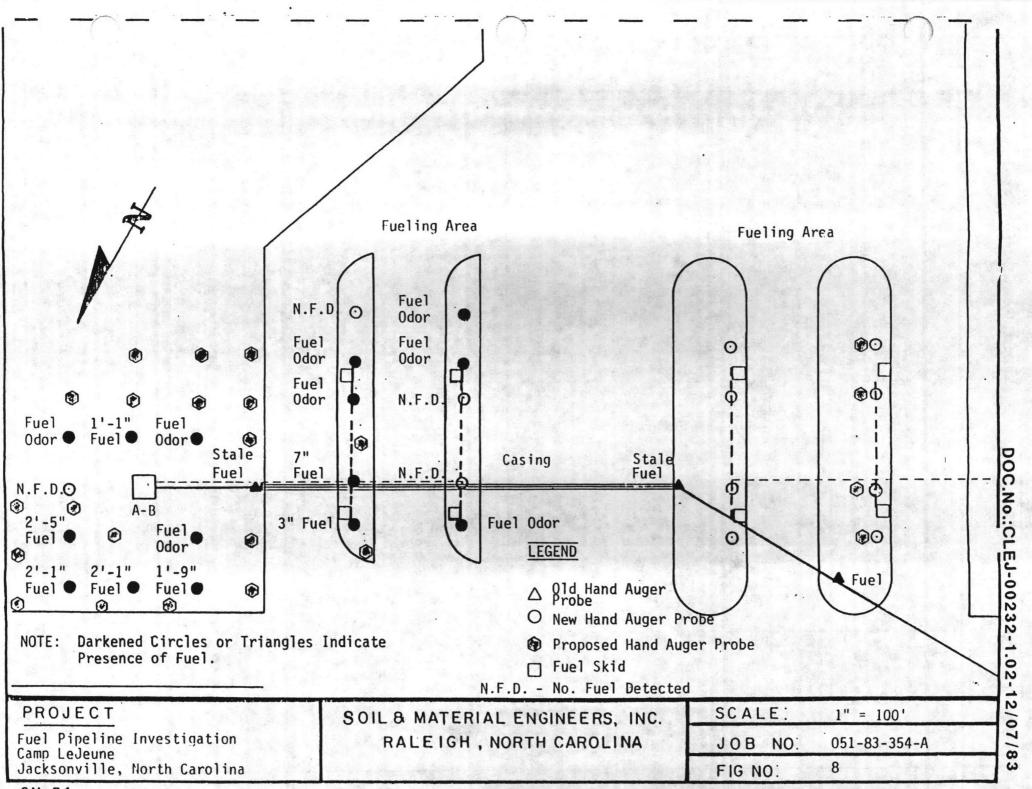
3. Mr. Bailey and I agreed that confirmation testing should be initiated as soon as possible at these and other nearby wells in the system. Samples of finished and raw water samples at Bldg 20 should also be analyzed until further notice. Resampling of Wells 601, 603, and 608 should also be completed to confirm detection of these compounds.

4. Mr. Bailey stated that a message was forthcoming which described a plan of action to address the problem. The plan would include additional sampling of the system and wells to pinpoint the areas contaminated.

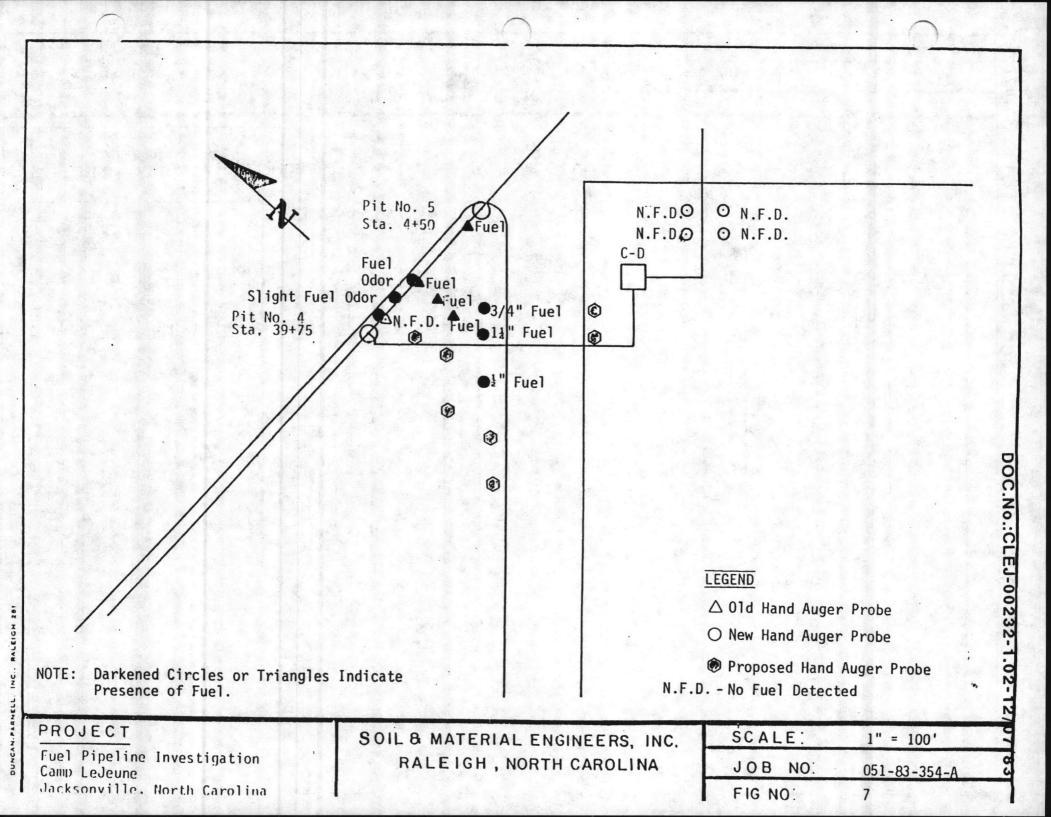
NOTE: After briefing Col LILLEY and LtCol FITZGERALD, at about 1430, I advised Mr. Cone, BMAIN to shut down Wells 601 and 608.

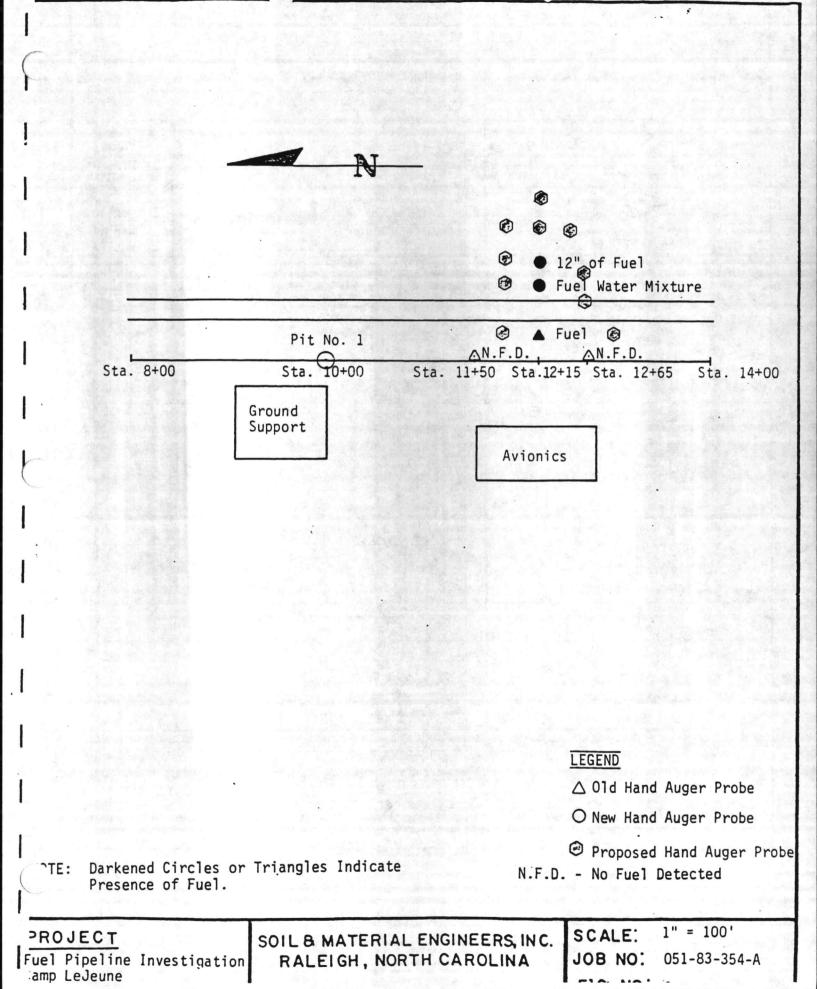
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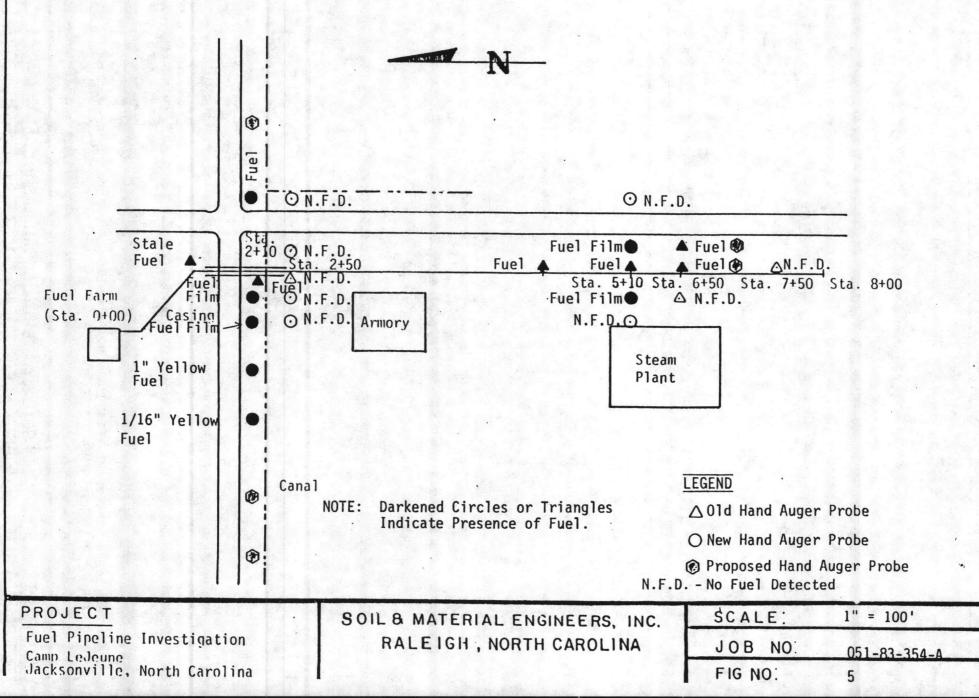
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SM-B1

