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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

AUG 02 1990

RCRAFFB

Certified Mail Return
Receipt Requested

Colonel James A. Cathcart
U. S. Marine Corps
Chief of Staff
Marine Corps Base
Camp LeJeune, North Carolina 28542-5001

Re: Remedial Investigation and Feasibility Study
Camp LeJeune Military Reservation

Dear Colonel Cathcart:

The Environmental Protection Agency (EPA) appreciates the opportunity to comment on the "Work Plan", "Sampling Plan" and "Health and Safety Plan" dated June 1, 1990, addressing the Hadnot Point Industrial Area (HPIA), Storage Lots 201 and 203 (Site 6), the Mercury Dump (Site 48) and the Rifle Range Chemical Dump (Site 69) located on Camp LeJeune Military Reservation (CLMR).

As you are aware, the Federal Facility Agreement (FFA or Agreement) for CLMR has been negotiated. It is anticipated that the FFA will become effective during the first quarter of Fiscal Year 1991. The FFA requires the Department of the Navy (DON) to submit a Site Management Plan, providing a prioritized schedule, projecting all Remedial Investigation and Feasibility Study (RI/FS), and Remedial Design and Remedial Action (RD/RA) activities on CLMR. However, the FFA provides that any Party can propose Operable Units where appropriate. The comments below are presented to provide guidance to the DON for the development of Operable Units within the HPIA contamination.

The EPA received copies (Letter from Cathcart to Linton, June 27, 1990) of the above referenced documents on June 28, 1990. At that time, the DON informed EPA that a Technical Review Committee (TRC) meeting was scheduled for July 25, 1990, and that our comments should be presented during the TRC meeting. A schedule for the implementation of the above documents was not provided with the submittal. As was evidenced by the results from the TRC meeting, the TRC forum will not be an effective part of the process unless the Parties to the FFA meet during the early development of Statements of Work (SOWs) which provide the basis for RI/FS and RD/RA Work Plans.

According to the FFA, first submittals for each of the above documents should be considered "Draft" documents and not "Draft Final" documents. Sufficient time must be allowed for review and revision of the submittal documents. Therefore, the DON should modify and resubmit the above "Draft" documents while incorporating all EPA and North Carolina Department of Environment, Health and Natural Resources (DEHNR) comments within sixty (60) days of receipt of this letter. These modified documents shall then be considered "Draft Final" and subject again to review and comment by EPA and DEHNR for a period of no more than thirty (30) days. Once all comments have been appropriately addressed, these documents will be approved and become "Final" documents.

As was discussed at the July 25, 1990, meeting, the current scope of investigation is unlikely to fully characterize the nature and extent of contamination of the deep aquifer beneath HPIA, and thereby not satisfy the stated objectives within the "Draft Work Plan". Accordingly, the DON should revise the stated objectives of the "Draft Work Plan", and submit a schedule providing for the concurrent submittal of a "Draft Remedial Investigation Report" documenting the results of the above "Draft Work Plan" and a "Draft Scope of Work" for the continued next phase of characterization of the deep aquifer. Such "Draft Scope of Work" should provide the basis for continued characterization studies, remedial action alternatives development and design considerations.

As was discussed at our July 25, 1990, meeting, EPA is exceedingly concerned about further delays in initiating necessary focused investigation and study for the design of response actions for the HPIA shallow aquifer contamination which has been adequately characterized by previous investigations. Alternatives addressing the shallow aquifer contamination have been developed and documented by the DON, and comment by EPA and DEHNR addressing such alternatives and existing data gaps have been submitted.

As outlined by the National Contingency Plan (NCP) (55 Federal Register 8666, March 8, 1990), interim actions (i.e., operable units) are encouraged to be taken prior to or concurrent with conduct of an RI/FS as information is sufficient to support remedy selection. Delaying decisions addressing the shallow aquifer contamination until deep aquifer contamination has been fully characterized is not appropriate. Data sufficient to

support HPIA interim action decisions concerning the unsaturated zone and shallow aquifer should be extracted as soon as possible from the proposed RI/FS Work Plan for HPIA.

At the July 25, 1990, meeting, the DON expressed its concern that any decision addressing the unsaturated soil/source of contamination will affect the design and implementation of shallow aquifer remediation (e.g., in situ soil washing affects on shallow groundwater pump and treat systems). However, the DON has not hesitated to initiate, without EPA concurrence, the design of a remedy addressing the floating fuel product contamination at Site 22 located in the HPIA. It is not clear to EPA at this time if, during free product removal, any contaminated shallow groundwater will be pumped, treated and released. While the action decision does not conform to the DON's argument for delaying additional remedial action for the shallow aquifer until the extent of all HPIA soil/source contamination is completely defined, the EPA commends the DON for moving forward with this response action. The DON should submit all reports and plans supporting this response action for EPA review and comment according to CERCLA requirements.

