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CNC CHARLESTON
5090.3a

CORRESPONDENCE CONCERNING DAMAGED AND COMPROMISED MONITORING WELL
AT SOLID WASTE MANAGEMENT UNIT 120 (SWMU 120) ZONE G CNC CHARLESTON SC
1/31/2000
SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL



January 31, 2000

Henry Shepard II, P.E.
Caretaker Site Office
NAVFACENGCOM, Southern Division
P. O. Box 190010
North Charleston, SC 29419-9010

Re: Damaged and Compromised Monitoring Well at SWMU 120 (Zone G) located in the Charleston Naval Complex, SCO 170 022 560, Noted during the January 16, 2001 Site Visit.

Dear Mr. Shepard:

The South Carolina Department of Health and Environmental Control (Department) conducted a scheduled site visit at SWMU 120 (Zone G) of the Charleston Naval Complex on January 16, 2001. The attached memorandum provides text for the damaged and compromised groundwater monitoring well observed during the site visit.

The Department recommends that the Navy schedule the field work to rectify the noted discrepancies with the groundwater monitoring well within thirty (30) calendar days of the receipt of this letter or contact the Department for further discussion.

Should you have any questions regarding this letter, please contact me at (803) 896-4088 or Paul Bergstrand at (803) 896-4016.

Sincerely,

Mihir Mehta, Project Manager
Corrective Action Engineering Section
Bureau of Land & Waste Management

Attachment: Memorandum from Mansour Malik to Mihir Mehta dated January 31, 2000.

cc: Paul Bergstrand, Hydrogeology
Mansour Malik, Hydrogeology
Rick Richter, Trident EQC
~~██████████, SOUTH DIV~~
Rob Harrell, SOUTH DIV
Dann Spariosu, EPA Region IV
Dean Williamson, CH2M HILL



*Division of Hydrogeology
2600 Bull Street
Columbia, SC 29201
Telephone (803) 896-4010
Fax (803) 896-4002*

M morandum:

To: Mihir Mehta, Environmental Engineer Associate
Corrective Action Engineering Section
Division Of Hazardous and Infectious Waste Management
Bureau of Land and Waste Management

From: Mansour N. Malik 
Hazardous Waste Section
Division of Hydrogeology
Bureau of Land and Waste Management

Date: 01/31/01
Navbase Charleston (CNC)
Charleston, South Carolina
SC 1 70 022 560

Well Status:

On our visit to Zone G, with CH2M-Hills representative Geologist: William Elliott on the 16th of January 2001, we inspected monitoring wells in SWMU 120. Monitoring well 120GW002 found to be displaced. The cemented cap with its assigned plate was found lying a few feet away from the original well location. While SWMU 120 is still in the RFI status, this monitoring well is still crucial to any further investigation/sampling. Please bring this matter to the attention of the Navy. Thanks.



PROMOTE PROTECT PROSPER

2600 Bull Street
Columbia, SC 29201-1708

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HENRY HNS 2/10
MATT W
FILE

February 15, 2000

Henry Shepard II, P.E.
Caretaker Site Office
NAVFACENCOM, Southern Division
P. O. Box 190010
North Charleston, SC 29419-9010

Re: Modify the current boundary of AOC 573 located in Zone E.

Dear Mr. Shepard:

Based on the site visit conducted on February 10, 2000 with the personnel from EPA, Navy, and EnSafe the South Carolina Department of Health and Environmental Control (Department) recommends that the boundary of AOC 573 be expanded to include the fenced in area of the facility and the area outside the fence that have been contaminated by the releases from the operations within the fenced in area. Based on the visual observation the ground appears to be heavily stained and the contamination appears to have migrated freely into an electrical vault and the storm water drain running along the fence line of Avenue B South. The Zone E RCRA Facility Investigation should fully characterize the nature and extent of contamination and evaluate its risk, hazard, and leaching concerns for all applicable media. The revised Zone E RFI Work Plan should provide the characterization strategy to address the above stated concerns.

Should you have any questions, please contact me at (803) 896-4088 or Paul Bergstrand at (803) 896-4016.

Sincerely,

M. P. Mehta

Mihir P. Mehta, Project Manager
Corrective Action Engineering Section
Bureau of Land & Waste Management

cc: Rick Richter, Trident EQC
Tony Hunt, SOUTHDIV
Dann Spariosu, EPA Region IV
Paul Bergstrand, Hydrogeology
Ann Clark, EQC Administration



2600 Bull Street
Columbia, SC 29201-1708

Henry Shepard II PE
3/12/2000
must

March 7, 2000

CERTIFIED LETTER
RETURN RECEIPT REQUESTED

Henry Shepard, II, PE
Caretaker Site Office
NAVFACENGCOM, Southern Division
P. O. Box 190010
North Charleston, SC 29419-9010

Re: Requirement for Draft Groundwater Monitoring Plan
Charleston Naval Complex
SC0 170 022 560

Dear Mr. Shepard:

The South Carolina Department of Health and Environmental Control (Department) requires that the Navy submit a Draft Groundwater Monitoring Plan, outlining the location of monitoring wells, monitoring frequency, analytes to be monitored, reporting strategy, maps/figures, and other relevant information by March 27, 2000. The groundwater monitoring plan is required under Condition II.E.3. "Required Contents" and in Appendix B of the Charleston Naval Complex (CNC) Hazardous Waste Permit, as well as in R.61-79.264.100 and R.61-79.264.101 of the South Carolina Hazardous Waste Management Regulations. The goal to be accomplished by the groundwater monitoring plan is to assess and monitor the movement of groundwater and groundwater contamination migrating off the CNC property, impacting surface water bodies, and/or impacting the uncontaminated groundwater on the base property. Groundwater monitoring must continue while the RCRA Facility Investigation is being completed and until the selection of appropriate corrective action is in place.