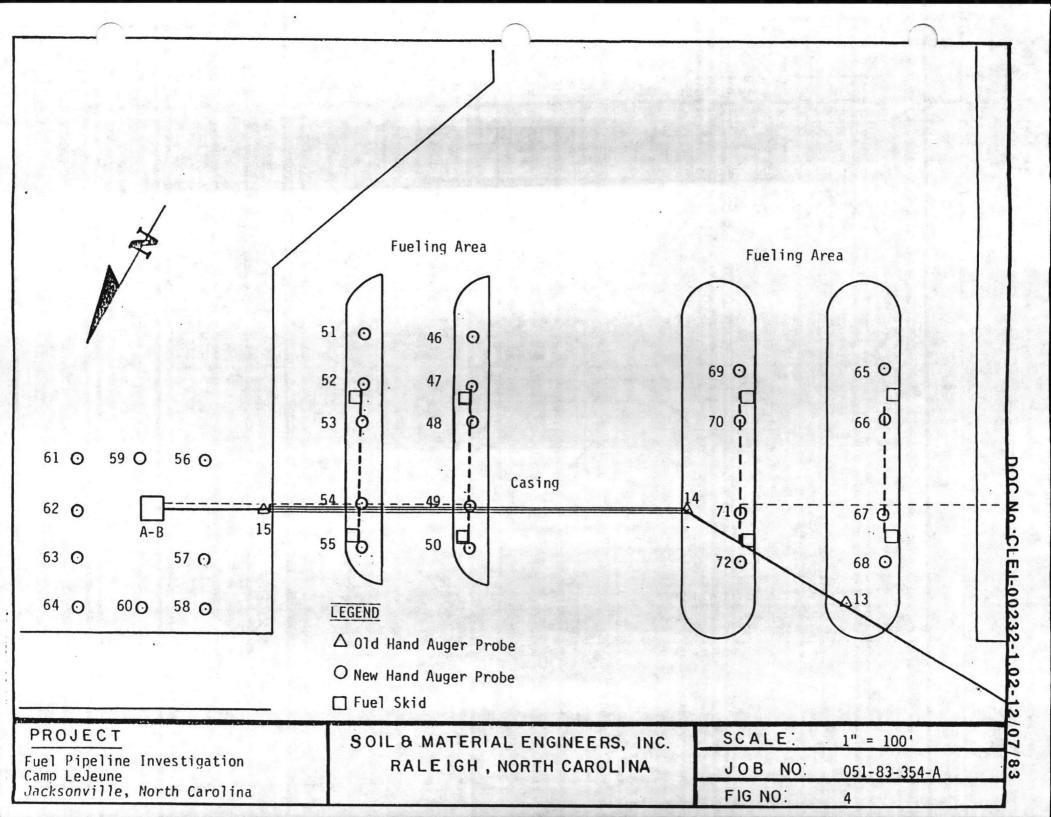






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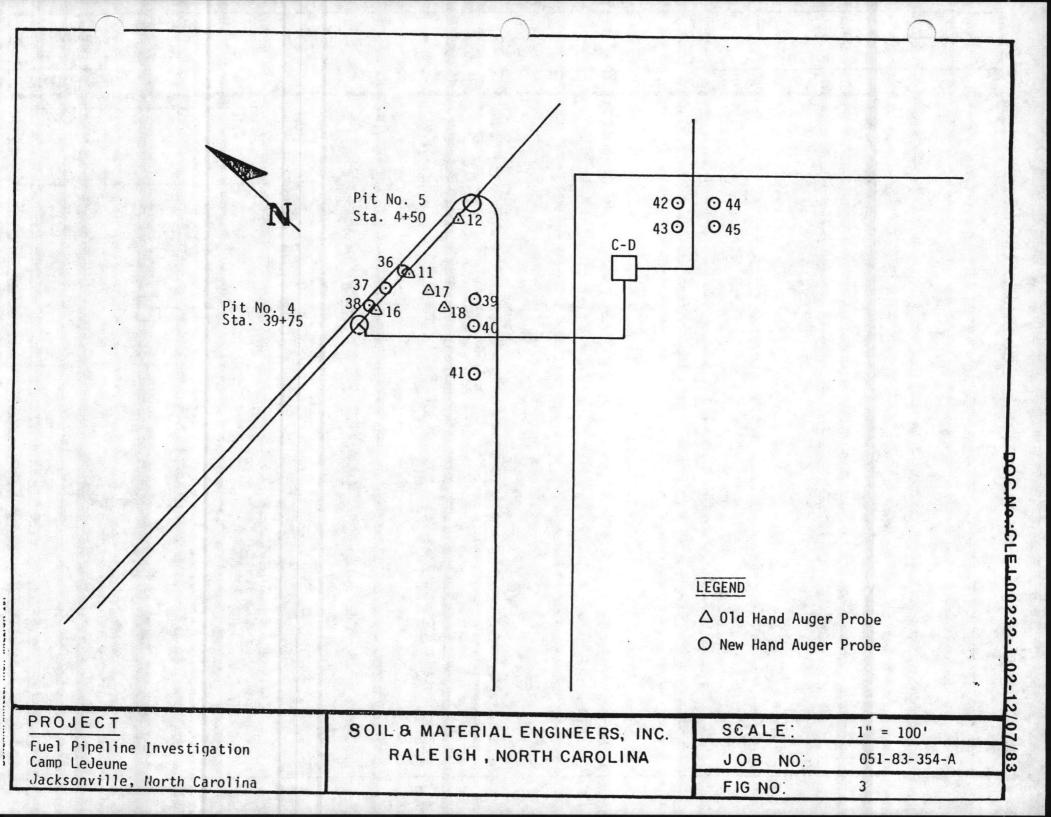
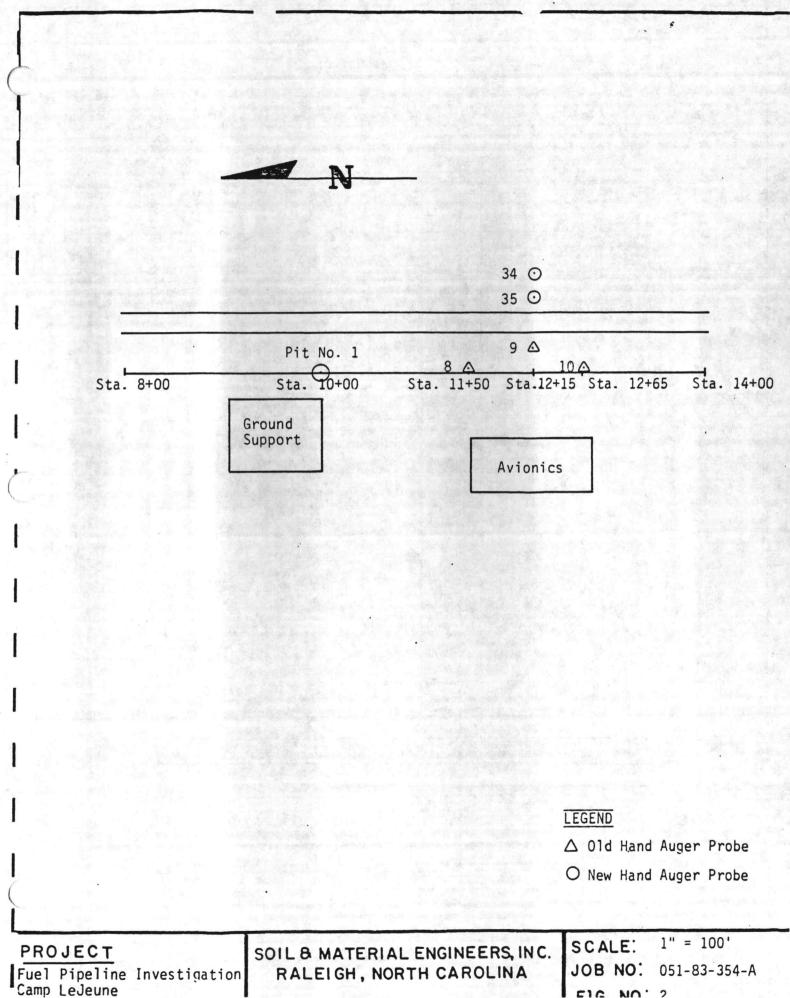
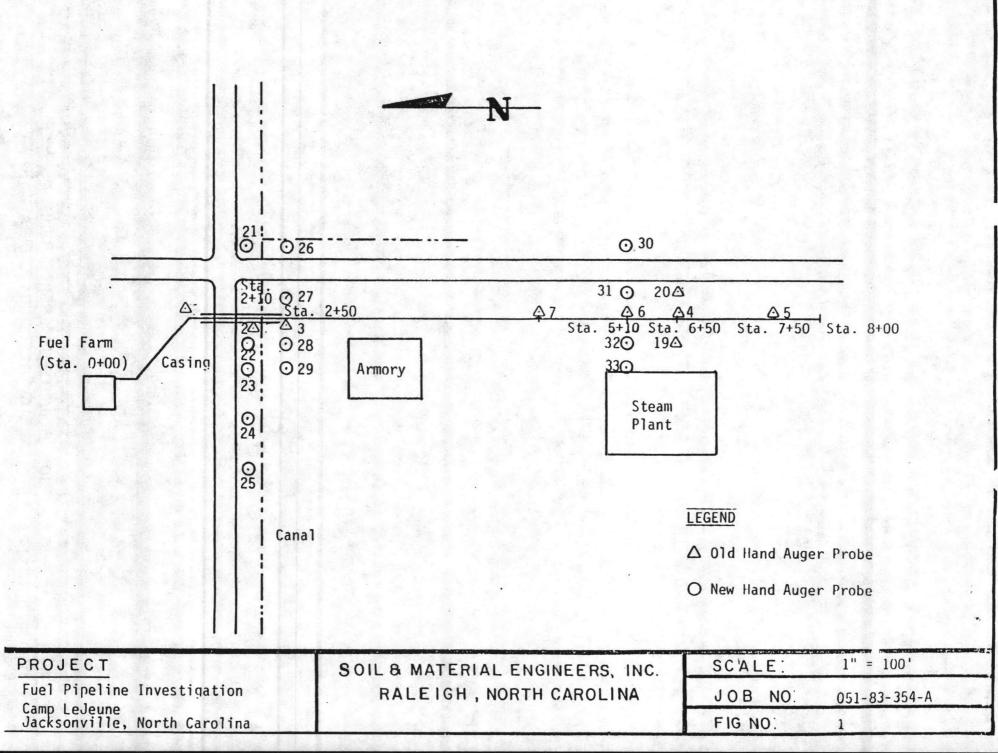


FIG NO 2





HA-64 STA.(See Fig. No.4)	0 -0.5'
a for a second	1.6'-2.2'
	2.2'-4.1'
	4.1'-7.5'
	7.5'-8.5'
	8.5'-10.2'
	10.2'

Dark Brown Silty Fine Sand - Topsoil with Grass Root Mat Orange-Brown and Gray Slightly Silty Fine SAND
Orange and Gray Silty Clayey Fine SAND
Orange and Gray Mottled Silty CLAY with Fine SAND
Gray and Brown Slightly Silty Slightly Clayey Fine SAND (Fuel Odor)
Tan Slightly Silty Fine SAND (Strong Fuel Odor)
2' Gray Slightly Silty Fine SAND (Fuel) Boring Terminated at 10.2'-Fuel Level Measured at 6'-10" after 24 hours Caved in at 8'-11", 2'-1" of Fuel Measured above Cave-In

HA-65 Through HA-72 STA.(See Fig. No.4) 0'

(Soil Cement)

Several unsuccessful attempts were made to penetrate through the soil cement layer at the designated locations with a hand auger and a pickax

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HA- 61 STA.(See Fig. No.4)	0 -1.5' 1.5'-2.0 2.0'-3.0' 3.0'-4.0' 4.0'-5.3' 5.3'-6.0' 6.0'-10.0' 10.0'	Brown Silty Fine SAND-Topsoil with Grass Root Mat Gray Slightly Silty Fine SAND Gray and Orange-Brown Slightly Clayey Silty Fine SAND Gray and Orange-Brown Mottled Silty CLAY with Fine Sand Gray Slightly Silty Fine SAND with Trace of Small Gravel Light Gray and Orange-Brown Slightly Silty Fine SAND Light Gray Slightly Silty Fine SAND (Slightly Stale Fuel Odor) Boring Terminated at 10.0'-Water Level Measured at 7'-10" after 24 hours Caved in at 8'-2"-Slightly Stale Fuel Odor in Water Sample
HA- 62	0 -1.0'	Dark Brown Silty Fine SAND-Topsoil with Grass Root Mat
STA. (See Fig. No.4)	1.0'-2.0'	Orange-Brown and Tan Slightly Silty Fine SAND
	2.0'-4.0'	Orange and Gray Clayey Silty Fine SAND
	4.0'-5.0'	Orange and Gray Mottled Silty CLAY with Fine SAND
	5.0'-6.0'	Gray Slightly Clayey Slightly Silty Fine SAND
	6.0'-7.0'	Gray and Orange-Brown Slightly Silty Fine SAND
	7.0'-8.3'	Dark Gray Slightly Silty Slightly Clayey Fine SAND
	8.3'-9.0'	Gray Slightly Silty Slightly Clayey Fine SAND with Trace of Coarse Sand and Small Gravel
	9.0'-10.3'	Gray Slightly Silty Fine SAND
	10.3'	Boring Terminated at 10.3'-Water Level Measured at 8'-9" after 24 hours Caved in at 9'-5"
HA- 63	0 -1.2'	Brown Silty Fine SAND-Topsoil with Grass Root Mat
STA. (See Fig. No.4)	1.2'-1.5'	Orange Sandy Clayey SILT
	1.5'-3.8'	Orange and Gray Mottled Silty Clay with Fine SAND
	3.8'-5.5' 5.5'-7.0'	Orange-Brown and Gray Slightly Silty Slightly Clayey Fine SAND (Fuel Odor Gray Slightly Silty Fine SAND (Strong Fuel Odor)
	7.0'-10.0'	Light Grav Slightly Silty Fine SAND (Fuel)
	10.0'	Boring Terminated at 10.0'-Fuel Level Measurement at 6'-2" after 24 hour Caved in at 8'-7",2'-5" of Fuel Measured above Caved-In

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HA- 58 STA.(See Fig. No.4)	0 -0.5' 0.5'-2.3' 2.3'-2.5' 2.5'-3.5' 3.5'-5.5' 5.5'-7.5' 7.5'-8.5' 8.5'-10.3' 10.3'	Dark Brown Silty Fine SAND - Topsoil with Grass Root Mat Orange-Brown and Tan Slightly Silty Fine SAND (Fill) Brown Silty Fine SAND (Fill) Dark Gray Slightly Clayey Silty Fine SAND Dark Brown Silty Fine SAND Dark Blue-Gray Sandy Silty CLAY (Slightly Stale Fuel Odor) Blue-Gray Silty Clayey Fine SAND with Coarse Sand and Small Gravel (Fuel Gray Slightly Silty Fine SAND with Coarse Sand (Fuel) Boring Terminated at 10.3'-Fuel Level Measured at 8'-6" after 24 hours 1'-9" of Fuel Measured above Bottom of Borehole	Odor)
HA-59 STA.(See Fig. No.4)	0 -0.9' 0.9'-2.0' 2.0'-2.5' 2.5'-5.5' 5.5'-9.5' 9.5'	Dark Gray Silty Fine SAND-Topsoil with Grass Root Mat Brown and Tan Silty Fine SAND (Fill) Orange-Brown and Tan Slightly Silty Fine SAND (Fill) Gray Slightly Silty Slightly Clayey Fine SAND (Fuel Odor) Light Gray Slightly Silty Fine SAND (Strong Fuel Odor) Boring Terminated at 9.5'-Fuel Level Measured at 6'-8" after 24 hours Caved in at 7'-9", 1'-1" of Fuel Measured above Cave-In	
HA-60 STA.(See Fig. No.4)	0 -0.3' 0.3'-1.5' 1.5'-2.4' 2.4'-3.5' 3.5'-4.0' 4.0'-4.7' 4.7'-7.0' 7.0'-10.2' 10.2'	Dark Brown Silty Fine SAND-Topsoil with Grass Root Mat Orange-Brown and Tan Slightly Silty Slightly Clayey Fine SAND Dark Gray and Brown Slightly Clayey Silty Fine SAND Gray Slightly Clayey Silty Fine SAND Gray and Brown Clayey Silty Fine SAND Gray and Brown Mottled Silty CLAY with Fine SAND Gray and Brown Slightly Silty Slightly Clayey Fine SAND (Fuel Odor) Light Gray Slightly Silty Fine SAND (Fuel) Boring Terminated at 10.2' uel Level Measured at 7'-4" after 24 hours Caved in at 9'-5", 2'-1" of Fuel Measured above Cave-In	DOC.No.:CLEJ-00