EPA strongly believes that the above response action cannot be separated from the final response action (e.g., deep groundwater remediation) for HPIA. Mixing of solvent based constituents with fuel related constituents has occurred within the HPIA groundwater aquifers. Therefore, the "Draft Work Plan" should address how this action will be consistent with future HPIA response actions (e.g., unsaturated zone and shallow groundwater contamination), and document existing data as it relates to future response actions (e.g., unsaturated zone and shallow groundwater remediation). In addition, the DON should incorporate and reference the following guidance documents: "Basic of Pump-and-Treat Groundwater Remediation Technology", EPA/600/8-90/003, March 1990, and "Guidance on Preparing Superfund Decision Documents", OSWER Directive 9355.3-02, July 1989.

The current scope of the above referenced "Draft Work Plan" does not include additional evaluation of alternatives addressing the shallow aquifer contamination. Accordingly, the DON should modify the "Draft Work Plan" to clearly document that the primary objective for this phase of investigation is to characterize the unsaturated zone as it relates to the design and implementation for shallow aquifer remediation.

Provided that all of our concerns are adequately addressed, EPA agrees to the DON delaying the remedial action decision for the entire HPIA unsaturated zone and shallow aquifer until June, 1991.

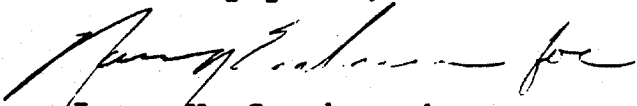
As was agreed to, the DON should submit a schedule providing for a June, 1991, submittal date for a "Draft Proposed Plan" addressing the HPIA Unsaturated Zone and Shallow Aquifer Operable Unit. The "Draft Work Plan" should be modified to include additional analysis of alternatives for the shallow aquifer as it relates to the design and implementation for unsaturated zone contamination, including the floating fuel product recovery at Site 22. In addition, the DON should modify the above referenced "Draft Work Plan", or provide another contracting mechanism to address the data (e.g., additional borings or wells) required to expedite the remediation of the unsaturated zone and shallow aquifer, should initial sampling and analysis indicate that contamination has migrated beyond the area defined by previous investigations.

A quantitative baseline risk assessment will not be necessary to justify the Unsaturated Zone and Shallow Aquifer Operable Unit. Qualitative risk information only, should be organized in the Proposed Plan demonstrating that the actions are necessary to stabilize the HPIA plumes of contamination and prevent further environmental degradation. The Proposed Plan addressing unsaturated zone and shallow aquifer contamination should incorporate all previous remedial actions (e.g., fuel recovery at Site 22). The HPIA unsaturated zone and shallow aquifer operable unit will serve to prevent continued contamination source release to the deep aquifer. This operable unit will, based on further engineering design analysis, work in coordination to be consistent with the final remedial action decision addressing the deep aquifer, and are therefore appropriate according to the NCP. The final remedial action decision will define the long-term remediation goals for HPIA.

Enclosed are specific comments which must be addressed before EPA can approve the above referenced documents. Also, enclosed is a "Draft RFA Report" for DON review and comment, and EPA concerns with regard to your response dated October 21,

1989, to our comments (Letter from Lucius to Dalzell, September 29, 1988) offered on the May 1988, "Feasibility Study Report" for the HPIA. If you have any questions concerning this matter, please contact Mr. Carl R. Froede, Remedial Project Manager, of my staff at (404) 347-3016.

Sincerely yours,



James H. Scarbrough, P. E., Chief
RCRA and Federal Facilities Branch
Waste Management Division

Enclosures

cc: Mr. Jack Butler, NCDEHNR (with enclosures)
Ms. Lee Crosby, NCDEHNR (with enclosures)
Ms. Stephanie Johnson, MCB Camp LeJeune (with enclosures)
Mr. Julian Wooten, MCB Camp LeJeune (with enclosures)
Commanding General, MCB Camp LeJeune (with enclosures)
Ms. Laurie Boucher, NAVFAC (with enclosures)
Mr. Andrew Kissell, NAVFAC (with enclosures)
Commander, NAVFAC (with enclosures)

SPECIFIC COMMENTS

Section 1.1, Second Paragraph, Page 1: A statement should be added to reflect that another purpose of this Work Plan is to specifically address EPA (Letter from Lucius to Dalzell, September 1988) and DEHNR comments offered on the May 1988, "Characterization Step Report" and "Feasibility Study Report" for the HPIA. Data gaps identified by EPA and DEHNR should be addressed by the Work Plan.

Section 2.1, Third Paragraph, Page 2: This Work Plan should also address the fuel tank farm (Site 22) as part of the HPIA investigation. The May 1988, "Characterization Step Report" documented that the northern node of contamination consists of two separate sources, one centered near the maintenance facility associated with Building 901 and another centered at Site 22. Any remedial action plan for the shallow aquifer will have to comprehensively address HPIA contamination from solvent or fuel based constituents which have combined into one plume. The DON should provide all of the reports and plans associated with the free fuel product response action at Site 22, and the Work Plan should be modified to document all existing data and information as it relates to future response action decisions at HPIA.

Section 3.1, First Paragraph, Page 10: For clarity, this paragraph needs to document the maximum values of contamination detected at HPIA during previous investigations.