According to Departmental records, the groundwater monitoring issue was discussed during the October 1997 CNC Tier I team meeting. The discussion was recorded as an action item for the Navy to submit a groundwater monitoring plan by December 1997. This issue was again brought to the Navy's attention during the August 24, 1999 team meeting. Also during the August 1999 meeting, the Department provided an initial list of Solid Waste Management Units (SWMUs), Areas of Concern (AOCs), and groundwater monitoring well locations that must be monitored. The list was based on confirmed groundwater contamination for which the groundwater monitoring plan would be developed. The urgency for the development and implementation of this plan was emphasized through subsequent discussions between the Department and the Navy. During the February 8, 2000 CNC Tier I team meeting, the Department again discussed the need and requirement for the groundwater monitoring plan, and requested that the Navy provide the draft plan by March 3, 2000 (recorded as an action item). On February 28, 2000, the Department received an e-mail reply from the Navy requesting an extension to the March 3, 2000 deadline due to the timing of the award for the new fixed price contract.

Mr. Henry Shepard, II, PE
March 7, 2000
Page 2 of 2

The Department understands the administrative constraints of the Navy and the new contractor, therefore, the Department is allowing the Navy to submit the draft groundwater monitoring plan by March 27, 2000. The Department is willing to discuss the details of the referenced draft plan and the deadline for the final plan with the Navy and the contractor during the next CNC Tier I team meeting on March 28 - 30, 2000.

Thank you for your cooperation in this matter. Should you have any questions or require additional information, please contact Mihir Mehta at (803) 896-4088 or Paul Bergstrand at (803) 896-4016.

Sincerely,



David M. Scaturo, PE, PG, Manager
Corrective Action Engineering Section
Bureau of Land and Waste Management

cc: Rick Richter, Trident EQC
Tony Hunt, PE, SOUTHDIV
Dann Spariosu, PhD, EPA Region IV
Ann Clark, EQC Administration
Melissa King, PE, Corrective Action Engineering
Charles Watson, Corrective Action Engineering
Susan Peterson, Corrective Action Engineering
Paul Bergstrand, PG, Hydrogeology
Jack Gelting, PG, Hydrogeology
Michael Danielsen, Hydrogeology
BLWM File No. 50484



2600 Bull Street
Columbia, SC 29201-1708

Handwritten: HNK 3/14
M.I.

Certified Mail
Return Receipt Requested

March 9, 2000

Henry Shepard II, P.E.
Caretaker Site Office
NAVFACENGCOM, Southern Division
P. O. Box 190010
North Charleston, SC 29419-9010

Subject: Environmental Indicators
Charleston Naval Complex, SCO 170 022 560

Dear Mr. Shepard:

As we informed you by letter on June 8, 1999, your facility is one of the approximately 1,700 facilities in the nation (34 of which are located in South Carolina) which constitute EPA's Corrective Action Baseline. The Department is committed to the completion of site stabilization at most of these facilities by the year 2005. For purposes of this commitment, site stabilization is measured by two (2) Environmental Indicators:

- 1) the control of current human exposures to harmful releases of contamination from the facility, and
- 2) the control of the migration of contaminated groundwater.

Since our records indicate that your facility is not meeting one or both of the above Environmental Indicators, the Department asks that you carefully review the Environmental Indicator Evaluation Memorandum (EI Memo) and the EI Guidance that are attached with this letter.

EPA has asked all states to develop EI Project Schedules for all Corrective Action Baseline facilities, including your facility. The EI Project Schedule attempts to identify the specific factors which stand in the way of a "YES" determination for one or both Environmental Indicators, the steps which would need to be taken to address the identified factors, the dates for completion of these steps, culminating in a "YES" determination by a projected date.

Please note that you are under no obligation to work with us to develop a final EI Project Schedule. However, the Department believes that your voluntary cooperation will result in a more accurate schedule. The development of accurate schedules will help SCDHEC and USEPA to determine when we will meet the EI goals we developed under GPRA. Therefore, I will be contacting you in the near future to discuss this letter and to jointly develop the EI Project Schedule. We hope that you will take this opportunity to open a focused dialogue with the CNC Tier I team in the next team meetings.

The EI Project Schedule is a planning tool - not an enforcement document. As a planning tool, the schedule will allow SCDHEC, USEPA and the facility (CNC) to focus our efforts to those items at the facility which need the most immediate attention (e.g., controlling current human exposures and migration of contaminated groundwater). We wish to emphasize that the activities and schedules in CNC RCRA Corrective Action permit remain enforceable. The EI Project Schedule does not provide a "shield" from enforcement if you violate any term or condition of your permit.

If you should have any questions about this letter, please contact me at (803) 896-4088.

Sincerely,



Mihir P. Mehta, Project Manager
Corrective Action Engineering Section
Bureau of Land & Waste Management

Enclosures: 1. Environmental Indicator Evaluation Memorandum
 2. EI Project Schedule Model and Guidance

cc: Tony Hunt, SOUTHDIV
 Rick Richter, Trident EQC (w/o attachments)
 Dann Spariosu, EPA Region IV (w/o attachments)
 Ann Clark, EQC Administration (w/o attachments)
 David Scaturo, Corrective Action Engineering (w/o attachments)
 Charles Watson, Corrective Action Engineering (w/o attachments)
 Susan Peterson, Corrective Action Engineering (w/o attachments)
 Paul Bergstrand, Hydrogeology (w/o attachments)
 Michael Danielsen, Hydrogeology (w/o attachments)



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960
NOV 29 1999

John IL
Ken copied

12-10-99

copies to: Jack
Shelley
David S

4WD-RPB

Mr. Hartsill Truesdale, P.E., Chief
Bureau of Solid & Hazardous Waste Management
South Carolina Department of Health &
Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

Subject: Region 4 EI Guidance Package

Dear Mr. Truesdale:

The United States Environmental Protection Agency (EPA), Region 4, hereby transmits the Region 4 Guidance Package which covers the evaluation of facilities for the two RCRA Corrective Action Environmental Indicators (EI). This document was prepared by a workgroup comprised of representatives from the Region 4 RCRA Programs Branch, the Enforcement and Compliance Branch, and the Federal Facilities Branch.