HA-55 STA.(See Fig. No.4)	0 -0.4' 0.4'-1.5' 1.5'-2.3' 2.3'-3.5' 3.5'-4.5' 4.5'-5.0' 5.0'-6.5' 6.5'-7.0' 7.0'-9.0' 9.0'-10.3' 10.3'	Dark Brown Fine Sandy SILT - Topsoil with Grass Root Mat Tan Silty Fine SAND (Fill) Orange-Brown and Tan Silty Fine SAND (Fill) Gray and Light Brown Slightly Clayey Silty Fine SAND (Fill) Dark Brown Fine Sandy SILT - Original Topsoil Brown Fine Sandy SILT Gray Silty Slightly Clayey Fine SAND (Slight Stale Fuel Odor) Gray and Brown Sandy Silty CLAY (Slight Stale Fuel Odor) Gray and Brown Silty Slightly Clayey Fine SAND (Strong Fuel Odor) Light Gray Slightly Silty Fine SAND (Strong Fuel Odor) Boring Terminated at 10.3' - Fuel Level Measured at 10'-0" after 24 hours 3" of Fuel Measured above Bottom at Borehole
HA-56 STA.(See Fig.No.4)	0 -1.0' 1.0'-2.0' 2.0'-3.5' 3.5'-4.5' 4.5'-6.0' 6.0'-7.0' 7.0'-8.0' 8.0'-8.5' 8.5'-9.0' 9.0'-10.3' 10.3'	Brown Silty Fine SAND - Topsoil with Grass Root Mat Orange-Brown and Tan Silty Fine SAND Orange-Brown and Gray Mottled Silty CLAY with Fine Sand (Slightly Stale Fuel Or Orange-Brown and Gray Mottled Slightly Clayey Slightly Silty Fine SAND (Stale Fuel Odo Light Gray Slightly Silty Fine SAND (Stale Fuel Odor) Brownish Gray Silty Fine SAND (Fuel Odor) Dark Gray Silty Fine SAND (Fuel Odor) Dark Blue-Gray Silty Fine SAND (Fuel Odor) Dark Gray Silty Fine SAND (Strong Fuel Odor) Light Gray Slightly Silty Fine SAND (Fuel) Boring Terminated at 10.3' - Fuel Level Measured at 6'-4" after 24 hours 1'-11" of Fuel Measured above Water Level Brown Sandy SILT - Topsoil with Grass Root Mat Orange-Brown and Gray Slightly Clayey Silty Fine SAND Brown and Gray Sandy SILT with Clay (Slightly Stale Fuel Odor)
HA-57 STA.(See Fig.No.4)	0 -0.4' 0.4'-1.1' 1.1'-4.5' 4.5'-6.5' 6.5'-7.5' 7.5'-10.3' 10.3'	Brown Sandy SILT - Topsoil with Grass Root Mat Orange-Brown and Gray Slightly Clayey Silty Fine SAND Brown and Gray Sandy SILT with Clay (Slightly Stale Fuel Odor) Blue-Gray and Brown Sandy Silty CLAY (Strong Fuel Odor) Blue-Gray and Brown Slightly Clayey Silty Fine SAND with Coarse Sand and Grave (Strong Fuel Odor) Light Gray Slightly Silty Fine SAND (Fuel) Boring Terminated at 10.3' - Fuel Level Measured at 7'-11" after 24 hours 2'-4" of Fuel Measured above Bottom of Borehole
		Table 1 80 80 80 80 80 80 80 80 80 80 80 80 80

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HA- 5? STA.(See Fig. No.4)	0 -1.0' 1.0'-1.5' 1.5'-2.5' 2.5'-3.5' 3.5'-5.0' 5.0'-7.0' 7.0'-8.0' 8.0'-10.3' 10.3'	Dark Brown Silty Fine SAND - Topsoil with Grass Root Mat Orange and Tan Slightly Silty Fine SAND (Fill) Tan and Gray Silty Fine SAND (Fill) (Slightly Stale Fuel Odor) Dark Gray Silty Fine SAND - Original Topsoil Gray Silty Fine SAND Gray and Brown Silty CLAY with Fine Sand Seams (Strong Fuel Odor) Gray Silty Clayey Fine SAND (Strong Fuel Odor) Light Gray Slightly Silty Slightly Clayey Fine SAND (Strong Fuel Odor) Boring Terminated at 10.3' - Water Level Measured at 10'-2" after 24 hours Strong Fuel Odor in Water Sample
HA-53 STA.(See Fig. No.4)	0 -0.4' 0.4'-1.0' 1.0'-2.5' 2.5'-3.0' 3.0'-4.0' 4.0'-5.0' 5.0'-5.5' 5.5'-6.5' 6.5'-10.3' 10.3'	Dark Brown Fine Sandy SILT - Topsoil with Grass Root Mat Gray and Orange-Brown Silty Fine SAND with Clay (Fill) Orange and Tan Slightly Silty Fine SAND (Fill) Dark Gray Silty Fine SAND - Original Topsoil Gray Slightly Silty Fine SAND Gray and Brown Slightly Silty Slightly Clayey Fine SAND Gray and Brown Mottled Silty Clayey Fine SAND Gray and Brown Mottled Silty Clayey Fine Sand Seams Gray Slightly Clayey Slightly Silty Fine SAND (Slight Fuel Odor) Boring Terminated at 10.3' - Water Level Measured at 10'-2" after 24 hours Slightly Stale Fuel Odor in Water Sample
HA-54 STA.(See Fig. No.4)	0 -0.6' 0.6'-2.0' 2.0'-3.3' 3.3'-5.0' 5.0'-9.0' 9.0'-10.3' 10.3'	Boring Terminated at 10.3' - Water Level Measured at 10'-2" after 24 hours. Slightly Stale Fuel Odor in Water Sample Dark Brown Fine Sandy SILT - Topsoil with Grass Root Mat Gray and Orange-Brown Silty Fine SAND with Clay (Fill) Gray and Light Brown Slightly Clayey Slightly Silty Fine SAND (Fill) Gray Silty Fine SAND Gray Slightly Clayey Slightly Silty Fine SAND (Strong Fuel Odor) Light Gray Slightly Silty Fine SAND (Fuel) Boring Terminated at 10.3' - Fuel Level Measured at 9'-9" after 24 hours 7" of Fuel Measured above Bottom of Borehole
		Table 1

Page 1?

HA-48 STA.(See Fig. No.4)	0 -0.5' 0.5'-3.5' 3.5'-5.5' 5.5'-6.0' 6.0'-8.0' 8.0'-9.3' 9.3'	Dark Gray Silty Fine SAND - Topsoil with Grass Root Mat Dark Gray and Brown Silty Fine SAND Brown Silty Fine SAND Tan Silty Fine SAND Gray Silty CLAY Gray Slightly Silty Slightly Clayey Fine SAND Boring Terminated at 9.3" - Water Level Measured at 6'-7" after 24 hours.
HA-49 STA.(See Fig. No.4)	0 -0.5' 0.5'-1.0' 1.0'-3.5' 3.5'-4.2' 4.2'-5.5' 5.5'-8.0' 8.0'-10.3' 10.3'	Dark Gray Silty Fine SAND - Topsoil with Grass Root Mat Orange-Brown and Tan Slightly Silty Fine SAND (Fill) Dark Gray Silty Fine SAND Brown Silty Fine SAND Gray and Brown Slightly Clayey Silty Fine SAND Gray Silty Clayey Fine SAND with Roots Gray Slightly Silty Slightly Clayey Fine SAND Boring Terminated at 10.3' - Water Level Measured at 6'-6" after 24 hours
HA-50 STA.(See Fig. No.4)	0 -0.5' 0.5'-0.9' 0.9'-5.0' 5.0'-6.5' 6.5'-7.0' 7.0'-7.5' 7.5'-9.5' 9.5'-10.0' 10.0'-10.3' 10.3'	Dark Brown Silty Fine SAND - Topsoil with Grass Root Mat Orange-Brown and Tan Slightly Silty Fine SAND (Fill) Dark Gray Silty Fine SAND with Roots Gray Silty Fine SAND Gray Slightly Clayey Silty Fine SAND (Slightly Stale Fuel Odor) Gray Silty CLAY with Fine SAND (Slightly Stale Fuel Odor) Gray Slightly Clayey Silty Fine SAND Light Gray Silty Clayey Fine SAND Light Gray Silty CLAY with Fine SAND Boring Terminated at 10.3' - Water Level Measured at 10.0' after 24 hours No Fuel Odor in Water Sample
HA-51 STA.(See Fig. No.4)	0 -0.5' 0.5'-1.0' 1.0'-7.5' 7.5'-9.0' 9.0'-10.0' 10.0'	Dark Brown Silty Fine SAND - Topsoil with Grass Root Mat Orange-Brown and Tan Slightly Silty Fine SAND (Fill) Gray Slightly Clayey Silty Fine SAND Gray Silty Clayey Fine SAND Light Gray Slightly Silty Slightly Clayey Fine SAND Boring Terminated at 10.0' - Water Level Measured at 9'-6" after 24 hours

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HA-44 STA.(See Fig. No.3)	0 - \vdot. 0' 1.0'-3.0' 3.0'-4.0' 4.0'-4.5' 4.5'-5.2' 5.2'-6.5' 6.5'-8.5' 8.5'-9.0' 9.0'-10.4' 10.4'	Dark Brown Silty Fine SAND (Fill) Gray and Brown Clayey Silty Fine SAND Gray and Brown Mottled Silty Clay with Fine Sand Gray Clayey Silty Fine SAND Gray Slightly Silty Fine SAND Gray and Orange-Brown Slightly Clayey Slightly Silty Fine SAND Light Gray Slightly Silty Fine SAND Gray and Orange Slightly Clayey Slightly Silty Fine SAND Greenish-Gray Slightly Silty Fine SAND with Trace of Coarse Sand Boring Terminated at 10.4' - Water Level Measured at 8'-5" after 24 hours
HA-45 STA.(See Fig. No.3)	0 -1.0' 1.0'-2.5' 2.5'-4.0' 4.0'-5.5' 5.5'-6.0' 6.0'-9.5' 9.5'-10.4' 10.4'	Dark Gray Silty Fine SAND (Fill) Gray and Orange-Brown Silty Fine SAND Gray and Orange-Brown Mottled Silty CLAY with Fine Sand Gray Slightly Clayey Silty Fine SAND Gray Slightly Silty Fine SAND Light Gray and Orange Mottled Slightly Silty Fine SAND Light Gray Slightly Clayey Slightly Silty Fine SAND Boring Terminated at 10.4' - Water Level Measured at 8'-9" after 24 hours
HA-46 STA.(See Fig. No.4)	0 -3.0' 3.0'-4.5' 4.5'-7.0' 7.0'-8.0' 8.0'-9.5' 9.5'-10.0' 10.0'	Dark Brown Silty Fine SAND (Slightly Stale Fuel Odor) Gray Silty Fine SAND with Silty Clay Seams and Roots (Stale Fuel Odor) Gray Silty Slightly Clayey Fine SAND (Stale Fuel Odor) Gray and Brown Mottled Silty CLAY with Fine Sand (Stale Fuel Odor) Gray Silty Clayey Fine SAND (Slight Fuel Odor) Dark Gray Silty Clayey Fine SAND (Slight Fuel Odor) Boring Terminated at 10.0' - Water Level Measured at 7'-5" after 24 hours Slight Fuel Odor in Water Sample
HA-47 STA.(See Fig. No.4)	0 -2.0' 2.0'-3.0' 3.0'-4.5' 4.5'-6.0' 6.0'-8.0' 8.0'-10.4' 10.4'	Dark Brown Silty Fine SAND (Slightly Stale Fuel Odor) Gray Slightly Silty Fine SAND (Slight Fuel Odor) Dark Gray Silty Fine SAND with Roots (Slight Fuel Odor) Gray Silty Clayey Fine SAND with Roots (Slight Fuel Odor) Gray and Orange-Brown Mottled Silty CLAY with Fine SAND (Slight Fuel Odor) Gray Silty Clayey Fine SAND (Slight Fuel Odor) Boring Terminated at 10.4' - Water Level Measured at 8'-6" after 24 hours Slight Fuel Odor in Water Sample