Section 3.1, First Paragraph, Page 11: As provided for by CERCLA Section 121(d)(4)(A) and the NCP, this Work Plan should provide a schedule for the submittal of a "Draft Proposed Plan" addressing the unsaturated zone and shallow aquifer contamination as an interim action (i.e., operable unit). As stated in our previous comments (Letter from Lucius to Dalzell, September 1988) the recovery of contaminants from the shallow aquifer should proceed expeditiously as an operable unit in order to prevent further migration of contaminants into the deep aquifer. The Unsaturated Zone and Shallow Aquifer Operable Unit will be consistent with the final remedial action decision for HPIA and is therefore appropriate. The "Draft Proposed Plan" should propose the preferred alternative(s). The "Draft Proposed Plan" should provide a detailed analysis of the preferred alternative(s) utilizing the nine criteria as specified by CERCLA and Section 6.12 of the Work Plan. Also, the "Draft Proposed Plan" should summarize the data and supporting information necessary to justify the Operable Unit. Once final, the Proposed Plan will be released for public review and comment, and a Record of Decision will be published.

Section 4.1.4.1, Fourth Paragraph, Page 17: As a top priority, the Work Plan should provide for the necessary hydrogeologic studies to provide the design rational for the recovery well network proposed by the May 1988 "Feasibility Study Report". The hydraulic conductivity values and storage coefficients must be determined for the various components of the shallow aquifer.

Section 4.2, Page 19 through Page 24: This section should be modified to include all media specific maximum contaminant levels previously detected for each site, along with DEHNR and EPA maximum contaminant levels (MCLs). Also, this section should include tables with analysis results for all sites.

Section 4.2.1, Second Paragraph, Page 19: This section should include a summary of the soil gas contamination in terms of the concentrations detected. Also, need to include a figure depicting the soil gas survey results.

Section 4.2.1, Fifth Paragraph, Page 22: EPA officially requests a copy of the report on the investigation by O'Brian and Gere Engineers, Inc. of Site 22.

Tables 4-1 through 4-4: These tables should be modified to include maximum detected contaminant concentrations along with MCLs for each media.

Section 4.4.1, Second Paragraph, Page 26: If any analysis for inorganic constituents exceeded MCLs at a site, they should be included within the site's indicator chemicals list.

Section 4.4.2, Second Paragraph, Page 28: Exposure pathways should include exposure to lead via ingestion of groundwater.

Section 4.5, Page 32: The Work Plan should be modified to include the initial screening of alternatives for Site 6, Site 48 and Site 69. The initial screening of alternatives is appropriate for these sites based on existing data (i.e., RI Phase I). The Remedial Investigation and Feasibility Study (RI/FS) process is integrated and dynamic, with FS needs dictating RI scoping requirements.

Section 4.5.1, First Paragraph, Page 32: The preliminary response measures should be modified to include the following:

- prevent migration of contamination from the shallow aquifer to the intermediate and deep aquifers.

Section 4.5.2.5, Page 35: This section should be modified to include vacuum extraction as an application in situ remedy.

Section 5.1, First Paragraph, Page 39: This section should be modified to provide specifics with regard to the data required to accomplish the two listed objectives.

Section 5.1, First Paragraph, Page 39: As stated previously, a quantitative risk assessment to address the unsaturated zone contamination is not necessary. Since the available technologies suitable for remediation of the unsaturated zone at HPIA are limited (e.g., soil washing, vacuum extraction and aeration), a focused feasibility for this contaminated medium is appropriate.

Section 5.1, Second Paragraph, Page 39: The objectives for this second phase of RI for Site 6, Site 48 and Site 69 should be better defined. The RI process generally should not require more than two phases of field activity. The NCP directs that RI activities be scoped so that sites are not investigated any more than necessary to reach an action decision, including the no action decision. The scope of the investigations for these sites should be expanded in order that baseline risk assessments and feasibility study reports can be developed. The present scope seems to have the objective to confirm what is already known. However, the objective should be to define the nature and extent of known contamination. The Work Plan should provide the required flexibility to allow for additional sampling, if necessary, to achieve this objective.

Section 6.1, Second Paragraph, Page 41: As required by the FFA, the Field Sampling Plan should be developed according to the requirements of the Engineering Support Branch Standard Operating Procedures and Quality Assurance Manual.

Section 6.1, Fourth Paragraph, Page 41: As required by the FFA, the Quality Assurance Project Plan should be developed according to the requirements of the Engineering Support Branch Standard Operating Procedures and Quality Assurance Manual.

Section 6.2, First Paragraph, Page 41: As stated earlier, a quantitative risk assessment is not necessary for implementation of the unsaturated zone remediation.

Section 6.2, First Paragraph, Page 41: This section should be modified to provide more specific information about the data required to accomplish the stated objectives and a detailed explanation of how the Work Plan will satisfy these specific data requirements.

Section 6.2.2, Page 42: The Work Plan should provide a detailed implementation and completion schedule for this subtask.