The guidance included in the Region 4 Package was issued as Interim Final Guidance on February 5, 1999, by the Office of Solid Waste (OSW). Note that this Region 4 Guidance Package differs from the previous Region 4 Model Memo, dated October 6, 1997, which was referenced in the Region 4 Guidance Package and used as guidance for the development of most of the EI Evaluations (also referred to as EI Memos).

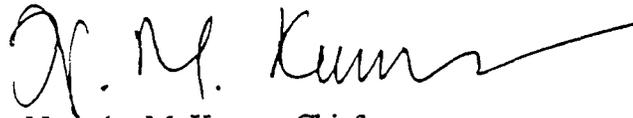
We recommend that all EI determinations which are over two years old and carrying a "NO" or "IN" be reexamined through the application of the referenced EI Guidance and the most recent cleanup data. We also recommend that the Region 4 EI Guidance Package be made available to the Government Performance Results Act (GPRA) baseline facilities in your state so that there is a common awareness of the basis for an EI decision. As part of the Region 4 strategy to meet established GPRA targets, EPA recommends that you urge all facilities that have not attained a "YES" determination for both indicators to:

1. Develop a project schedule which shows the steps to be taken along with estimated dates of completion, to achieve a "YES" determination for the two indicators.
2. Revise the EI Evaluation as soon as the facility believes a "YES" determination has been attained for each indicator.

3. Submit a revised EI Evaluation to the State and to EPA for review and concurrence.

Should you have comments, questions or concerns about the enclosed Region 4 EI Guidance Package, please contact Wes Hardegree, of my staff, at (404) 562-8486.

Sincerely,

A handwritten signature in black ink, appearing to read "N. M. Kumar", with a long horizontal flourish extending to the right.

Narindar M. Kumar, Chief
RCRA Programs Branch
Waste Management Division

Enclosure

INTRODUCTION

This file contains the July 1999 **Region 4 Environmental Indicator (EI) Guidance Package** to be used in evaluating facilities for the two (2) RCRA Corrective Action Environmental Indicators (EIs). The Region 4 EI Guidance Package is comprised of the following two (2) components:

1. An **Introductory Memo**, which briefly explains the facility being evaluated, summarizes the conclusions of the evaluation, and outlines any necessary next steps to control exposures and/or groundwater migration, and
2. An **Attachment** to the Introductory Memo, which contains the detailed basis for the conclusions presented in the Introductory Memo. The attachment is actually the **February 5, 1999, Interim Final EI Guidance developed by EPA Headquarters** with input from the Regions and States.***

For a **one page flow diagram** which briefly outlines the questions covered by the Interim Final Hqs's EI Guidance, please see the following file: g:\user\shared\ei\Hqs EI Chart.

*** NOTE: The Region 4 Model Memo dated October 6, 1997, which referenced an attachment containing an evaluation guidance developed by Region 4, is now **REPLACED** by the attached guidance. EPA Region 4 strongly encourages the States to **USE** the July 1999, Region 4 Guidance Package for EI reevaluations or new evaluations performed after February 5, 1999.

QUICK REFERENCE FOR STATUS OF ENVIRONMENTAL INDICATORS					
Name and EPA I.D. Number	Location (City or Town)	Current CA725 Decision	Current CA750 Decision	If Current Decision is Negative, Projected Date for Positive EI	
				CA725	CA750

4WD-[RPB, FFB, ECB, STATE PROGRAM HEADING]

SUBJ: Evaluation of *[Facility name]*'s status under the RCRIS Corrective Action
Environmental Indicator Event Codes (CA725 and CA750)
EPA I.D. Number: *[I.D. Number]*

FROM: *[Facility Manager]*

THRU: *[Section Chief]*

TO: *[Branch Chief]*

I. PURPOSE OF MEMO

This memo is written to formalize an evaluation of *[facility name]*'s status in relation to the following corrective action event codes defined in the Resource Conservation and Recovery Information System (RCRIS):

- 1) Current Human Exposures Under Control (CA725),
- 2) Migration of Contaminated Groundwater Under Control (CA750).

Concurrence by the *[Federal Facilities, Enforcement and Compliance, RCRA Programs, or State Programs]* Branch Chief is required prior to entering these event codes into RCRIS. Your concurrence with the interpretations provided in the following paragraphs and the subsequent recommendations is satisfied by dating and signing at the appropriate location within Attachments 1 and 2.

II. HISTORY OF ENVIRONMENTAL INDICATOR EVALUATIONS AT THE FACILITY AND REFERENCE DOCUMENTS

This particular evaluation is the *[first, second, third, etc.]* evaluation for *[facility's name]*. *[If this is not the first evaluation, then briefly present the results of the earlier evaluation and attach a copy of the earlier evaluation memo. As the number of reevaluations increases for a facility, the project manager will have to determine whether complete copies of the earlier evaluations need to be attached.]*

III. FACILITY SUMMARY

[Insert a brief discussion on the land use surrounding the facility, the facility's location, operations, type of waste(s) generated, facility's regulatory status or any other general information on the facility which may assist the reader in understanding the facility.]