HA-40 STA.(See Fig. No.3)	0 -0.8' 0.8'-3.5' 3.5'-4.5' 4.5'-7.4' 7.4'	Dark Brown Silty Fine SAND - Topsoil with Grass Root Mat Gray and Orange Slightly Silty Fine SAND (Fill) Orange and Gray Mottled Silty CLAY with Fine SAND (Fuel Odor) Orange and Gray Mottled Silty Clayey Fine SAND (Fuel Odor) Boring Terminated at 7.4' - Water Level Measured at 6'-7" after 14 hours 1¼" of Fuel Measured on Water Sample
HA-41 STA.(See Fig. No.3)	0 -1.0' 1.0'-4.0' 4.0'-5.0' 5.0'-6.5'	Dark Brown Silty Fine SAND - Topsoil with Grass Root Mat Dark Gray Slightly Clayey Silty Fine SAND (Fill) (Fuel Odor) Gray and Orange-Brown Mottled Silty CLAY with Fine Sand Seams (Fuel Odor) Gray and Orange-Brown Mottled Slightly Clayey Slightly Silty Fine SAND (Strong
	6.5'-7.4' 7.4'	Fuel Od Gray Slightly Clayey Slightly Silty Fine Sand Boring Terminated at 7.4' - Water Level Measured at 6'-10" after 24 hours }" of Fuel Measured on Water Sample
HA-42 STA.(See Fig. No.3)	0'-1.7' 1.7'-3.0' 3.0'-4.5' 4.5'-5.5' 5.5'-6.5' 6.5'-8.0' 8.0'-8.5' 8.5'-10.4' 10.4'	Brown and Gray Silty Fine Sand (Fill) Orange-Brown and Gray Slightly Clayey Slightly Silty Fine SAND Gray and Orange-Brown Mottled Silty CLAY with Fine SAND Gray Slightly Clayey Slightly Silty Fine SAND Orange and Gray Slightly Clayey Slightly Silty Fine SAND Light Gray Slightly Silty Fine SAND Orange and Gray Slightly Silty Fine SAND Orange and Gray Slightly Clayey Slightly Silty Fine SAND Boring Terminated at 10.4' - Water Level Measured at 9.0' after 24 hours
HA-43 STA.(See Fig. No.3)	0 -0.8' 0.8'-3.0' 3.0'-4.5' 4.5'-5.5' 5.5'-6.5' 6.5'-7.5' 7.5'-8.5' 8.5'-10.4' 10.4'	Light Gray Slightly Silty Fine SAND Orange and Gray Slightly Silty Fine SAND Orange and Gray Slightly Clayey Slightly Silty Fine SAND Boring Terminated at 10.4' - Water Level Measured at 9.0' after 24 hours Dark Brown Fine Sandy SILT (Fill) Gray and Orange-Brown Slightly Clayey Silty Fine SAND Gray and Orange-Brown Mottled Silty CLAY with Fine SAND Gray and Slightly Clayey Slightly Silty Fine SAND Gray and Slightly Clayey Slightly Silty Fine SAND White Fine SAND Light Gray and Orange Slightly Silty Fine SAND Light Gray Slightly Clayey Slightly Silty Fine SAND Boring Terminated at 10.4' - Water Level Measured at 8'-9" after 24 hours. Table 1 Page 10 of 17
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HA-36 STA 40+50 5' Lt.	0 -0.8' 0.8'-4.0' 4.0'-6.5' 6.5'-10.4' 10.4'	Dark Brown and Dark Gray Silty Fine SAND - Topsoil with Grass Root Mat Orange and Tan Slightly Silty Fine SAND (Fill) Gray Slightly Clayey Silty Fine SAND (Fuel Odor) Light Gray Slightly Silty Slightly Clayey Fine SAND (Strong Fuel Odor) Boring Terminated at 10.4' - Water Level Measured at 9'-3" after 24 hours Fuel Odor in Water Sample
HA-37 STA.40+25 5'Lt.	0 -0.5' 0.5'-2.8' 2.8'-3.5' 3.5'-5.0' 5.0'-5.5' 5.5'-10.4'	Dark Brown and Dark Gray Silty Fine SAND - Topsoil with Grass Root Mat Brown Silty Fine SAND (Fill) Orange and Tan Slightly Silty Fine SAND (Fill) Orange and Tan Slightly Clayey Silty Fine SAND Orange-Brown and Gray Silty CLAY with Fine Sand Seams Gray and Orange Mottled Slightly Clayey Slightly Silty Fine SAND (Slight Stale Fuel Odor)
	10.4'	Boring Terminated at 10.4' - Water Level Measured at 9'-1" after 24 hours No Fuel Odor in Water Sample
HA- 38 STA. 40+00 5' Lt.	0 -0.8' 0.8'-1.8' 1.8'-3.5' 3.5'-4.5' 4.5'-6.0' 6.0'-10.4'	Dark Brown Silty Fine SAND (Fill) Dark Brown and Gray Slightly Clayey Silty Fine SAND (Fill) Orange-Brown and Tan Slightly Silty Fine SAND (Fill) Gray Slightly Clayey Silty Fine SAND Gray and Brown Mottled Silty CLAY with Fine Sand Seams Gray and Brown Mottled Slightly Clayey Slightly Silty Fine SAND (Slight Stale
	10.4'	Boring Terminated at 10.4' - Water Level Measured at 8'-9" after 24 hours No Fuel Odor in Water Sample
HA- 39 STA.(See Fig.No.3)	0-2.0' 2.0'-3.5' 3.5'-5.0' 5.0'-7.4' 7.4'	Dark Brown Silty Fine SAND with Thin Silty Clay Layers (Fill) Orange and Light Gray Slightly Clayey Slightly Silty Fine SAND (Fill) Gray and Orange Mottled Silty CLAY with Fine Sand Seams (Fuel) Gray and Orange Mottled Slightly Clayey Slightly Silty Fine SAND (Fuel Odor) Boring Terminated 7.4' - Water Level Measured at 6'-11" after 24 hours 3/4" of Fuel Measured on Water Sample

HA-32 STA. 6+00 25' Rt.	0 -1.0' 1.0'-1.5' 1.5'-3.0' 3.0'-3.5' 3.5'-6.5' 6.5'-7.3' 7.3'	Dark Brown Silty Fine SAND - Topsoil with Grass Root Mat Tan and Yellow Slightly Silty Fine SAND (Fill) Tan and Light Gray Slightly Silty Fine SAND Dark Brown and Gray Clayey SILT with Fine Sand and Organic Matter Dark Gray Silty CLAY with Fine Sand and Organic Matter (Fuel Odor) Dark Gray Silty CLAY with Organic Matter (Fuel Odor) Dark Gray Silty CLAY with Organic Matter (Fuel Odor) Boring Terminated at 7.3' - Water Level Measured at 6'-2" after 24 hours Fuel Odor in Water Sample - Fuel Film noticed on Water
HA-33 STA. 6+00 50' Rt.	0 -1.0' 1.0'-1.5' 1.5'-3.5' 3.5'-4.0' 4.0'-5.0' 5.0'	Dark Brown Silty Fine SAND - Topsoil with Grass Root Mat Tan and Yellow Slightly Clayey Silty Fine SAND Tan and Light Gray Slightly Silty Fine SAND (Wet Sand) Dark Brown and Gray Clayey SILT with Fine Sand and Organic Matter Dark Gray Silty CLAY with Organic Matter Boring Terminated at 5.0' - Water Level Measurement at 2'-10" after 24 hours Caved in at 3.0' after 24 hours.
HA-34 STA. 12+15 100'Lt.	0 -0.5' 0.5'-3.0' 3.0'-4.0' 4.0'-5.5' 5.5'-10.4' 10.4'	Dark Brown and Dark Gray Fine Sandy SILT - Topsoil with Grass Root Mat Brown and Gray Fine Sandy SILT Gray Slightly Clayey Silty Fine SAND Gray and Brown Mottled Silty CLAY with Fine Sand (Fuel Odor) Blue-Gray Slightly Sandy CLAY with Organic Matter (Fuel) Boring Terminated at 10.4' - Fuel Level Measured at 9'-5" after 24 hours 12" of Fuel Measured above Bottom of Borehole.
HA-35 STA. 12+15 75' Lt.	00.5' 0.5'-2.0' 2.0'-4.0' 4.0'-5.0' 5.0'-7.3' 7.3'	Dark Brown Fine Sandy SILT - Topsoil with Grass Root Mat Gray and Orange-Brown Silty Fine SAND Orange-Brown and Gray Silty CLAY with Fine Sand (Fuel Odor) Gray and Brown Silty CLAY (Fuel Odor) Gray Silty CLAY (Fuel) Boring Terminated at 7.3' - Water Level Measured at 4'-1" after 24 hours Strong Fuel Odor in Water Sample (Fuel Water Emulsion)

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0 - 0.2'	Dark Brown Topsoil with Grass Root Mat
0.2'-2.0'	Gray and Tan Silty Fine SAND (Fill)
2.0'-3.0'	Gray and Brown Slightly Clayey Fine Sandy SILT
3.0'-3.5'	Orange-Brown and Gray Fine Sandy Silty CLAY
3.5'-4.4'	Orange-Brown Silty CLAY with Fine Sand Seams
4.4'-5.0'	Orange and Gray Mottled Silty CLAY with Fine Sand
5.0'-6.5'	Gray Fine Sandy Silty CLAY
6.5'	Boring Terminated at 6.5' - Water Level Measured at 5'-3" after 24 hours
0 -0.3'	Dark Brown Topsoil with Grass Root Mat
0.3'-1.2'	Gray Silty Fine SAND
1.2'-3.0'	Gray and Tan Slightly Clayey Fine Sandy SILT
3.0'-4.0'	Gray and Brown Mottled Silty CLAY with Fine Sand and Organic Matter
4.0'-6.0'	Gray Fine Sandy Silty CLAY with Organic Matter
6.0'-7.3'	Blue-Gray Silty CLAY
7.3'	Boring Terminated at 7.3' - Water Level Measured at 5'-3" after 24 hours
0 -0.6'	Dark Brown Silty Fine SAND - Topsoil with Grass Root Mat
0.6'-1.0'	Gray and Tan Silty Fine SAND (Fill)
1.0'-3.0'	Dark Gray and Dark Brown Slightly Clayey Fine Sandy SILT
3.0'-3.5'	Gray Slightly Clayey Silty Fine SAND
3.5'-4.5'	Gray and Brown Mottled Silty CLAY with Fine Sand
4.5'-7.0'	Gray Silty CLAY
7.0	Boring Terminated at 7.0' - Water Level Measured at 3'-2" after 24 hours
0 -1.0' 1.0'-1.5' 1.5'-3.5' 3.5'-6.5' 6.5'-7.3' 7.3'	Dark Brown Silty Fine SAND - Topsoil with Grass Root Mat Tan and Yellow Slightly Silty Fine SAND (Fill) Dark Brown and Gray Clayey SILT with Fine Sand and Organic Matter Dark Gray and Brown Silty CLAY with Organic Matter (Fuel Odor) Dark Gray Silty CLAY with Organic Matter (Fuel Odor) Boring Terminated at 7.3' - Water Level Measured at 5'-1" after 24 hours Fuel Odor in Water Sample - Fuel Film Noticed on Water
	$\begin{array}{c} 0.2'-2.0'\\ 2.0'-3.0'\\ 3.0'-3.5'\\ 3.5'-4.4'\\ 4.4'-5.0'\\ 5.0'-6.5'\\ 6.5'\\ \end{array}$ $\begin{array}{c} 0 & -0.3'\\ 0.3'-1.2'\\ 1.2'-3.0'\\ 3.0'-4.0'\\ 4.0'-6.0'\\ 6.0'-7.3'\\ 7.3'\\ \end{array}$ $\begin{array}{c} 0 & -0.6'\\ 0.6'-1.0'\\ 1.0'-3.0'\\ 3.0'-3.5'\\ 3.5'-4.5'\\ 4.5'-7.0'\\ 7.0'\\ \end{array}$ $\begin{array}{c} 0 & -1.0'\\ 1.0'-1.5'\\ 1.5'-3.5'\\ 3.5'-6.5'\\ 6.5'-7.3'\\ \end{array}$