Section 6.2.3, Page 42: The Work Plan should provide a detailed implementation and completion schedule for this subtask. Also, due to the fact that deep aquifer contamination is known to exist in wells (e.g., wells 634, 601, 602 and 608) located at the boundary of HPIA, the Work Plan should also provide for three (3) additional well clusters outside of the area with known contamination to better define the extent of contamination within the deep aquifer.

Table 6-1, Page 43: This table should be modified to include the Toxicity Characteristic Leaching Procedure (TCLP) (55 Federal Register 11798, March 29, 1990) which replaced the Extraction Procedure.

Figure 6-1, Page 44: The Work Plan should also provide four (4) reduced scaled figures providing detailed locations for all soil boring and well locations.

Section 6.2.4, Page 45: The Work Plan should provide a detailed implementation and completion schedule for this subtask.

Section 6.2.5, Page 45: The Work Plan should provide a detailed implementation and completion schedule for this subtask. Also, the second sentence of this section should be modified to read as follows: "Previous studies indicate that shallow soil contamination is known to exist in three areas."

Section 6.2.5, Second Paragraph, Page 46: This section should refer to the TCLP.

Section 6.2.5, Page 46: This section should be modified to give the specific depths at which soil samples will be taken within boreholes. Also, Work Plan should describe how screening will be employed to ensure that samples will be obtained from zones of greatest contamination.

Section 6.3, Page 46: The Work Plan should be modified to provide a specific schedule for each subtask under Task 2B. Simply moving forward in the RI process is not an appropriate objective for RI field activities. The Work Plan should provide for additional sampling (e.g., additional groundwater wells), if necessary, to define the nature and extent of contamination, and form the basis for the remedial decisions,

including operable units for this site. The location of proposed surface water and sediment samples should not coincide with sampling locations from previous investigations. Locations for additional surface water and sediment samples should be determined based on the results from previous investigations.

Section 6.4, Page 48: The Work Plan should be modified to provide a specific schedule for each subtask under Task 2C. Simply moving forward in the RI process is not an appropriate objective for RI field activities. The Work Plan should provide for additional sampling, if necessary, to define the nature and extent of contamination, and form the basis for the remedial decisions, including operable units for this site. This section should refer to a figure which depicts the locations of all proposed surface water and sediment samples. Locations for additional surface water and sediment samples should be determined based on the results from previous investigations in order to further define the extent of contamination.

Section 6.4.3, Page 48: The Work Plan should be modified to give more detail as to the objectives and requirements of the tissue sampling subtask. The explanation should include a discussion of the statistical significance and procedures of the proposed sampling scheme. Only bottom dwelling/feeding organisms should be selected for analysis. This section should incorporate and reference the following guidance document: "Ecological Assessment of Hazardous Waste Sites", EPA/600/3-89/013, March 1989.

Section 6.5, Page 48: The Work Plan should be modified to provide a specific schedule for each subtask under Task 2D. Simply moving forward in the RI process is not an appropriate objective for RI field activities. The Work Plan should provide for additional sampling (e.g., additional groundwater wells), if necessary, to define the nature and extent of contamination, and form the basis for the remedial decisions, including operable units for this site. Also, the Work Plan should provide for sampling and analysis of public and private wells downgradient of Site 69.

Section 6.5.4, Page 49: The Work Plan should be modified to give more detail as to the objectives and requirements of the tissue sampling subtask. The explanation should include a discussion of the statistical significance and procedures of

the proposed sampling scheme. Only bottom dwelling/feeding organisms should be selected for analysis. This section should incorporate and reference the following guidance document: "Ecological Assessment of Hazardous Waste Sites", EPA/600/3-89/013, March 1989.

Section 6.8, Page 50: The Work Plan should be modified to provide a specific schedule for Task 5. The Work Plan should be modified to provide for baseline risk assessments for Site 6, Site 48 and Site 69. Also, the following references should be used:

"Interim Final "Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual", OSWER Directive 9285.7-01a, September 1989;

"Interim Final Risk Assessment Guidance for Superfund, Volume II, Environmental Evaluation Manual", OSWER Directive 9285.7-02, March 1989;

"Superfund Exposure Assessment Manual", OSWER Directive 9285.5-1, April 1988; and

"Ecological Assessment of Hazardous Waste Sites", EPA/600/3-89/013, March 1989.

Section 6.9, Page 53: The Work plan should be modified to include any necessary treatability studies for the design of the Unsaturated Zone and Shallow Aquifer Operable Unit. The required preliminary data should be extracted from previous investigations to be used for the treatability studies concerning these operable units.

Section 6.10, Page 53: The Work Plan should be modified to provide a specific schedule for Task 7. Site Summary Reports for Site 6, Site 48 and Site 69 have been previously developed. Therefore, the Work Plan should be modified to provide for RI reports, defining the nature and extent of contamination for these sites. Also, the following references should be used:

"Interim final "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA", OSWER Directive 9355.3-01, October 1988; and

"Basic of Pump-and-Treat Groundwater Remediation Technology", EPA/600/8-90/003, March 1990.