IV. CONCLUSION FOR CA725
(Brief Outline of Issues Leading to an EI of YE, NO or IN)

*[After completing the questions in Attachment 1, please summarize the CA725 conclusion here for easy reference by the Branch Chief or the general public. If the conclusion is that current human exposures are controlled, then please outline why a positive evaluation is reasonable (e.g., there are no complete current exposure pathways, complete current human exposures to contamination have been controlled by Interim Measures, etc.). **More importantly,** if the conclusion is that current human exposures are uncontrolled (i.e., NO) or that there is insufficient information available to make a decision (i.e., IN), then please outline what has caused the evaluation to be NO or IN (e.g., human exposures to contaminated soil exist, SWMUs 2, 5 and 11 have not been assessed yet, etc.). This brief explanation of why the evaluation is NO or IN will be critical in development of the next steps and the EI Interim Milestone Schedule in Section VI.]*

V. CONCLUSION FOR CA750
(Brief Outline of Issues Leading to an EI of YE, NO or IN)

*[After completing the questions in Attachment 2, please summarize the CA750 conclusion here for easy reference by the Branch Chief or the general public. If the conclusion is that migration of groundwater releases are controlled, then please outline why a positive evaluation is reasonable (e.g., migration of contaminated groundwater have been controlled by Interim Measures). **More importantly,** if the conclusion is that the migration of contaminated groundwater is uncontrolled (i.e., NO) or that there is insufficient information available to make a decision (i.e., IN), then please outline what has caused the evaluation to be NO or IN (e.g., the groundwater plume on the south side of the facility is still migrating, field data on the effectiveness of the Interim Measures system has not been collected/submitted yet, etc.). This brief explanation of why the evaluation is NO or IN will be critical in development of the next steps and the EI Interim Milestone Schedules in Section VI.]*

VI. SUMMARY OF FOLLOW-UP ACTIONS
(Discussion of What is Needed to Get to Yes, with EI Interim Milestone Schedule)

A. CA725

[Insert a brief discussion on what actions will be or are being taken by the RCRA/HSWA Program to control current human exposures which are not already controlled. If insufficient information on media contamination exists, then briefly explain what actions are to be taken to obtain the necessary information. If insufficient information is available on current human

exposures, then explain what actions will be taken to obtain the necessary information. This discussion should conclude with a statement of when the negative indicator (i.e., NO or IN) will reach a Yes (e.g., It is projected that CA725 will reach YE in Fiscal Year 2003).] **NOTE ON NEGATIVE EVALUATIONS:** In addition to your narrative discussion, please include an EI Interim Milestone Schedule for completing those key actions items needed to allow for a Yes determination to be made for this facility. For example,

(FACILITY NAME) EI INTERIM MILESTONE SCHEDULE CA725			
Activity(ies) (events as defined in RCRIS) ¹	CA RCRIS Event Code	Scheduled Date ² (QTR & FY)	Remarks ³ (Include unit(s) and description of action(s))
<i>example (e.g.): Stabilization Measures Implemented</i>	CA600	3/31/00	<i>SWMU 17 – imposition of excavation and treatment of PCB contaminated soils above industrial RBC's SWMU 10 - imposition of institutional controls.</i>
<i>e.g., Int. Measures Progress Report Received</i>	CA643	6/31/00	<i>SWMU 10: Report on Institutional Controls Received</i>
<i>e.g., Interim Measures Report Received</i>	CA640	9/31/00	<i>SWMU 17: Report on completion of soil excavation</i>

¹ For activities, use RCRIS Corrective Action (CA) Event Codes as a reference. Given site specific nature and differences, each Project Officer should use **professional judgement** in determining which RCRIS CA Events Codes would apply based on approach being used. Remarks should be provided that outline what specific actions and milestones are occurring to support attainment of a positive EI determination.

If none of the existing RCRIS CA Event Codes fit the actions at your facility, a catch-all regional CA Event Code will be available for use. The regional CA Event Code will be provided at a later date. This catch-all RCRIS CA Event Code will be titled "Tech Memo/Report in Support of EI Determination."

² Use the last day of a Fiscal Quarter for the Scheduled Date – 12/31/XX, 3/31/XX, 6/30/XX, and 9/30/XX. The Scheduled Date for the estimated positive EI determination supplied in this memo should correspond to the Beginning of Year Plan (BYP)

³ Include a brief summary of the Remarks in the corresponding RCRIS CA Event Code's Comment Field

Activity(ies) (events as defined in RCRIS) ¹	CA RCRIS Event Code	Scheduled Date ² (QTR& FY)	Remarks ³ (Include unit(s) and description of action(s))
<i>e.g., Stabilization Construction Complete</i>	CA650	12/31/01	<i>Review finds that Interim Measures undertaken have been completed at SWMUs 17 and 10.</i>
<i>e.g., Current Human Exposures Under Control Determination</i>	CA725	12/31/01	<i>Revised EI Memo</i>

In developing your EI Interim Milestone Schedules, please keep in mind that the Interim Milestone Schedule will be used to track progress toward reaching a positive evaluation.

A. CA750

[Insert a brief discussion on what actions will be or are being taken by the RCRA/HSWA Program to control the migration of contaminated groundwater. If insufficient information on media contamination exists, then briefly explain what actions are to be taken to obtain the necessary information. The discussion should conclude with a statement of when the negative indicator (i.e., NO or IN) will reach a Yes (e.g., It is projected that CA725 will reach YE in Fiscal Year 2003).] NOTE ON NEGATIVE EVALUATIONS: In addition to your narrative discussion, please include an EI Interim Milestone Schedule for completing those key actions items needed to allow for a Yes determination to be made for this facility. For example,

(FACILITY NAME) EI INTERIM MILESTONE SCHEDULE CA750			
Activity(ies) (events as defined in RCRIS) ¹	CA RCRIS Event Code	Scheduled Date ² (QTR& FY)	Remarks ³ (Include unit(s) and description of action(s))
<i>example (e.g.), Stabilization Measures Implemented</i>	CA600	9/30/00	<i>SWMU 1: imposition of SVE/AS system for VOC soil hot spot and GW plume</i>
<i>e.g., Interim Measures Report Received</i>	CA640	6/30/01	<i>SWMU 1: GW effectiveness and monitoring report for VOC plume.</i>

Activity(ies) (events as defined in RCRIS) ¹	CA RCRIS Event Code	Scheduled Date ² (QTR & FY)	Remarks ³ (Include unit(s) and description of action(s))
<i>e.g., Stabilization Construction Complete</i>	CA650	9/30/01	<i>Review of GW effectiveness monitoring report shows stabilization objectives to have been met.</i>
<i>e.g., Migration of Contaminated Groundwater Under Control</i>	CA750	9/30/01	<i>Revised EI Memo</i>

In developing your EI In term Milestone Schedule, please keep in mind that the Interim Milestone Schedule will be used to track progress toward reaching a positive evaluation.