Table 1 Page 7 of 17

20. A. 1. 183 - A. 1		
HA-24 STA. 2+10 100' Rt.	0 -0.8' 0.8'-2.5' 2.5'-3.0' 3.0'-4.0' 4.0'-6.5' 6.5'-7.3' 7.3'	Dark Brown Silty Fine SAND - Topsoil with Grass Root Mat Tan and Brown Slightly Silty Fine SAND (Fill) Dark Brown Silty Fine SAND - Old Topsoil Gray Slightly Clayey Silty Fine SAND Gray and Brown Mottled Silty CLAY with Fine Sand (Fuel Odor) Gray Silty CLAY with Organic Matter (Fuel) Boring Terminated at 7.3' - Water Level Measured at 5'-0" after 24 hours 1" of Yellow Fuel Measured on Water Sample
HA-25 STA.2+10 150'Rt.	0 -0.6' 0.6'-4.5' 4.5'-7.0' 7.0'-7.3' 7.3'	Dark Brown Silty Fine SAND - Topsoil with Grass Root Mat Dark Brown and gray Fine Sandy SILT with Roots Gray and Brown Silty CLAY with Fine Sand (Fuel Odor) Gray Silty CLAY (Fuel) Boring Terminated at 7.3' - Water Level Measured at 5'-6" after 24 hours 1/16" of Yellow Fuel Measured on Water Sample
HA-26 STA. 2+50 75'Lt.	0 -0.5' 0.5'-1.0' 1.0'-2.0' 2.0'-4.5' 4.5'-5.5' 5.5'-7.0' 7.0'-7.3' 7.3'	Dark Brown Silty Fine SAND - Topsoil with Grass Root Mat Tan Slightly Silty Fine SAND (Fill) Gray and Brown Slightly Clayey Silty Fine SAND Gray and Orange-Brown Mottled Fine Sandy Silty CLAY Gray Silty CLAY with Fine Sand Blue-Gray Silty CLAY Blue-Gray Clayey Fine to Medium SAND Boring Terminated at 7.3' - water level measured at 3'-11" after 24 hours.
HA-27 STA.2+50 20' Lt	0 -0.3' 0.3'-1.2' 1.2'	Dark Brown Silty Fine SAND - Topsoil with Grass Root Mat Dark Gray and Brown Slightly Clayey Fine Sandy SILT Boring Terminated at 1.2' - (Soil Cement) Seven Other Unsuccessful Attempts Were Made in the General Area to Penetrate Through the Soil Cement Layer with a Hand Auger

Vane 6

HA-21 STA. 2+10 75' Lt.	0-2.0' 2.0'-3.1' 3.1'-5.6' 5.6'-8.0' 8.0'-9.0' 9.0'	Dark Brown Very Silty Fine SAND (Fill) Orange-Brown and Gray Fine Sandy SILT Orange-Brown and Gray Fine Sandy Silty CLAY (Fuel Odor) Gray Fine Sandy Silty CLAY (Strong Fuel Odor) Gray Silty Clayey Fine SAND (Fuel) Boring Terminated at 9.0'-Water Level Measured at 5'-10" after 24 hours Strong Fuel Odor in Water Sample (Fuel Water emulsion)
HA-22 STA. 2+10 25' Rt.	0-0.5' 0-5'-2.0' 2.0'-3.5' 3.5'-4.0' 4.0'-6.0' 6.0'-7.3' 7.3'	Dark Brown Very Silty Fine SAND-Topsoil with Grass Root Mat Brown Silty Fine SAND (Fill) Orange-Brown and Gray Slightly Clayey Fine Sandy SILT Orange-Brown and Gray Clayey SILT with Fine Sand (Fuel Odor) Gray and Brown Mottled Silty CLAY with Fine Sand Seams (Fuel) Gray Silty CLAY (Fuel) Boring Terminated at 7.3'-Water Level Measurement at 5'-3" after 24 hours Strong Fuel Odor in Water sample - Fuel Film Noticed on Water
HA-23 STA. 2+10 50' Rt	0-0.9' 0.9'-2.8' 2.8'-3.5' 3.5'-4.0' 4.0'-6.0' 6.0'-7.3' 7.3'	Dark Brown Silty Fine SAND-Topsoil with Grass Root Mat Tan and Light Brown Slightly Silty Fine SAND (Fill) Gray Slightly Clayey Silty Fine SAND Gray and Brown Clayey Silty Fine SAND Gray and Brown Mottled Silty CLAY with Fine Sand (Fuel Odor) Gray Slightly Sandy Silty CLAY (Fuel) Boring Terminated at 7.3'-Water Level Measured at 5'-1" after 24 hours Strong Fuel Odor in Water Sample-Fuel Film Noticed on Water

HA-17 Sta. 42+50 25' Rt. of G	0-1.8' 1.8'-3.7' 3.7'-5.5' 5.5'-6' 6'	Dark Brown Silty Fine SAND (Fill) Light Gray-Brown Silty Fine SAND (Some Fuel) Gray and Orange Fine Sandy Silty CLAY with Sand Seams (Fuel) Gray and Light Brown Slightly Clayey Fine SAND (Wet) (Fuel) Boring Terminated at 6'
HA-18 Sta. 42+50 50' Rt. of Q	0-1.7' 1.7'-3.5' 3.5'-5' 5'-6' 6'	Dark Brown Silty Fine SAND (Fill) Light Gray-Brown Silty to Clayey Fine SAND Gray Fine Sandy Silty CLAY with Fine Sand Seams (Fuel) Gray Slightly Clayey to Clayey Fine SAND (Fuel) Boring Terminated at 6'
HA-19 Sta. 6+50 25' Rt. of G	0-1.5' 1.5'-2' 2'-6' 6'	Gray and Brown Slightly Silty Fine SAND (Fill) Dark Brown Fine Sandy Clayey SILT - Old Topsoil Brown to Gray Fine Sandy Silty CLAY with Some Fine Sand Seams Boring Terminated at 6'
HA-20 Sta. 6+50 25' Lt. G	0-1.3' 1.3'-2' 2'-4' 4'	Gray and Brown Silty Fine SAND (Fill) Dark Brown Fine Sandy Clayey SILT with Roots - Old Topsoil Dark Gray to Gray Fine Sandy Silty CLAY (Fuel at 4') Boring Terminated at 4'

Pane 4

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Table 1 Page 4 of 17

HA-12 Sta. 43+25	0-1' 1'-3.5' 3.5'-5.5' 5.5'-6' 6'	Brown Silty to Very Silty Fine SAND (Fill) Gray Slightly Clayey Silty Fine SAND (Fuel at 3') Gray Fine Sandy Silty CLAY (Fuel) Gray Clayey Fine SAND (Fuel) Boring Terminated at 6'
HA-13 Sta. (See Plans)	0-1.5' 1.5'-3' 3'-5' 5'-6' 6'	Gray Silty SAND with Rocks - Soil Cement (Fill) Brown Clayey Fine SAND (Fill) Gray Fine Sandy Silty CLAY Gray Clayey Fine SAND (Fuel) Boring Terminated at 6' - Water Level Measured at 5.3'
HA-14 Sta. (See Plans)	0-1.5' 1.5'-4' 4'-7' 7'-8.5' 8.5'	Gray Very Silty SAND with Some Rocks - Soil Cement (Fill) Brown Silty Fine SAND (Fill) Gray SILT to Clayey Fine SAND (Fill) Orange and Gray Silty Fine SAND (Fill) (Somewhat Stale Fuel) Boring Terminated at 8.5' - Water Level Measured at 4.8'
HA-15 Sta. (See Plans)	0-2.5' 2.5'-5.5' 5.5'-7' 7'	Brown Silty Fine SAND with Some Clay Peds (Fill) Gray-Brown Silty to Clayey Fine SAND (Fill) Gray Clayey Fine SAND (Some Stale Fuel) Boring Terminated at 7' - Hit Something at 7'
HA-16 Sta. 42+00	0-2' 2'-4.5' 4.5'-6.5' 6.5'-7' 7'	Dark Brown Silty Fine SAND with Some Roots (Fill) Light Brown Silty Fine SAND with Some Clay Peds (Fill) Gray Fine Sandy Silty CLAY Gray and Orange Clayey Fine SAND (Wet) Boring Terminated at 7'

HA-6	0-0.5'	Brown Very Silty Fine SAND (Fill)
Sta. 6+00	0.5'-2' 2'-4' 4'	Light Brown to Gray Silty Fine SAND (Fill) (Fuel) Dark Brown Fine Sandy Clavey SUT (Fuel)
(1)科学	4	Boring Terminated at 4' - Water Level Measured at 2.1' after 24 Hours
HA-7	0-2' 2'-4'	Dark Brown Fine Sandy SILT with Roots
Sta. 5+10	4'	Dark Gray to Gray Fine Sandy Silty CLAY Boring Terminated at 4' - Water Level Measured at 1.7' after 24 Hours
HA-8	0-2' 2'-3.5'	Dark Brown Very Silty Fine SAND (Fill)
Sta. 11+50	3.5'-4.5' 4.5'-5' 5'	Gray-Brown Silty Fine SAND (Fill) Gray Clayey Fine SAND Gray Silty CLAY
		Boring Terminated at 5' - Water Level Measured at 2.8' after 24 Hours
HA-9	0-1'	Gray-Brown Silty Fine SAND with Roots
Sta. 12+15 25' Lt. of Q	1'-1.5'	Brown Fine Sandy SILT with Roots Gray Clayey Fine SAND
	2'-3.5' 3.5'	Gray with Orange Fine Sandy Silty CLAY (Fuel) Boring Terminated at 3.5' - Water Level Measured at 3" after 24 Hours
HA-10	0-2' 2'-3.5'	Dark Brown Fine Sandy SILT
Sta. 12+65	3.5'-5' 5'	Gray-Brown Fine Sandy SILT Gray Fine Sandy Silty CLAY Boring Terminated at 5' - Water Level Measured at 3.3' after 24 Hours
		Hours and at 3.3' after 24 Hours
HA-11	0-2' 2'-3.5'	Brown Silty to Very Silty Fine SAND (Fill)
Sta. 42+50	3.5'-5.5' 5.5'-6.5' 6.5'	Gray Silty to Clayey Fine SAND (Some Fuel) Gray Fine Sandy Silty CLAY (Some Fuel) Gray and Orange Clayey Fine SAND (Fuel) Boring Terminated at 6.5'

Pano 2

### TABLE I

# SUMMARY OF HAND AUGER PROBES

Boring No.	Depth	Description
HA-1	0-0.8'	Dark Brown Very Silty Fine SAND - Topsoil
Sta. 1+75	0.8'-1.8' 1.8'-3.0' 3'-5' 5'	Tan Silty Fine to Medium SAND Dark Gray Fine Sandy Clayey SILT with Fine Sand Seams Gray Fine Sandy Silty CLAY (Stale Fuel) Boring Terminated at 5' - Water Level Measured at 2.8' after 24 Hours
		Hours after 24 Hours
HA- 2	0-0.5'	Dark Brown Very Silty Fine SAND with Roots - Topsoil Brown Silty Fine SAND
Sta. 2+15	2.7'-4' 4'	Gray and Dark Gray Fine Sandy Silty CLAY (Fuel) Boring Terminated at 4' - Water Level Measured at 2'8" after 24 Hours
HA- 3	0-0.1'	Dark Brown Topsoil
Sta. 2+50	0.1'-3' 3'-4' 4'	Orange-Brown Fine Sandy SILT Gray and Orange Fine Sandy Silty CLAY Boring Terminated at 4' - Water Level Measured at 3.2' after 24 Hours
HA-4	0-1.5'	Brown Silty Fine SAND with Some Rocks (Fill)
Sta. 6+50	1.5'-3' 3'-4' 4'	Dark Brown Fine Sandy Clayey SILT with Roots (old Topsoil) Gray Fine Sandy Silty CLAY (Fuel) Boring Terminated at 4' - Dry after 24 Hours
HA-5	0-1'	Light Brown Silty Fine SAND (Fill)
Sta. 7+50	1'-2' 2'-4' 4'	Dark Brown Fine Sandy Clayey SILT with Roots Gray Fine Sandy Silty CLAY Boring Terminated at 4' - Water Level Measured at 1.1' after 24 Hours

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volumetric extent of the contamination is beyond the scope of this Phase 1 investigation.

### Recommendation for Further Investigation

The hand auger probes and fuel measurements indicate that some fuel contamination exists in all four areas. The contamination in Area 1 appears to be limited to the area immediately adjacent to the canal. The major amount of fuel found in Area 2 is across White Street from the pipeline, indicating either movement of fuel beneath the street or a fuel spill unrelated to pipeline leakage. The fuel leakage in Area 3 appears to be fairly limited in area but probably extends somewhat below the concrete aprons and taxiways. The major area of fuel contamination found appears to be in the Rapid Jet area, where measured fuel thicknesses of 1 to 2 feet were typical.

It should be noted that, due to the relative unit weights and viscosities of hydrocarbon fuels and water, the measured fuel thickness in boreholes and wells frequently exceeds the fuel thickness in the soil matrix. The fuel may enter the borehole at a more rapid rate than water, exaggerating the measured fuel thickness.

Based on the results of this Phase I inventory, additional investigation appears to be warranted to further delineate the extent of fuel contamination in these areas. Suggested locations of additional probes are shown on Figures 5 through 8.

It has been a pleasure working with you on this phase of the project. We will contact you shortly regarding the scheduling of the Phase 2 investigation.

Sincerely, Soil & Material Engineers, Inc.

Phil Rahn, Geologist

Ernest F. Parker, Jr., P.L.



#### Page 2 of 3

probes. At each probe location, the engineer noted the presence and depth of fuel by both visual and odor examinations. After a period of 24 hours, the engineer measured and recorded the water or fuel level below the ground surface in each probehole. Where water or fuel accumulated in the probehole, a sample was retrieved with a 3/4-inch inside diameter clear tube by placing the tube to the bottom of the probehole and sealing off the tube at the bottom. The sample retrieved was noted for the presence of fuel by both visual and odor examination. If fuel was visible in the sample, the thickness of fuel was measured and recorded. The absence or presence of fuel at each probe location and the thickness of any fuel measured are described on Table 1 and summarized on Figures 5 through 8.

At hand auger probe locations HA-27 and HA-65 through HA-72, little or no penetration could be made with the hand auger. Therefore, no information is available for these areas at this time.