Section 6.11, Page 53: The Work Plan should be modified to provide a specific schedule for Task 8. Remedial alternative screening should also be performed for Site 6, Site 48 and Site 69. At the completion of this proposed Work Plan, and based on the RI Reports and baseline risk assessments for these sites, the need for a detailed analysis of alternatives and feasibility study reports will be determined. Also, the following reference should be used:

Interim final "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA", OSWER Directive 9355.3-01, October 1988.

Section 6.12, Page 53: The Work Plan should be modified to provide a specific schedule for Task 9. Also, the following reference should be used:

Interim Final "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA", OSWER Directive 9355.3-01, October 1988.

Section 6.13, Page 54: The Work Plan should be modified to provide a specific schedule for Task 10. Also, the following reference should be used:

Interim Final "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA", OSWER Directive 9355.3-01, October 1988.

The Work Plan should be modified to include an additional task with a schedule for the development and submittal of Proposed Plans addressing the Unsaturated Zone and Shallow Aquifer Operable Unit at HPIA. This new section should reference the following guidance document:

Interim Final "Guidance on Preparing Superfund Decision Documents", OSWER Directive 9355.3-02, July 1989.

The Work Plan should be modified to include an additional task with a schedule for the development and submittal of Remedial Design Work Plans addressing the Unsaturated Zone and Shallow Aquifer Operable Unit at HPIA. This new section should reference the following guidance documents:

"Superfund Remedial Design and Remedial Action (RD/RA) Guidance", OSWER Directive 9355.0-4A, June 1986; and Interim Final "Guidance on Remedial Actions for Contaminated Groundwater at Superfund Sites", OSWER Directive 9283.1-2, December 1988.

References Section, Page 55: All references should be updated as per the above comments. The following references should be deleted or replaced:

Porter, J. W., 1986, Draft Memorandum, December 1986 or July 1987;

OSWER Directive 9355.0-19;

OSWER Directive 9355.0-21;

OSWER Directive 9285.4-1; and

OSWER Directive 9355.3-01, March 1988.

The Field Sampling Plan (FSP) and the Quality Assurance Project Plan (QAPP) should be modified to include all comments above on the Work Plan. Specifically, the FSP and QAPP should conform to and reference the requirements of the Engineering Support Branch Standard Operating Procedures and Quality Assurance Manual. A copy of this document was delivered by EPA to the DON at the July 25, 1990, meeting.

Resource Conservation and Recovery Act

Facility Assessment

Report

Camp LeJeune Military Reservation

Jacksonville, North Carolina

The Environmental Protection Agency

Region IV

Federal Facilities Section

Site Description

The Camp LeJeune Military Reservation covers approximately one hundred and seventy (170) square miles within Onslow County located in the south-central part of North Carolina. The Atlantic Coast forms the eastern and southern boundaries of the reservation as shown in Figure One.

Approximately fifty thousand (50,000) military personnel and their dependants live on the reservation. The reservation includes the Marine Corps Base (MCB) Camp LeJeune and the Marine Corps Air Station (MCAS) New River commands. The two commands are separated by the New River and by Southwest Creek and Brison Creek, tributaries to the New River.

Waste generation, treatment and disposal as a result of industrial activities on Camp LeJeune Military Reservation have necessitated the use of numerous landfill areas and sewage treatment facilities. Training activities on the reservation require the use of numerous large tracked and wheeled support vehicles. Past hazardous waste management practices included direct ground or storm drain deposition of waste oils and waste solvents generated through maintenance operations conducted primarily at the Hadnot Point Industrial Area (HPIA).

The training mission of MCB Camp LeJeune requires the use of live ordnances which are fired upon well defined impact areas. Unexploded rounds are localized, where ordnance is electrically exploded or burned within two (2) disposal cells, with one sited in the interior part of both the K-2 and G-10 Impact Areas.

Fuel Farms serving MCB Camp LeJeune and MCAS New River have released significant known amounts of certain petroleum products contaminating subsurface soil and groundwater. In addition, fire training activities are conducted on MCAS New River.

Environmental Compliance Status

RCRA Status:

The Camp LeJeune Military Reservation has approximately one hundred and fifty (150) hazardous waste generation units. These units are subject to the Resource Conservation and Recovery Act of 1976 (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984 (HSWA),

40 CFR Part 262. Transportation of hazardous waste by MCB Camp LeJeune is subject to RCRA/HSWA regulation under 40 CFR Part 263. Open Burning and Open Detonation (OB/OD) of explosives on the reservation is subject to RCRA/HSWA regulation under 40 CFR 264, Subpart X. Storage tanks on the reservation containing hazardous waste are subject to RCRA/HSWA regulation under 40 CFR Part 265.

Prior to the promulgation of HSWA, MCB Camp LeJeune was granted a Hazardous Waste Treatment, Storage and Disposal (TSD) Operating Permit on September 7, 1984, for containerized storage in buildings TP-451 and TP-463. A copy of the permit is provided as Appendix A. In response to a Notice of Violation determined by the North Carolina Department of Environment, Health, and Natural Resources (DEHNR), MCB Camp LeJeune submitted closure plans for eleven Hazardous Waste Storage Tanks containing waste oils contaminated with Freon, and they are as follows:

<u>Location</u>	<u>Tank</u>
Building 45 Holcomb Blvd.	S781
	S889
	S891
Tarawa Terrace	STT61
	STT62
	STT63
	STT64
	STT65
MCAS New River	AS-419
	AS-420
	AS-421.