VII. LEVEL OF CONFIDENCE IN REACHING A POSITIVE EI EVALUATION AND MAJOR ISSUES

[If the evaluation is NO or IN for one or both of the Environmental Indicators, please offer an opinion on the level of confidence held in the schedule outlined in Section VI. In offering this opinion, please explain those major issues which greatly influence, positively or negatively, the level of confidence.]

Attachments: 1. CA725: Current Human Exposures Under Control
 2. CA750: Migration of Contaminated Groundwater Under Control

ATTACHMENT 1
DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
RCRA Corrective Action
Environmental Indicator (EI) RCRIS Code (CA725)
Current Human Exposures Under Control

Facility Name: _____
Facility Address: _____
Facility EPA ID #: _____

1. Has all available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been considered in this EI determination?

- _____ If yes - check here and continue with #2 below,
_____ If no - re-evaluate existing data, or
_____ If data are not available skip to #6 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future. _____

Definition of "Current Human Exposures Under Control" EI

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

Duration / Applicability of EI Determinations

**Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS Event Code (CA725)**

Version: Interim Final
2/5/99

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be "**contaminated**"⁴ above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

Media	Yes	No	?	Rationale/Key Contaminants
Groundwater				
Air (indoors) ⁵				
Surface Soil (e.g., <2 ft)				
Surface Water				
Sediment				
Subsurface Soil (e.g., >2 ft)				
Air (outdoors)				

_____ If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

_____ If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

_____ If unknown (for any media) - skip to #6 and enter "IN" status code.

Rationale and Reference(s): _____

⁴ "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

⁵ Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

3. Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

<u>Summary Exposure Pathway Evaluation Table</u>							
Potential Human Receptors (Under Current Conditions)							
<u>"Contaminated"</u> <u>Media</u>	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food ⁶
Groundwater	Yes/No	Yes/No	Yes/No	Yes/No	N/L	N/L	Yes/No
Air (indoors)	Yes/No	Yes/No	Yes/No	N/L	N/L	N/L	N/L
Soil (surface, e.g., <2 ft)	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No
Surface Water	Yes/No	Yes/No	N/L	N/L	Yes/No	Yes/No	Yes/No
Sediment	Yes/No	Yes/No	N/L	N/L	Yes/No	Yes/No	Yes/No
Soil (subsurface, e.g., >2 ft)	N/L	N/L	N/L	Yes/No	N/L	N/L	Yes/No
Air (outdoors)	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	N/L	N/L

Instructions for Summary Exposure Pathway Evaluation Table:

1. For Media which are not "contaminated" as identified in #2, please strike-out specific Media, including Human Receptors' spaces, or enter "N/C" for not contaminated.
2. Enter "yes" or "no" for potential "completeness" under each "Contaminated" Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations, some potential "Contaminated" Media - Human Receptor combinations (Pathways) are not assigned spaces in the above table (i.e, N/L - **not likely**). While these combinations may not be probable in most situations, they may be possible in some settings and **should be added as necessary**.

_____ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major

⁶ Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

pathways).

_____ If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.

_____ If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code

Rationale and Reference(s): _____

4 Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **"significant"**⁷ (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?

_____ If no (exposures can not be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

_____ If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) - continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

_____ If unknown (for any complete pathway) - skip to #6 and enter "IN" status code

Rationale and Reference(s): _____

5 Can the **"significant" exposures** (identified in #4) be shown to be within **acceptable** limits?

⁷ If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training and experience.

6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

_____ YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the _____ facility, EPA ID # _____, located at _____ under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

_____ NO - "Current Human Exposures" are NOT "Under Control."

_____ IN - More information is needed to make a determination.

Completed by (signature) _____ Date _____
(print) _____
(title) _____

Supervisor (signature) _____ Date _____³
(print) _____
(title) _____
(EPA Region or State) _____

Locations where References may be found:

Contact telephone and e-mail numbers

(name) _____
(phone #) _____
(e-mail) _____

⁸ FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.

ATTACHMENT 2
DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
RCRA Corrective Action
Environmental Indicator (EI) RCRIS Event Code (CA750)
Migration of Contaminated Groundwater Under Control

Facility Name: _____
Facility Address: _____
Facility EPA ID #: _____

1. Has all available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been considered in this EI determination?

- _____ If yes - check here and continue with #2 below,
_____ If no - re-evaluate existing data, or
_____ If data are not available, skip to #8 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future. _____

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRAs). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated groundwater and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Is **groundwater** known or reasonably suspected to be "**contaminated**"⁹ above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

_____ If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.

_____ If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s): _____

⁹ "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

3. Has the **migration** of contaminated groundwater **stabilized** such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"⁷ as defined by the monitoring locations designated at the time of this determination?

_____ If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination"⁷.

_____ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"¹⁰) - skip to #8 and enter "NO" status code, after providing an explanation.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s): _____

4. Does "contaminated" groundwater **discharge** into **surface water** bodies?

¹⁰ "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be "**insignificant**" (i.e., the maximum concentration³ of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature and number of discharging contaminants, or environmental setting) which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

_____ If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration³ of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) providing a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

_____ If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration³ of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations¹¹ greater than 100 times their appropriate groundwater "levels," providing the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identifying if there is evidence that the amount of discharging contaminants is increasing.

_____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s): _____

¹¹ As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

6. Can the discharge of "contaminated" groundwater into surface water be shown to be "currently acceptable" (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented¹²)?