#### Subsurface Conditions

In general, the soil conditions encountered between station 0+00 and 12+15 consisted of 3 to 4 feet of silty sands much of this material being redeposited fill. Underlying the sands are clayey silts which undergo a transition to silty clays within one to two feet. The pipeline apparently lies on the clayey silt or silty clay soil and is located 3 to 5 feet below the ground surface.

The soils between stations 39+75 and 50+00 generally consist of 3 to 5 feet of brown to gray silty fine sand (fill), with a 1 to 2 foot layer of gray fine sandy silty clay or fine sandy clayey silt occurring at most of the probes. The basal portion of the probes generally consist of 3 to 6 feet of white, orange, and gray silty to clayey sand with traces of course sand and gravel.

Twenty-hours hour groundwater levels in the hand auger probes ranged from 3 feet to below the depth to which the auger probes were advanced.

Evidence of fuel contamination during probing or subsequent accumulation of fuel in the probehole (at approximately 24 hours) is presented in Figures 5 through 8. Areas of accumulation include 100 feet west of Station 2+10 and Station 6+50, 100 feet east of Station 12+15, and 50 feet south of Stations 37+75 and 52+00. Assessing the



# SOIL & MATERIAL ENGINEERS INC. ENGINEERING-TESTING-INSPECTION

3109 Spring Forest Road, Box 58069, Raleigh, NC 27658-8069, Phone (919) 872-2660

December 7, 1983

Resident Officer In Charge of Construction Naval Facilities Engineering Command Jacksonville Area Camp LeJeune, NC 28542

Reference: Leaked Fuel Inventory Direct Fueling Pipeline Marine Corps Naval Air Station Camp LeJeune, North Carolina S&ME Job No. 051-83-354-A

#### Gentlemen:

Soil & Material Engineers, Inc. has completed the first phase of the authorized inventory of JP-5 fuel leaked from the direct fueling pipeline at the Marine Corps Naval Air Station, Camp Lejeune, North Carolina. The pipeline extends from the tank farm on White Street to the Rapid-Jet flightline fueling stations, a distance of about one mile.

This inventory is the result of an earlier investigation of leakage from the pipeline (S&ME Job No. 057-83-128). As a part of that study, 20 hand auger probes were performed to evaluate the possibility that significant quantities of fuel had leaked from the pipeline. The hand auger records from those probes are attached (Table 1, HA-1 through HA-20). These hand auger probes identified four areas where fuel contamination was indicated, warranting further study. This report covers the first phase of the inventory of fuel contamination in these areas.

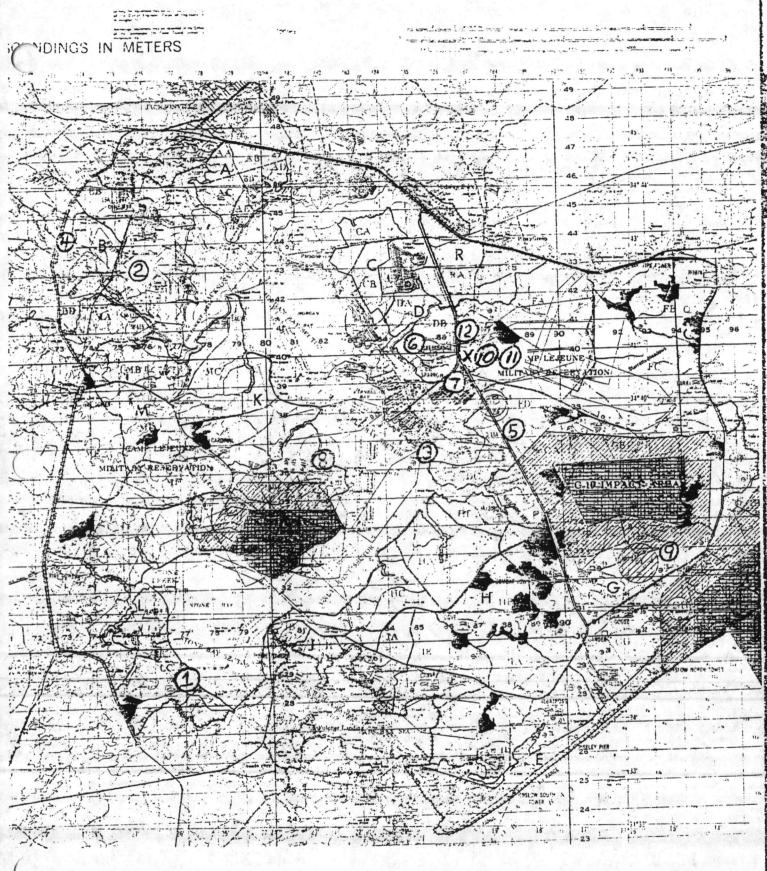
#### Field Exploration

The probes were performed by an engineer using a 3-inch diameter hand auger. The probes were generally extended to <u>depths</u> ranging between 6.5 to 10.4 feet below the ground surface, depending on soil and groundwater conditions encountered. The engineer maintained a field log of each hand auger probe, including a visual description of the soils encountered (see Table I). No samples were retained from the hand auger Leaked Fuel Inventory Direct Fueling Pipeline Marine Corps Naval Air Station Camp LeJeune, North Carolina

S&ME Job No. 051-83-354-A



## Dec. No. CLEJ-OCIZZ-1.UL-UHOS/81



WELL NO	DIVISION OF HEALTH SERVICES "WELL INFORMATION"	د. الا ۱۱۵.	
1) <u>WELL SITE</u> : Owned or controlled (100' radi	us)? OK -ALC	weres	
Sources of pollution/distance	· CONTRolled	by usme.	
Adequate slope?	Flooding?		1
2) WELL HOUSE: Free of stored materials?	yes		
Properly drained?	Freeze prot	ection?	
Condition of house	oke	Locked? yes.	
3) WELL: Diameter Varieb Typ			
- Properly sealed?	Froperly vented?		
Casir: depth	Well depth	Meter Available?	@ WTP
Concrete slat adequate?	•	Ster Hur ENq	@ 7 wells
Size of blow-off	Sample t	ap availatle 125	
4) PLUP: Japacity 400 gpm 50	164 IVE DUAR VERT	These (High Source	2000 a Dm
	// · · · · · · · · · · · · · · ·	Lukimi Deserver	Ke 500 gpm
Height above floor (pump/casing)	15 gung	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	2 in 750 gpm
5) TREATMENT: Is this a contral treatment f	acility? yes (on	e of eight)	3 @ 700 gpm
Chlorinator: Type with 9A	5 (T-cont ) apacity 12	1200 ppd in	Servise? yes
Spare parts or unit? Spare w/2	200 ppd Proper ventilation?	yes be Mast ? Fil	- YACK : REPAIR KIT;
Marine: Type Narrisch Bass (	Buence ) Condition	2.K	'rlazns.
Filter(s): Type GRAVITY (No	RATE COUNZOS 3	ea Mesia JA	UD & ANTHRACITE
	(gp=/ft <sup>2</sup> )	Head in s B/W	Q 2.5-3.0 0Z
Type controls Phu con Rols	only condition OK	a/suspece u	48 hes
Consents fifter RATE Change	based and C.O.H	. filrer over los	HAR RECARD. UNI
Softeners: Type SpirACTOR	<u>, ia. Z.</u>	Media Servi	D - CATA LYST
Size Rate (ggm	(ft <sup>2</sup> ) 1200 gpm s	Head loss -	
Type controls 11505 HIDZATEL	1: "	. (21	STORAGE)
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		and a second	
5) REMARKS AND RECOMMENDATIONS Aux 9	Plenator .0 011	<u></u>	

WELL NO.	DIVISION OF HEALTH SERVICES *WELL INFORMATION*	10 kg
KELL SITE: Owned or controlled (100' ra	adius)? OK - ALL Wells	and the second
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Adequate slope?	Flooding?	an a
WELL HOUSE: Free of stored materials	1 483	<mark>na na kalendar an </mark>
Properly drained?	· Freeze protection?	
Condition of house	DC Locked?	Technical ward of the solution
	Type const. CIRAJE Yield (SPM) 1/4720	2.) Storage at well 208
Properly sealer?	Froperly vented?	
	Well deptrMeter	waiiable? @ WTP
Concrete slap atequate?	.: 25	For a - wells
Size ci tlocii	Sample tap availation	2 - 이상성 가지 않는 것이 같이 있는 것이 없다.
	Avg 115 igue por Veret TURB. (Sere	
	Is rump leaking?	1500 Jpm .
TDE ATWENT . To this a central treatment	+ farility? share (and the output)	
건강에 친구들은 감독을 했다. 여름을 다 아이들 것이 다 가지 않는 것을 알았다. 것이 가지 않는 것을 많은 것이 없다.	t facility? yes one of autr)	·····
Chlorinator: Type WIT 923	(150 #) (apacity 10/30 ppd	In Service? 1/25
	r (SD ppd) Freer ventilation? yes a	
Aerator: Type NONE		
Filter(s): Type NONC	 No. Meci	a
SizėRa	ate (gpm/ft <sup>2</sup> )Head	lcs
Type controls	Condition	and the second second
Cormerts		<u>en en e</u>
Softeners: Type Jon Ercha	NG. 2 Media	Na Zeolire
Size 72" & Rate (g	apm (2) 180 ea Hrad low	<u>= +10</u>
	Condition fa.	in Come (entrs)
Type controls		
Type controls	, , , , , , , , , , , , , , , , , , , ,	by tour weide with
Comments Regent @ :048	No But SAT TANK WIN	by tour weide with
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Other treatment (Describe): Photo Frocess wastewater treatment (Describ	HE BUK SAT TANK WITH MOTE-BIF Jung (2gel) discord to SAN. SUD	sy tour worde with orang for (1.0 mg/l)
Other treatment (Describe): Photo Frocess wastewater treatment (Describ	No BUL SAT TANK US A	sy tour worde with or gal H-B) (10 mg/l)
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WELL NO	DIVISION OF HEALTH SERVICES *WELL INFORMATION*	ID NO
1) WELL SITE: Owned or controlled (100' rad	ius)? OK - ALL	wills
Sources of collution/distance	sites controlled by	usme
Adequate slope?	Flooding?	and the second
2) WELL HOUSE: Free of stored materials?	4.55	
	Freeze protection?	
Condition of house	05	ocked?
3) WELL: Diameter 10 Ples Ty	pe const. ARAVE Yield (GP!	M) <u>111→236</u> Storage at well <u></u>
al 9 Properly sealed? 4=3	Properly vented?	
well's Casing depth	Well depth	Meter Available?
mez. sully concrete sist adequate?	•	<u>Cize</u>
Size of blooff		able Aux ers; @ Z wells
4) PUMP: Casarry III 327 236	141 · Type pump VERTT	x.72.73 .
Height above floor (pump/casing)	- High Service	
5) <b>IREATMENT</b> : Is this a central treatment	facility? yes (1.	750 gpm; 850 gpm; 500 gpm 9( 8)
Chlorinator: Type WET gas	Capacity 501	in Service? 1/23
Spare parts or unit? Spaze uni	Proper ventilation: 424	625 Mask? AIR Pack · Repair Kit
Aerator: Type IVONE	Condition	Ę A/E/2T.
Filter(s): Type PRESSUR	E No. 6	Media SAND
Size 84" P Rate	(gpa/ft <sup>2</sup> ) 127 gpm co	L Head loss = = 5-10 Chs
Type controls	Condition	
Comments BACKWASHED da	ily - Access of man	ings in filter sides
Softeners: Type Spiracro.	r <u>z</u> No. /	Media SMND- Catalyst
Size 1.0 MGD Rate (gpm	/ft <sup>2</sup> )	Head loss
Type consects Hydrater lime	- BAGS Condition	nixer instor Noisy
Comments Distance The Tank	Real Provinsi Contra	a souther and the second second
Other treatment (Describe): NaF-	is live storen befaze	SATURATOR - METER ON fill lin
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5) PEMARKS IND PEDOWNENDATIONS DATION	to se andance	<u>. 7 -</u>

DIVISION OF HEALTH SERVICES         WELL NO.         *WELL INFORMATION*         ID NO.         WELL SITE:         OK         OK	
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[ - : 위험 문화법이었다. 한 한 것입니다. 한 것인데 그렇게 잘 갖춰진 것을 많이 나라지 않았다. 이번 것들을 받아 있는 것을 들어도 하는 다. 그는 것을 알 것이라. 이는 그는 것들을 가 들어서 않는 것이다.	
Sources of pollution/distance None - contraction by USM	(
Adequate slope?Flooding?	
WELL HOUSE: Free of stored materials? 423	an sadeni -
Properly drained? Freeze protection? 4C3	
Properly drained? Freeze protection? 4C5 Condition of house OK Locked? 4C5	
WELL: Diameter VARIES Type const. GRAVE Yield (GPM) Varies Storage at well	
Properly sealed? Properly sealed? Properly sealed?	
	<u> </u>
Well depth	
Concrete size adequate?	ells
Size of blcw-offSample tap available4es	post in the second s
PUMP: Capacity 104 gpm 300 Hp 189 Type pump JENET TURE (high Service in w.	<u>(47</u>
Height above floor (pump/casing)Is pump leaking?	
TREATMENT: Is this a central treatment facility? yes (are geight)	and a start of the second
	1.1
<u>Chlorinator</u> : Type WHT GAS (150=cy/) Capacity 18/100 ppd In Service? yes	Syste
Spare parts or unit? SPARE - @ 30 ppd Proper ventilation? US Gas Mask? AIR PACK: OLER	T' Pepa
Aerator: Type PERMUTIT FORCED dRAFT Condition for or - descurrow tank	Quit
Filter(s): Type Pressure (PERMUTT No. 3 Media SAND	St. C.
· · · · · · · · · · · · · · · · · · ·	and the second
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Type controls Multipoers Condition OK - all coursed's NOT AUTOMA	TIE
Conments B/w en 3 Ed drig	arao comunitation 
Softeners: Type Permurir No. 2 Media Na Zeoline	N
Size 60 " Q Rate (gpm/3) 128 gpm en Head loss 5-8+	
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Condition OK	-
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Connents REGENERATE @ 1100 Mt BRINE Can HAVE MISIDE W	
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Connents Regenerate @ 1100 mt BRINE Conf HAUR MISIDE W	(