DEHNR issued a Notice of Deficiency concerning the above referenced Hazardous Waste Storage Tanks to MCB Camp LeJeune on November 1, 1988.

On June 7, 1988, MCB Camp LeJeune submitted a Subpart X Open Burning and Open Detonation of explosives RCRA Part A Modification. A copy of the modification is provided as Appendix B. A RCRA Part B Modification Application concerning the OB/OD units was submitted by MCB Camp LeJeune on November 9, 1988. A copy of the application is provided as Appendix C. The modification application is currently subject to the Environmental Protection Agency Region IV (EPA) and DEHNR review.

Under the jurisdiction of Marine Corps Air Station Cherry Point, North Carolina, MCAS New River is solely a generator of hazardous waste without Interim Status. At this time, MCAS New River is considered a separate RCRA facility apart from MCB Camp LeJeune. However, upon issuance of the HSWA permit, founded on the fact that the K-2 Impact Area is located on the same contiguous property as is MCAS New River, corrective actions at MCAS New River will be conducted under the same RCRA/HSWA permit authority as MCB Camp LeJeune.

During the week of January 9 through 13, 1989, an RFA Site Inspection for Camp LeJeune Military Reservation was conducted by the Federal Facilities Section (FFS) of EPA and DEHNR. The RFA Report presents the results of an extensive file survey and the RFA Site Inspection. The RFA Report is intended to satisfy Section 3004(u) of RCRA, as amended by HSWA, which requires a RCRA Facility Assessment.

The RFA Report describes the FFS's Further Action determinations (i.e., RCRA Facility Investigation, Interim Measure, or No Further Action) concerning known or suspected releases of hazardous waste or hazardous constituents from Solid Waste Management Units on Camp LeJeune Military Reservation.

The primary objective of the RFA Report is to integrate, to the degree possible, the DON's future RCRA/HSWA responsibilities with ongoing CERCLA/SARA activities at Camp LeJeune Military Reservation.

CERCLA Status:

During the periods of March 15 through March 24, 1982 and January 1 through February 3, 1983, the Naval Energy and Environmental Support Activity (NEESA) conducted the Initial Assessment Study (IAS), for Camp LeJeune Military Reservation, as required by Section 211 of the Superfund Amendments and Reauthorization Act of 1986 (SARA). The FFS has determined that the IAS (1983) report satisfies the Preliminary Assessment requirement of Section 120 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended by SARA. A copy of the IAS is provided as Appendix D. Based on the IAS concerning seventy-six (76) potentially contaminated sites (i.e., SWMUs) at Camp LeJeune Military Reservation, NEESA recommended No Further Action (NFA) at fifty-four (54) sites,

and prioritized twenty-two (22) sites for Confirmation Studies (i.e., CERCLA Section 120 Remedial Investigations or RIs). The initial results from the RIs have been completed and a report compiled (Evaluation of Data From Second Round of Verification Step Collection and Analysis, July 1987).

The initial RI analysis of site monitoring wells indicated the presence of significant levels of Volatile Organic Compound (VOC) contamination in the shallow aquifer. In January and February, 1985, subsequent analysis of drinking water well samples by DEHNR indicated that the shallow aquifer contamination had migrated downward into the deeper aquifer which provides potable water for the Camp LeJeune Military Reservation. Analysis of samples from the distribution system indicated the presence of Trichloroethylene (TCE), 1,2-trans-Dichloroethylene (DCE) and Methylene Chloride in the following maximum concentrations:

<u>Compound</u>	<u>Concentration</u>
TCE	3200 ppb
DCE	3400 ppb
Methylene Chloride	273 ppb.

VOC contamination has forced the Camp LeJeune Military Reservation to close eight (8) potable wells, and they are as follows:

Well

601
602
608
634
637
651
652
653.

Also, two (2) additional wells, TT-26 and TT-New, serving potable water to the Tarawa Terrace Housing Area were closed due to an apparent off-site source of VOC contamination. The off-site source is believed to be the ABC One Hour Cleaners facility located in Jacksonville, North Carolina. This facility is a National Priorities List (NPL) site.

On December 12, 1986, EPA submitted the Hazard Ranking System (HRS) package for Camp LeJeune Military Reservation. The preliminary HRS score for the reservation equaled 36.84. The HRS package was based on

the findings for IAS Site # 21 (i.e., Lot 140). Site # 21 is currently used to store out-of-service PCB contaminated transformers, but was used for a pesticide mixing and equipment cleanup area in the past.

On June 24, 1988, EPA proposed Camp LeJeune Military Reservation for inclusion on the NPL with the Seventh NPL Update at 40 C. F. R. Part 300 (53 Federal Register 23988). On October 4, 1989, EPA finalized Camp LeJeune Military Reservation on the NPL at 40 C. F. R. Part 300 (54 Federal Register 41015), which became effective on November 4, 1989.