_____ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR 2) providing or referencing an interim-assessment,¹³ appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

_____ If no - (the discharge of "contaminated" groundwater can not be shown to be "currently acceptable") - skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

_____ If unknown - skip to 8 and enter "IN" status code. :

Rationale and Reference(s): _____

¹² Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

¹³ The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

RCRA Corrective Action
Environmental Indicator (EI) RCRIS Event Code (CA750)

Version: Interim Final
2/5/99

8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

_____ YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the _____ facility, EPA ID # _____, located at _____. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater" This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

_____ NO - Unacceptable migration of contaminated groundwater is observed or expected.

_____ IN - More information is needed to make a determination.

Completed by (signature) _____ Date _____
(print) _____
(title) _____

Supervisor (signature) _____ Date _____
(print) _____
(title) _____
(EPA Region or State) _____

Locations where References may be found:

Contact telephone and e-mail numbers

(name) _____
(phone #) _____
(e-mail) _____

Optional Exposure Pathway Evaluation Work Sheet
Referenced in CA725 - Question 3

Explanatory Footnotes:

Exposure Pathway Evaluation Work Sheet is a qualitative evaluation of the "completeness" of major pathways between contamination and exposures by plausible receptors. This screening only evaluates the major pathways (that are common at many/most contaminated site situations) and should not be used to reduce the scope of a site-specific risk assessment (which should include all pathways which may be significant at a given site).

Additional note: The following are special situations in which project managers should be cautious about using benchmark or other generic screening levels that have been derived with specific assumptions. In any of the situations, the risk manager should have a risk assessor provide assistance to review the use of the screening models.

- 1) The use of screening levels when multiple contaminants are present at a site; most guidances were developed for single contaminant exposures scenarios and are not appropriate to consider compounded or synergistic effects of multiple contaminants.
- 2) The use of screening levels when multiple routes of exposure are possible for given contaminant; some of the screening guidances consider multiple exposure routes but all of them do not.
- 3) The use of soil screening levels at sites with oily soils, free phase hydrocarbon on the groundwater, and free phase hydrocarbon below the water table; the guidances were developed assuming water leaching of soils not oil transport of contaminants through soils.

Optional Exposure Pathway Evaluation Work Sheet
Referenced in CA725 - Question 3

(1/5/99 Draft)

Screening Potentially Complete Pathways for Contaminated GROUNDWATER

Off-site GW Cont.	wells impacted? wells not "	Potable use Non-potable uses	Phyl/Inst. controls? (e.g., treatment @ wellhead?) Watering plants? Swimming pools? Showering??	Resident (ingestion) (inhalation) (dermal)
On-site GW Cont.	wells impacted? wells not "	Potable use Non-potable uses	Phyl/Inst. controls? (e.g., gw-use restrictions?) Process-water exposures? Watering landscaping? Showering??	Worker (M) (ingestion) (inhalation) (dermal)
On- or Off-site GW Cont.	const. into gw expected? " " not "	Phyl/Inst. controls? (e.g., PPE/Training req?)	Const. Work. (inhalation) (dermal cont.)	
On- or Off-site GW	irrigation of veg./fruit expected? " : veg./fruit not "	Phyl/Inst. controls? (e.g, testing/restrictions?)	Food Supply (Ingestion) Cont.	

Screening Potentially Complete Pathways for Contaminated SURFACE SOIL

Off-site SS Cont.	contam. expected contam. not "	Private yards, etc. Not heavy use areas	Phyl/Inst. controls? (e.g., vegetation, etc.)	Resident Recreator (ingestion) (dermal cont.) (inhalation)
On-site SS Cont.	contam. expected contam. not "	High use/maint. areas? Not heavy use areas	Phyl/Inst. controls? (e.g., PPE/Fencing?) (Ok for children?)	Worker (M) Trespasser (i n g e s t i o n) (inhalation) (dermal)
On- or Off-site SS Cont.	cont. construction expected? construct. not "		Phyl/Inst. controls? (e.g., PPE/Training req?)	Const. Work. (ingestion) (inhalation) (dermal cont.)
On- or Off-site SS Cont.	veg./fruit/game expected? veg./fruit/game not "		Phyl/Inst. controls? (e.g., Testing/Restrictions?)	Food Supply (Ingestion)

Screening Potentially Complete Pathways for Contaminated SURFACE WATER/SEDIMENT

Off-site SW/S Cont.	contam. expected? contam. not " "	Water supply intakes? " not expected	Phyl/Inst. controls? (e.g., treated prior to)	Resident (ingestion) (inhalation) (dermal cont.)
Off-site SW/S Cont.	contam. expected? contam. not " "	Private yards, etc. Not heavy use areas	Phyl/Inst. controls? (e.g., remoteness?) (children?)	Resident Recreator (ingestion) (inhalation) (dermal cont.)
On-site SW/S Cont.	contam. expected contam. not " "	High use/maint. areas? Not heavy use areas	Phyl/Inst. controls? (e.g., fences/signs?) (children?)	Worker (M) Tresspassor (ingestion) (inhalation) (dermal cont.)
On- or Off-site SW/S Cont.	construct. expected? construct. not " "		Phyl/Inst. controls? (e.g., PPE/training req?)	Const. Work. (ingestion) (inhalation) (dermal cont.)
On- or Off-site SW/S Cont.	fish/shellfish/veg./game expected? fish/shellfish/veg./game not " "		Phyl/Inst. controls? (e.g., consumption restrictions?)	Food Supply (Ingestion)

Screening Potentially Complete Pathways for Contaminated SUB-SURFACE SOIL

On- or Off-site SubSoil	construction expected? construct. not "	Phyl/Inst. controls? (e.g., PPE/training req?)	Const. Work. (ingesti on) (inhalation) (dermal cont.)
Cont.			

On- or Off-site SubSoil	deep rooted veg./fruit expected? " veg./fruit not " (e.g., planting restrictions?)	Phyl/Inst. controls?	Food Supply (ingestion)
Cont.			