ł	VELL NO. *WELL INFORMATION* ID NO.
	WELL SITE: Owned or controlled (100' radius)? OK - ALL WELLS
100	Sources of pollution/distance controller by USMC
	Adequate slope? Flooding?
	WELL HOUSE: Free of stored materials? YES
	Properly drained? Freeze protection? 4C5
	Properly drained? Freeze protection? 4C5
	WELL: Diameter VARIES Type const. Yield (GPM) VARIES Storage at well
	Froperly sealed? . Properly contest? Torac. 777 gpm
	Keter Available? @ WTP
	Concrete slab adequate?
	Size of blow-offSample tap available
	PUMP: Capacity 104 Jpm ZFO 155 Type pump VERT TURIS
	hi service pumps
	Height above floor (pump/casing) Is pump leaking?
	IREATMENT: Is this a central treatment facility? yes (one of eight)
	Chlorinator: Type WET Capacity 15/100 ppd In Service? 4/05
	Scare parts or unit? SPARE 100 ppd Proper ventilation? YES Gas Mask? AIR PACK ARET . Report
	herator: Type Permurit forces deats condition for or - deservice trank
	Filter(s): Type PERMINT - PRESSURE No. 6 Media
	Size 96 D Rate (gpm/52) 94 gpm CC Head loss ±5#
	Type controls Multipart Condition OK
	Comments BACKWASHED daily
	Size 72" Rate (gpm/2) 102 95m ca Head loss 5#
	Type controls Multiport Condition OK
	Connents Regeneration @ 100 mb
	Other treatment (Describe): Lime (Hydearen to sluzzy Ipump -pH conred for fe Reduction
	Process Wastewater treatment (Describe): Phosphate NOT IN SPRICE
	L' serving pond - discory. to dirch
*	RENARKS AND RECOMMENDATIONS
	DERING AND RECOMMENDATIONS
	DERING day tour inside Blog, should have cover Dering day tour inside Blog, should have cover Dering POK NOT necessary togerner (Should perform insplantfrials to dere it lime may be discontinued)

	DIVISION OF HEALTH SERVICES *WELL INFORMATION* ID NO
1)	KELL SITE: . Owned or controlled (100' radius)? OK - ALL welly
	Sources of pollution/distance controlled by USMC
	Adequate slope?Flooding?
2)	WELL HOUSE: Free of stored materials? 423
	Properly drained? Freeze protection?
- 7	Condition of house
3)	WELL: Diameter VARIES Type const. 9RAVE Yield (GPM) Varics Storage at well
	Properly sealed? Properly vented? TOTIEL 369 9pm
2 4	velle Gesting depth Meter Available? 223
	Concrete size adequate?
	Size of tlc=-offSample tap available
.)	PUMP: Capacity ZID gpm 159 105 Type pump VEIZT THERE
	Height above floor (pump/casing) Service from 1 @ 1000 gpm (20/ Aux drive)
5)	TREATMENT: Is this a central treatment facility? Yes (our of eight) 1@ 300
	Chlorinator: Type WIT Gas (1502) Capacity 10/30 ppd In Service? 455 (
	"Spare parts or unit? space 1@ 50 ppd Proper ventilation? yes Gas Mask? AIR PACK; Aker : Repoir Kir
	Aerator: Type PECSSUPIZED - in line unir Condition DK - 4505 AIR COMPZESSOR
	Filter(s): Type Calgon (Pressure mirs) No. 2 Media Sono
	size 48" & Rate (gpm at ) 37 gpm con Head loss ± 5#
	Type controls Marral cycle Condition OK
	Consents BACKWASher at 030ms - Uses Raw water for B/W
	Softeners: Type Calgon No. 2 Media Na Zeoline
	size 42 " Q Rate (gpm/1) 75 gpm ec Head loss ± 5 #
	Type controls Manual cycle Condition OK - New Resin in 1977
41.	Timments Regeneration 080 Mb
	Other treatment (Describe):
	Process wastewater treatment (Describe): Settling. pond - pumper to ditch
)	REMARKS IN PEDDIMENDATIONS OSPANIA USE TETE, WATER (EX Elw 3) The PASTERN ST changed - NOW Splir thru folrers & sofravers - Should All be then filters then sofraver (# Extend Resin (gr 3) Relacement in dist. System)
	filters then sooner (-chiens kesne ig - million of the grand
	영수가 좀 수 것에서 가지 한 것이고 있다. 이것이 가지 말했지만 이 이것이 가지 않는 것이 것이 것이 것이 것이 것이 가지? 같은 것이 같은 것이 없다. 것이 있는

UUL. NU. DIVISION OF HEALTH SERVICES WELL NO. \*WELL INFORMATION\* ID NO. ox -all wells WELL SITE: . Owned or controlled (100' radius)? 1) Sources of pollution/distance CONTRolled by U.S.MC. Adequate slope? Flooding? WELL HOUSE: Free of stored materials? 2) 423 Properly drained? Freeze protection? Condition of house KELL: Clameter Varies Type const. GRAVEL Yield (GPM) VO.2125 Storage at well NO Frequerty vented? TOTAL - 7224 gpm Properly sealed? 35 Meter Available? @ WTP Well depth Casing depth vella the Hux @ 18 wolls Concrete slab adequate? Sample tap available Size of blow-off PUNE: Cafacity 450 Min 105 AND 350 Type pump VERT THEIS (SERVICE pumps 1@ 3000 gpm 4) 3@ 1500 gpm Is pump leaking? height above floor (pump/casing) (2 w/AUX DWR) TREATMENT: Is this a central treatment facility? yes (one of eight 5) Capacity 50/200 ppc In Service? 425 Chicrinator: Type WET 945 Spare parts or unit? Spare unit 200 proper ventilation? 105 Gas Mast? ALEPK' Repair KIT MITAWASSAN Type PROPANE GAS - Submerger Condition New - 35 Media SAND - ANTHRACLE Filter(s): Type 92AVITY No. 5 Rate (gpm/ft<sup>2</sup>) Size 350 PER Head loss Blue @ 57 2.0 Type controls New Condition 9000 Conments Surface wasn ea. Fibrer Softeners: Type SPIRACTORS No. 5 Media SAND-Cata Size Hurran Lime GOTRate (grist) 1.0 mGD ca Head Loss Grees pamps 1000 # Line / MG HeD. Condition . Type controls Comments Other treatment (Describe): No.F. - GRAVIMETRIC (New 85 Cther treatment (Describe): New-B/w to holning basin - Sludge to san suna Process Wastewater treatment (Describe): New - B/w to holning basin - Sludge to san suna REMARKS AND RECOMMENDATIONS Maintains pH@ 8.8 for stability

	DIVISION OF HEALTH SERVICES
WELL NO.	*WELL INFORMATION* ID NO
WELL SITE: . Owned or controlled (1	00' radius)? BK - All wells
Sources of pollution/distance	None - CONTRollow by USMC
Adequate slope?	Flooding?
<u>WELL HOUSE</u> : Free of stored mate	rials? UES
Properly drained?	405 Freeze protection? 405
Condition of house	De Locked? 1/25
Properly sealed?	Properly vented? ZT= Tal 1.300 gpm
Casing depth	Well depth Meter Available? @ WTP
Concrete slab adequate?	size Aur enz a 4 we
Size of blow-off	Sample tap available
PUMP: Caracity 133 gpm 3.	50 = 225 Type pump VEIZT TURBING (4310)
	) High sezu, fumps Letung leaking? ZO 700 gpm ZO 1500
Height above floor (pump/casing	
TREATMENT: Is this a central tre	I That the one est
TREATMENT: Is this a central tre	eatment facility? Jes (one of Eight)
a strange and the second strange when	eatment facility? Jes (one of Eight) 1250 opprover 20 Gas Capacity 20100 3540 In Service? Yes
<u>IREATMENT</u> : Is this a central tre <u>Chlorinator</u> : Type <u>Ur</u> <u>Spare parts or unit?</u> <u>3</u> <u>Up</u>	eatment facility? Jes (one of Eight) Gas Capacity 20100 3540 In Service? Yes Proper ventilation? 425 Gas Mask? 425' Repair K alerts
IREATMENT:       Is this a central tree         Chlorinator:       Type         Spare parts or unit?       3 unit?         Aerator:       Type	eatment facility? <u>Jes</u> (one of Eight) <u>12</u> 50 openates 20 <u>Gas</u> Capacity <u>20100</u> <u>2500</u> In Service? <u>Jes</u> <u>Proper ventilation? <u>Jes</u> <u>Gas Mask? <u>Jes</u> <u>Peptile</u> K <u>alerts</u> <u>one</u> <u>Condition</u></u></u>
IREATMENT:       Is this a central tree         Chlorinator:       Type         Spare parts or unit?       3 up         Aerator:       Type         Filter(s):       Type	eatment facility? Jes (owe of Eight) Gas Capacity 20 100 service? Yes Gas Proper ventilation? Yes Gas Mask? Yes: Perdik K alerts Dwe Condition In Service? Yes Alerts Media <u>FAPID</u> SAND
IREATMENT:       Is this a central tree         Chlorinator:       Type         Spare parts or unit?       3 unit?         Aerator:       Type         Filter(s):       Type         Size_/B       X 20'	eatment facility? Jes (owe of Eight) Gas Capacity 20100 openates in Service? Yes Gas Proper ventilation? Yes Gas Mask? Yes' Pendik K alerts Dwe Condition In Service? Yes Alerts Alerts Rate (gpm/ft <sup>2</sup> ) Z.O usual Head loss —
IREATMENT:       Is this a central tree         Chlorinator:       Type         Spare parts or unit?       3 up         Aerator:       Type         Filter(s):       Type         Size-       18 X 20'         Type controls       20362273	eatment facility? Jes (owe of Eight) 1250 openates in Service? Yes Gas Capacity 20100 3540 In Service? Yes Proper ventilation? Yes Gas Mask? Yes: Perdik K alerts owe Condition inf No. 2 Media <u>FAPID</u> SAND Rate (gpm/ft <sup>2</sup> ) <u>Z.O usual</u> Head loss — Condition
IREATMENT:       Is this a central tree         Chlorinator:       Type         Spare parts or unit?       3 unit?         Aerator:       Type         Filter(s):       Type         Size-       18 X 20'         Type controls       203867275         Corments       all controls	eatment facility? <u>Jes</u> (and a <u>Gight</u> ) <u>Gas</u> <u>Capacity</u> <u>2000</u> <u>September</u> <u>Gas</u> <u>Capacity</u> <u>2000</u> <u>September</u> <u>Gas</u> <u>Proper</u> ventilation? <u>Jes</u> <u>Gas Mask? <u>Jes</u> <u>Perdik</u> <u>K</u> <u>alext</u> <u>s</u> <u>alext</u> /u>
IREATMENT:       Is this a central tree         Chlorinator:       Type       Up & T         Spare parts or unit?       3 unit?         Aerator:       Type       No         Filter(s):       Type       QRANC         Size-       18 X ZO'       Type controls       POBEIZTS         Corments       all controls       Softeners:       Type	eatment facility? Jes (owe of Eight) <u>123 50 openate 2</u> <u>123 50 openate 2</u> <u>123 proper ventilation? <u>125 Gas Mask? <u>125</u> <u>Pendik</u> K <u>alext s</u> <u>owe</u> <u>Condition</u> <u>121 No. 2 Media <u>PAPID SAND</u> <u>Rate (gpm/ft<sup>2</sup>) <u>Z.0 usual</u> Head loss <u>-</u> <u>condition <u>good</u> <u>ols &amp; Metreizs of SURFACE Sweeps in each</u> <u>accoded</u> <u>accoded</u> <u>alext s</u> <u>alext s</u> <u>al</u></u></u></u></u></u>
IREATMENT:       Is this a central tree         Chlorinator:       Type         Spare parts or unit?       3 unit?         Aerator:       Type         Aerator:       Type         Filter(s):       Type         Size       18 X 20'         Type controls       203 EP273         Cocments       all controls         Softeners:       Type         Size       700 gpm(2)	eatment facility? Jes (owe of Eight) - Gas Capacity 20 100 genered a - Gas Capacity 20 100 genered a - Gas Mask? Yes' Perdik K - alext s - alext s - Condition - Condition <u>Good</u> - Condition <u>Good</u> - Condition <u>Good</u> - Condition <u>Good</u> - Condition <u>Cond</u> - Cond - Cond
IREATMENT:       Is this a central tree         Chlorinator:       Type         Spare parts or unit?       3 unit?         Aerator:       Type         Aerator:       Type         Filter(s):       Type         Size       18 X ZO'         Type controls       203 EPZTS         Cocments       all controls         Softeners:       Type         Size       700 gpm(2)	eatment facility? Jes (owe of Eight) - gas Capacity 20 100 equations: Ups - gas Capacity 20 100 equations: Ups - gas Capacity 20 100 equations: Ups - gas Proper ventilation? Ups Gas Mask? Ups' Perdik K - alexer s - alexer s - condition - Condition - Condition Good - Cond - Cond - Cond
IREATMENT:       Is this a central tree         Chlorinator:       Type       Upe         Spare parts or unit?       3 LLA         Aerator:       Type       No         Filter(s):       Type       QRANC         Size       18 X 20'       Type controls       POBERTS         Softeners:       Type       Spare         Size       700 gpm       Spare         Type controls       Hydratic         Softeners:       Type       Spare         Size       700 gpm       Spare         Type controls       Hydratic       Spare         Softeners:       Type       Spare         Size       700 gpm       Spare         Type controls       Hydratic       Spare	eatment facility? Jes (ONE Of Eight) Gas Capacity 20100 Sphores D Proper ventilation? Hes Gas Mask? Hes' Perdik K alerts ONE Condition Try No. 2 Media RAPID SAND Rate (gpm/ft <sup>2</sup> ) Z.O USMA/ Head loss - Condition Opod Ols & Mercies OK SURFACE Sweeps in each OCTOR No. 2 Media Catalyst (SAND) ate (gpm/ft <sup>2</sup> ) - Head loss - Head loss - Head loss - Description Opod
IREATMENT:       Is this a central tree         Chlorinator:       Type         Spare parts or unit?       3 unit?         Aerator:       Type         Aerator:       Type         Filter(s):       Type         Size       18 X ZD'         Type controls       203 EPZTS         Comments       Marce         Size       700 gpm(2)         Type controls       Hydratic         Size       700 gpm(2)         Type controls       Hydratic         Other treatment (Describe):       1	estment facility? Jes (owe of Eight) - gas Capacity 20100 - 35pd In Service? Yes - gas Capacity 20100 - 35pd In Service? Yes - gas Proper ventilation? Yes Gas Mask? Yes' Perdiz K - alerts - condition - condition - Condition - Condition
IREATMENT: Is this a central tree <u>Chlorinator</u> : Type <u>with</u> Spare parts or unit? <u>3</u> who <u>Aerator</u> : Type <u>NO</u> <u>Filter(s)</u> : Type <u>QRAN</u> Size <u>18 X 20'</u> Type controls <u>ROBERTS</u> <u>Comments</u> Type <u>Spire</u> Size <u>700 qpm(2)</u> Type controls <u>MyCRAT</u> <u>Comments</u>	estment facility? Jes (and a Gight) Gas Capacity 20100 3540 In Service? Yes Gas Proper ventilation? Yes Gas Mask? Yes' Perdik K alext 3 Done Condition IT/ No. 2 Media RAPID SAND Rate (gpm/ft <sup>2</sup> ) Z.O USMA/ Head loss - Condition GOOD OLS & METCIZS DK SURFACE SWEEPS IN EACH DCTOR No. 2 Media CATALYST (SAND) ate (gpm/ft <sup>2</sup> ) - Head loss - D- Condition GOOD Ate (gpm/ft <sup>2</sup> ) - Head loss - D- Condition GOOD Ate (gpm/ft <sup>2</sup> ) - Head loss - Condition GOOD Condition GOOD Ate (gpm/ft <sup>2</sup> ) - Head loss - Condition GOOD Condition Condition Conditio