A Remedial Investigation and Feasibility Study Report was submitted to EPA and DEHNR for review and comment by the DON for the HPIA Shallow Aquifer Operable Unit. EPA provided comments (letter from Lucius to Dalzell) on September 29, 1988, concerning deficiencies in the RI/FS documentation. As of the date of this RFA Report, DON has not adequately responded to EPA comments on the HPIA RI/FS.

EPA, DEHNR and DON have negotiated a Federal Facility Agreement (FFA) under Section 120 of CERCLA to address the remedial/corrective action of Camp LeJeune Military Reservation. The further action determinations below are consistent with the requirements of the FFA.

Further Action Determinations

No Further Action Sites:

<u>Site #</u>	<u>Site Name</u>
4	Sawmill Road Construction Debris Dump
5	Piney Green Road
8	Flammable Storage Warehouse Building TP451 & TP452
10	Original Base Dump
11	Pest Control Shop
13	Golf Course Construction Dump Site
14	Knox Area Rip-Rap
15	Montford Point Burn Dump 1948-1954
17	Montford Point Rip-Rap
18	Watkins Village (E) Site
19	Naval Research Lab Dump
20	Naval Research Lab Incinerator

<u>Site #</u>	<u>Site Name</u>
23	Roads and Grounds Building 1105
25	Base Incinerator
26	Coal Storage Area
27	Naval Hospital Area Rip-Rap
29	Base Sanitary Landfill
31	Engineering Stockyard G-4 Range Road
32	French Creek
33	Onslow Beach Road
34	Ocean Drive
37	Camp Geiger Area Surface Dump
38	Camp Geiger Area Construction Dump
39	Camp Geiger Construction Slab Dump
40	Camp Geiger Area Borrow Pit
42	Building 705/BQO Dump
44	Jones Street Dump
46	MCAS Main Gat Dump
47	MCAS Rip-Rap Near Stick Creek
49	MCAS Suspected Minor Dump
50	MCAS Small-Craft Berthing Rip-Rap
51	MCAS Football Field
53	MCAS Warehouse Building Area/Oiled Roads
55	Air Station East Perimeter Dump
56	MCAS Oiled Roads to Marina
57	Runway 36 Dump
58	MCAS Tank Training Area
60	Explosive Ordnance Disposal K-326 Range
61	Rhodes Point Road Dump
62	Race Course Area Dump
63	Vernon Road Dump
64	Marines Road-Sneads Ferry Road Mogas Spill
66	AMTRAC Landing Site and Storage Area
70	Oak Grove Field Surface Dump
71	Oak Grove Buried Dump
72	Oak Grove Coal Pile

Total = 46

RFA Sampling Sites:

<u>Site #</u>	<u>Site Name</u>
3	Old Creosote Plant
7	Tarawa Terrace Dump
12	Explosive Ordnance Disposal (G-4)

<u>Site #</u>	<u>Site Name</u>
23	Roads and Grounds Building 1105
25	Base Incinerator
26	Coal Storage Area
27	Naval Hospital Area Rip-Rap
29	Base Sanitary Landfill
31	Engineering Stockyard G-4 Range Road
32	French Creek
33	Onslow Beach Road
34	Ocean Drive
37	Camp Geiger Area Surface Dump
38	Camp Geiger Area Construction Dump
39	Camp Geiger Construction Slab Dump
40	Camp Geiger Area Borrow Pit
42	Building 705/BQO Dump
44	Jones Street Dump
46	MCAS Main Gat Dump
47	MCAS Rip-Rap Near Stick Creek
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51	MCAS Football Field
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55	Air Station East Perimeter Dump
56	MCAS Oiled Roads to Marina
57	Runway 36 Dump
58	MCAS Tank Training Area
60	Explosive Ordnance Disposal K-326 Range
61	Rhodes Point Road Dump
62	Race Course Area Dump
63	Vernon Road Dump
64	Marines Road-Sneads Ferry Road Mogas Spill
66	AMTRAC Landing Site and Storage Area
70	Oak Grove Field Surface Dump
71	Oak Grove Buried Dump
72	Oak Grove Coal Pile

Total = 46

RFA Sampling Sites:

<u>Site #</u>	<u>Site Name</u>
3	Old Creosote Plant
7	Tarawa Terrace Dump
12	Explosive Ordnance Disposal (G-4)

<u>Site #</u>	<u>Site Name</u>
43	Agan Street Dump
59	MCAS New River Infantry Training Area
65	Engineer Area Dump
<u>67</u>	Engineers TNT Burn Site

Total = 7

The purpose of RFA sampling is to provide the data necessary to justify previous NFA decisions documented in the IAS (1983) Report. The RFA sampling decisions were based on the following types of information: IAS Report, historical photographs, evidence of stained soil, evidence of surface water impacts and evidence of indiscriminate dumping. The following is a suggested RFA sampling strategy:

<u>Site #</u>	<u>RFA SAMPLING</u>
3	Sample surface sediments and subsurface soils;
7	Sample surface sediments and subsurface soils;
12	Sample surface sediments and subsurface soils;
43	Sample nearby downgradient surface water bodies;
59	Sample nearby downgradient surface water bodies;
65	Sample surface sediments and subsurface soils;
<u>67</u>	Sample surface sediments and subsurface soils.