Screening Potential Pathways for Contaminated INDOOR AIR

Contamination in groundwater, surface or subsurface soil, surface water, or sediments;

Adjacent to homes? " not " "	vapors/particulates likely? no " "	Phyl/Inst. controls? (e.g., barriers/veg.)	Resident (inhalation- indoors)
Adj. to workplace bldgs? " not " "	vapors/particulates likely? no " "	Phyl/Inst. controls? (e.g., barriers/veg.)	Worker (inhalation- indoors)

Outdoor Air - Addressed in Earlier Pathways

Examples of Exposure Controls

1. Physical Exposure Controls

Caps
Fences/walls
Security Guards
Vegetative Cover
Natural Inaccessibility
Remoteness/Unattractiveness
Treatment of media (prior to exposure)
Vapor barriers / ventilation systems

2. Institutional Exposure Controls

Posted Signs
Land-use Restrictions (e.g., zoning, deed, Responsible Party statements)
Level of PPE (Personal Protection Equipment)
Safety Training / Newsletters
Activity Permits / Notifications (e.g., construction permits / notifications)
Well Restrictions
Media-use Restrictions
Responsible Party statements of activity / use restrictions
Testing / Monitoring (and restrictions if necessary)
Consumption Restrictions
Restrictions on Frequency of Exposures



2600 Bull Street
Columbia, SC 29201-1708

MEMORANDUM

COMMISSIONER:
Douglas E. Bryant

TO: Project File

BOARD:
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Corrective Action Engineering Section
Bureau of Land and Waste Management

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Caron Falconer, RCRA North Programs Section USEPA Region IV
Rich Richter, Trident District

Mark B. Kent

Cyndi C. Mosteller

FROM: Johnny Tapia P., Environmental Engineer Associate
Corrective Action Engineering Section
Bureau of Land and Waste Management

Brian K. Smith

Rodney L. Grandy

SUBJ: Evaluation of the Charleston Naval Shipyard's status under the RCRIS
Corrective Action Environmental Indicator Event Codes (CA725 and CA750)

EPA I.D. Number: SC0 170 022 560

DATE: September 18, 1997

I. PURPOSE OF MEMO

This memo is written to formalize an evaluation of the Charleston Naval Shipyard's status in relation to the following RCRIS corrective action codes:

- 1) Human Exposures Controlled Determination (CA725),
- 2) Groundwater Releases Controlled Determination (CA750).

The applicability of these event codes adheres to the definitions and guidance provided by the Office of Solid Waste (OSW) in the July 29, 1994, memorandum to the Regional Waste Management Division Directors.

The State of South Carolina became authorized, in January 1995, to implement those portions of RCRA covered under the HSWA Corrective Action process. The recommendations provided in this memo have been generated in cooperation with the USEPA Region IV staff through the use of EPA's current Environmental Indicator ranking system.

II. HUMAN EXPOSURES CONTROLLED DETERMINATION (CA725)

There are three (3) national status codes under CA725. These status codes are:

- 1) YE Yes, applicable as of this date.
- 2) NA Previous determination no longer applicable as of this date.
- 3) NC No control measures necessary.

The State of South Carolina in conjunction with EPA Region IV, has also added a RCRIS status code to CA725 which tracks initial evaluations in which a determination is made that plausible human exposures to current contamination risks are not controlled. This status code is listed as "NO, not applicable as of this date." Use of this status code is only applicable during the first CA725 evaluation. Evaluations subsequent to the first evaluation will use the national status codes (i.e., YE, NA and NC) to explain the current status of exposure controls.

Note that the three national status codes for CA725 are based on the entire facility (i.e., the codes are not SWMU specific). Therefore, every area at the facility must meet the definition before a YE, NA or NC status code can be entered for CA725. Similarly, the status code, NO, is applicable if plausible human exposures are not controlled in any areas of the facility.

This particular CA725 evaluation is the first evaluation performed by SCDHEC for the Charleston Naval Shipyard. Because assumptions have to be made as to whether or not human exposures to current media contamination are plausible and, if plausible, whether or not controls are in place to address these plausible exposures, this memo first examines each environmental media (i.e., soil, groundwater, surface water, air) at the entire facility including any offsite contamination emanating from the facility rather than from individual areas or releases. After this independent media by media examination is presented, a final recommendation is offered as to the proper CA725 status code for the Charleston Naval Shipyard.

The following discussions, interpretations and conclusions on contamination and exposures at the facility are based on the following reference documents:

1. Memo from Lawson Anderson (EA/H) to Project Team
"Summary of Geoprobe Investigation CTO-290" June 28, 1996.
2. Zone H Draft RFI Report, July 5, 1996.
3. Zone A Draft RFI Report, September 12, 1996.
4. Memo from Lawson Anderson (EA/H) to Tony Hunt (SOUTHDIV)
"Summary of SWMU 39 Investigations for DHEC Hess Oil Project Manager"
October 9, 1996.
5. Site-Specific RFI Discussions for SWMUs 1, 2 and 39, August 19, 1997.