Focation of Closed Drinking Water Wells at MCB CLNC. 24 July 86.

Drinking Water Well Number

601 (renumbered 660)

602

608

634

637

651

652

653 ( was numbered 619)

(T-26

TT-NEW

Ination

Corner of Holcomt Blod and Dogwood St

Corner of Halcomb Blod and Ash St.

In area behind Steam Plant at the end of Michael Road.

On Snead's Ferry Road across road from Bldgs. 903 and 904.

Corner of Holcomb Blod and Parachute Tower Road (Outdoor Theater)

Corner of Old Pining Erren Rd and Old Beaching

Dr. Lyman Rd. (on left) about 2 mile from Snead's Ferry Rd.

On Old Pinin Grien Road (on right) 0.4 mile N of Walloce Creek.

Corner of Jegein Blod and Tarawa Blod.

On Tarawa Block (on right) between TTNo. Elementary School and Pelelin Drive

CCEJ-00228-1.02-07/24/86

### WALE !. (LEAN MAINSILE

NINSHIE MELLS

JAMPLE DATE(S)	FOR V	icc s		CHLOWINGS	FOR VC	C-,	FLIDE ILE	
WELL BLDG. 14	1N1 85	1765 85	IAPR 85	JUL 85	JAN 86	Nov 86 HINCIP # 2	JEP 87	
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614	ND		1	18			с	
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1020	ND		14. 19	12	ND	ND	0.20	
621	ND			14			c	
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628						ND	0.14	
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	A Contraction of the second se						1	

JAMPLE DATE ()	For	z VOCs		CHLORINE 3	. Same		FLUDRICE
Charles State	JUN	FEB	AFE	JUL	JUN	NOV 86	M3/L SE.C
WELL BLOG #	85	25	85	85	86	HINCIP II 2	87
649		ND		16	1.4923	ND	0.20 C
650	ND			16 OUT OF		ND	0.18 c
634		ND		SERVICE	ND	ND	0.26 OUT OF
655	ND		-	12	ND	ND	SECVICE
661	1. 1.		TRUE!		ND	N.D	0.13
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LCH 4006			ND	10			
LCH 4007	ND		1.000	IZ	ND		с 0.23
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### TABLE 1. GEAR MAINSIDE WELLS CONT.

TABLE 2

F & CONTAMINALCIS

MAINENINE WELLS

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WELL BLDG. #	CHEMICAL	30 NOV 84	4 tec	10 10:	13 13=0	1103141	4 HEP. 85	1200	and the second second second	4,5 +4	12. 1104	15	CF) CF
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11/30/84	PCE	Z4		ND	N DH	0		CO			ND		0
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(804) 445-1814

5090 1142CFB

1 1 JUN 1987

From: Commander, Atlantic Division, Naval Facilities Engineering Command To: Commanding General, Marine Corps Base, Camp Lejeune

Subj: NACIP SITE 6; PROPOSED WAREHOUSE CONSTRUCTION BY DEFENSE REUTILIZATION AND MARKETING SERVICE, FY-90

Ref: (a) MARCORB Camp Lejeune ltr 6280/9 FAC of 20 Apr 87

Encl: (1) CNO 1tr 5090 Ser 451/7U393392 of 14 Apr 87 (2) Excerpt from Site Suitability Assessment, Proposed Brig Expansion,

NAVSTA Norfolk. Prepared by Malcolm Pirnie, Inc., June 84

1. In reference (a), you requested guidance on the feasibility of constructing a warehouse on Lot 203. This site was included in the Installation Restoration (formerly NACIP) program because of documented evidence of hazardous materials disposal. We can summarize the data collected to date under the IR program as follows:

a. Lot 203 served as a waste disposal area in the 1940s. Subsequently, it was used for storage of scrap metal and other items, including DDT and PCB transformers.

b. The eastern end of the proposed warehouse overlaps a former DDT storage area. Soil samples collected in the vicinity in August 1984 detected DDT and its isomers in concentrations up to 80 ppb. However, a monitoring well (6GW4) installed in the fall of 1986 did not detect DDT in the groundwater.

c. Trichloroethylene contamination has been confirmed in well 651, located northeast of Lot 203. Although the storage lot is a potential source of the solvent, none was detected in the shallow well, 6GW4, located east of the proposed project site.

2. Based on the analytical results to date, we do not believe the contamination is severe enough to preclude construction on this site. We do recommend the following guidelines be followed for construction on any site suspected of containing hazardous materials:

a. Sample soil in any areas to be excavated (for foundations, utilities, etc.) to the proposed depth of excavation. Analyze each sample for metals using the EP toxicity test. For this particular site, we would also recommend analysis for PCBs.

b. If the soil fails the EP toxicity test it must be handled and disposed of as a hazardous waste. If not, it should be retained on site (within the confines of the storage lot). If PCBs are detected, EPA Region IV should be consulted to determine the regional policy for cleanup of PCB spills.





Subj: NACIP SITE 6; PROPOSED WAREHOUSE CONSTRUCTION BY DEFENSE REUTILIZATION AND MARKETING SERVICE, FY-90

c. If surface soil staining or the soil borings indicates oil and grease contamination, water from dewatering operations should be pumped through an oil/water separator prior to discharge.

d. Project specifications should indicate that this is a former waste disposal area and should include provisions for dealing with buried containers that may turn up during excavation and precautions for minimizing personnel exposure. Enclosure (2) is a summary of potential construction problems and recommendations prepared for another project planned for a similar site.

3. These recommendations may be further refined when more information becomes available under the IR program and as the project scope is better defined. It may be appropriate at this time to submit a formal letter to state environmental agencies to obtain their concurrence on the proposed site usage. Enclosure (1) mandates that we keep state and local authorities informed as to planned actions at a site.

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4. Our point of contact for the IR program is Cherryl Barnett.

J. R. BAILEY By direction

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Environmental Engineer

Assistant Chief of Staff, Facilities, Marine Corps Base, Camp Lejeune

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TRIP REPORT MEETING WITH LANTDIV AND ENVIRONMENTAL SCIENCE AND ENGINEERING, INC. REGARDING INSTALLATION RESTORATION PROGRAM 16 SEPTEMBER 1987

1. From LANTDIV, Code 114: Mr. Rakowski, Mrs. Barnette, Mr. Wallmeyer.

From ESE: Mr. Gregory, Mr. Geden, Mr. Farrell. From MCB: Mr. Alexander.

2. The Purpose of the Meeting: To review the Installation Restoration Program status, specifically to review the proposed remedial actions for the Hadnot Point groundwater problems and to examine data collected to date on the remaining 22 contaminated sites aboard Camp Lejeune.

3. A summary of the <u>Hadnot Point groundwater problem</u> follows:

a. In the shallow aquifer 15 volatile organic compounds (VOC) have been identified; the four most serious compounds violate recommended State and EPA standards.

b. Two large plumes have been identified in the shallow aquifer. One includes a portion of the industrial area between Building 1700 and the Burger King extending from Holcomb Boulevard to Louis Street. The second includes the area from the fuel farm on Ash Street northeastward to Sneads Ferry Road and from Holcomb Boulevard to Louis Street on the Southeast.

c. One of the most significant issues currently being addressed is the issue of "how clean is clean". Neither State nor EPA standards are clearly defined although North & Carolina has provided their Maximum Contaminant Limits for seven of the problem pollutants. (Note: State of North Carolina is proposing revised standards. We should get these and comment as needed.)

d. Recent deep well monitoring has identified an additional contaminant, methol ethyl ketone (MEK), in the deep aquifer. This new data will compound the problem of identifying groundwater treatment options for the deep aquifer because MEK is not treated with the same methods as the other pollutants identified to date. bj: TRIP REPORT MEETING WITH LANTDIV AND ENVIRONMENTAL SCIENCE AND ENGINEERING, INC., REGARDING INSTALLATION RESTORATION PROGRAM 16 SEPTEMBER 1987

e. ESE described a tentative list of short and long term remedial options to be presented in a report in a comparison of effectiveness and total cost.

f. Groundwater treatment options currently being examined will cause additional environmental emissions through one or all of the following media:

> --Sewage treatment plant --Air emissions --Packaged VOC for hazardous waste disposal off base

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g. We recommend pulling the pumps and equipment at the eight contaminated water supply wells in the Hadnot Point area, leaving them available for sampling only.

4. An estimated schedule of events for the Hadnot Point groundwater problem includes:

a. ESE will send a draft Remedial Investigation/ Feasibility Study Report to LANTDIV and Camp Lejeune in early October (RI/FS).

b. We will review the report ASAP and return to ESE for a final draft.

c. Upon revision, we will send the report to the State and EPA (estimated in mid November) for their review over a 30 day period. Some time within that 30 day period a briefing will be held here at Camp Lejeune with the State and EPA officials.

5. Regarding the other 22 IRP sites.

a. We recommend discontinuing work at nine sites due to the lack of documented contamination of any significance.

b. We recommend doing a <u>Risk Analysis at six sites</u> to determine if additional contaminants exist and/or are causing environmental problems.

c. We recommend continued monitoring and development of clean up options at seven sites and development of a change order for the ESE contract to produce a report regarding the findings at these sites. This report should be available at the end of the second quarter FY-88.

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6. I have discussed these findings with Mr. Hubbel, CMC LFL, and he feels that MCB and LANTDIV should discuss the release of some of this information to the public in accordance with the superfund amendments. We will need to review these the superfund amendments for public involvement with the JPAO regulatory requirements for public involvement with the JPAO and develop a cooperative effort in light of these rules and the possibility that Camp Lejeune sites could be named to the EPA National Priority List.

### R. E. ALEXANDER

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