RFI Sites:

<u>Site #</u>	<u>Site Name</u>
1	French Creek Liquids Disposal Area
2	Former Nursery/Day-Center (Bldg. 712)
6	Storage Lots 201 & 203
9	Fire Fighting Training Pit
16	Montford Point Burn Dump
21	Transformer Storage Lot 140
22	Industrial Area Tank Farm
24	Industrial Area Fly Ash Dump
28	Hadnot Point Burn Dump

<u>Site #</u>	<u>Site Name</u>
30	Sneads Ferry Road Fuel Tank Sludge Area
35	Camp Geiger Area Fuel Farm
36	Camp Geiger Area Dump near Sewage Treatment Plant
41	Camp Geiger Dump near former Trailer Park
45	Campbell Street Underground Avgas Storage and Adjacent JP Fuel Farm at MCAS New River
48	MCAS New River Mercury Dump Site
54	Crash Crew Fire Training Burn Pit at MCAS New River
68	Rifle Range Dump
69	Rifle Range Chemical Dump
73	Courthouse Bay Liquids Disposal Area
74	Mess Hall Grease Pit Area
75	MCAS New River Basketball Court Site
76	MCAS New River Curtis Road Site
<u>A</u>	MCAS (H) Officer's Housing Area

Total = 23

The purpose of RFI sampling is to provide the data necessary to completely characterize, by compound, the nature and extent of contamination at each site. The RFI sampling decisions were based on information compiled by the IRP at Camp LeJeune Military Reservation.

EPA CONCERNS ON DON'S RESPONSE TO COMMENTS
ON THE HPIA FEASIBILITY STUDY

1. Air Compliance Branch:

Response 1 - Need to specify what type of instrumentation and the technical specifications of such instrumentation that will be used for the air monitoring in and around the Sewage Treatment Plant (STP).

2. RCRA Branch:

Response 1 - To avoid future additional work under RCRA Facility Investigation requirements, the Field Sampling Plan should provide for one round of analysis from the well with the greatest detected contamination at HPIA, Site 6, Site 48 and Site 69 respectively, which includes all 40 CFR Part 264, Appendix IX constituents not already part of the target compound list.

Response 4 - As a top priority, the Work Plan should provide for the necessary studies to provide the design rationale for an Unsaturated Zone and Shallow Aquifer Operable Unit. This Work Plan should provide a schedule for the submittal of a "Draft Proposed Plan" addressing the characterized unsaturated zone and shallow aquifer contamination as an interim action (i.e., operable unit). The recovery of contaminants from the unsaturated zone and shallow aquifer should proceed expeditiously as an operable unit in order to prevent further migration of contaminants to the deep aquifer. The Unsaturated Zone and Shallow Aquifer Operable Unit will be consistent with the final remedial action decision for HPIA and is therefore appropriate. The "Draft Proposed Plan" should propose the preferred alternative. The "Draft Proposed Plan" should provide a detailed analysis of a limited number of alternatives (i.e., focused feasibility study) utilizing the nine criteria as specified by CERCLA and Section 6.12 of the Work Plan. Also, the "Draft Proposed Plan" should summarize the data and supporting information necessary to justify the operable unit. Once final, the Proposed Plan will be released for public review and comment. The Proposed Plan, along with public comment, will form the basis for the Record of Decision for this operable unit. The Work Plan should incorporate and reference the following guidance document: "Basic of Pump-and-Treat Groundwater Remediation Technology", EPA/600/8-90/003, March 1990.

Response 6 - The design specifications of the proposed lead pretreatment unit should be provided to EPA and DEHNR for review and comment. Note: the remediation goal for lead in groundwater suitable for drinking has been set at 15 ug/l (Memorandum from Longest and Diamond to Tobin, June 21, 1990).

3. Facilities Performance Branch:

Response 3 - The Work Plan should be modified to provide for the pilot test to validate assumptions of shallow aquifer remediation alternatives.

Response 4 - The Work Plan should be modified to consider all factors associated with the implementability of the shallow aquifer remediation alternatives.

Response 7 - DON should provide the design and operation specifications for the STP along with the resubmittal of the Work Plan.

Response 8 - EPA officially requests that DON submit the assumptions and design criteria used in developing treatment costs for the shallow aquifer remediation alternatives.

Response 9 - DON should not delay necessary permit applications necessary to implement the Unsaturated Zone and Shallow Aquifer Operable Unit.

4. Ground Water Protection Branch:

Response 3 - The DON should modify the Work Plan to provide a schedule for the submittal of a "Draft Proposed Plan" for the Unsaturated Zone and Shallow Aquifer Operable Unit.

Response 6a - The Work Plan should include a section that specifies the data needed for the recovery well network design, as well a detailed explanation of how the required data will be obtained.

Response 8 - The Work Plan should provide for any necessary treatability studies to implement the Unsaturated Zone and Shallow Aquifer Operable Unit.