III. MEDIA BY MEDIA DISCUSSION OF CONTAMINATION AND THE STATUS OF PLAUSIBLE HUMAN EXPOSURES

Releases from SWMUs and/or AOCs have contaminated groundwater at concentrations above relevant action levels. SWMU 39 is the site of a former storage area for petroleum, oil and lubricant (POL) drums. As part of Zone A investigation, detections of chlorinated solvents and BTEX compounds were reported in shallow groundwater, as reported in references 3 and 4. There has been a total of 11 groundwater sampling event, a Geoprobe investigation and a CPT investigation (Reference 5), which reported the following levels of detections: PCE= 1-16 ug/l (MCL= 5 ug/l); TCE=1-91 ug/l (MCL= 5 ug/L); DCE=1.2-6.5 ug/l (MCL= 7 ug/l); vinyl chloride VC= 1.9-5.8 ug/L (MCL= 2 ug/l); and Benzene= 25-170 ug/l (MCL= 5 ug/l). Subsequent investigation (reference 1) identified a suspected plume and levels consistent with previous investigations. Deep and intermediate groundwater bearing zones are being monitored, specially at the west boundary of the base, that is adjacent to a marsh area and close to a residential zone. At this point vinyl chloride was detected in shallow groundwater up to 6.2 ug/L (Reference 5). A northwest to southwest trending divide lies in the central portion of zone A, and behaves as a recharge zone for the shallow aquifer. Groundwater to the east of this divide flows toward the Cooper River. To the south, groundwater flows toward Noisette Creek; to the west, groundwater flows either to the west into the marsh and wetland feeding Noisette Creek or to the south directly toward Noisette Creek. The surficial aquifer at the Charleston Naval Base is not used as a source of drinking water, and research indicated that no drinking water wells exist in a four mile radius of the base, however private non-reported wells do exist.

SWMU 166 located on the Naval Annex property has a chlorinated solvents plume in shallow, intermediate and deep groundwater that has already moved off-site. The detections off-site were: PCE=25-100 ug/L (MCL= 5ug/L), TCE=4-100 ug/L (MCL= 5ug/L), DCE=7-47 ug/L (MCL=7ug/L). TCE concentrations at the property boundary reached 3,940 ug/L. This information is contained in references 2, 5, 6, 7 & 8 listed in section V of this memo. Currently no controls are in place.

In addition to the observed groundwater contamination, there are plausible human exposures to this contamination. For example, at SWMU 39 there is a possible groundwater-to-surface water cross-media transport to the marsh area because of the shallow groundwater table (as low as 2 feet), but surface water and sediment samples collected indicated that transfer from groundwater to surface water is not happening to date. No controls are installed to stop groundwater from migrating off-base or to prevent access to the marsh area and the headwaters of Noisette Creek. Both, the marsh area and Noisette Creek are used regularly for fishing and shellfish collection. Currently, these plausible human exposures to contaminated groundwater are not controlled.

On August 25, 1997 a group of sites were considered for expedited corrective measures. SCDHEC and EPA had asked the Navy to expedite Interim Measures/ Corrective Measures, at sites where off-site migration is possible and no controls are in place. The first submittal towards controlling off-site migration of chlorinated solvents at SWMU 39, SWMU 166 and AOC 607 is due on October 10, 1997. Other sites with groundwater contamination located within the base property will also be included in this submittal.

Based on the above discussion, plausible human exposures to groundwater contamination are currently not controlled and control measures for groundwater are necessary.

Releases from SWMUs and/or AOCs have possibly contaminated surface water at concentrations above relevant action levels. Currently surface water bodies that surround the Charleston Naval Base (Shipyard Creek, Noisette Creek and the Cooper River) are under investigation. There is evidence of past releases from AOCs/SWMUs (through the storm sewer system or surface runoff), to the above mentioned water bodies. Many of these outfalls

discharge into the Cooper river. Dry-docks operations were mainly for repair and construction of naval ships, which was one of the main activities at the base. Waste produced from these activities were regularly released into the Cooper river.

In addition to the possible presence of surface water contamination, there are plausible human exposures, for example, discharges into the creeks and rivers where fishing and shellfish harvesting for human consumption has been observed. These plausible human exposures are not currently controlled.

Based on the above, plausible human exposures to surface water contamination are not controlled and control measures are necessary at this time.

Soil at the facility is contaminated at concentrations above relevant action levels. There are numerous AOCs/SWMUs contaminated with inorganics, PCBs, pesticides. Polycyclic Aromatic Hydrocarbons (PAHs) are present throughout the entire facility. SWMU 9 is a 11 acre landfill that received industrial and domestic waste. This landfill is surrounded by SWMUs 19,20 and 121, AOCs 649, 650, 651, and 654. All are studied as one unit. SWMU 19 had 10 detections of BaP (110-604) ug/Kg. The BaP RBC is 88 ug/Kg. PCBs were detected (32-2,300) ug/Kg. Its RBC = 83 ug/kg. At SWMU 20, BaP was detected in nine out of ten locations in the range (87-820) ug/Kg. The BaP RBC= 88 ug/Kg. At SWMU 121, BaP was detected in 11 soil samples in the range (77-1,700) ug/Kg. Benzo(a)anthracene and Benzo(b)fluoranthene were detected in 8 and 11 soil samples respectively. Their detections range was (93-1,900) ug/Kg and (92-2,700) ug/Kg respectively. The RBC for both PAHs is 880 ug/Kg. PCBs (RBC =83 ug/Kg) were detected in the range of 66- 4,300 ug/Kg. Lead, Beryllium and copper were detected in all soil samples at (40.6-2,770) mg/Kg, (0.16-14.6) mg/Kg, (60-4,060) mg/Kg respectively. Their RBCs are 400 mg/Kg, 0.15 mg/Kg and 3,100 mg/Kg respectively. AOCs 649, 650 and 651 had detections of PAHs Benzo(a)anthracene, Benzo(b)fluoranthene and Benzo(a)pyrene with maximum detections of 1,900, 4,000 and 2,000 respectively.

In addition to the soil contamination at the facility, there are plausible human exposures to this contamination. For example, the area of SWMU 9 that encompass the above mentioned SWMUs and AOCs, is not fenced or has any access control to the area. There is not a designed cap or cover on top of the landfill area. Probable past exposure occurred because a running track and a baseball field were constructed on top of the landfill and adjacent areas. Current site workers have unrestricted access to this area. The area that bounds the landfill, by the side of Shipyard creek has no access controls to prevent trespassers from entering the site. These plausible human exposures are not controlled.

Based on the above discussion, plausible human exposures to contaminated soil are not controlled and control measures are necessary at this time.

Releases to air from soil, groundwater and/or surface water contaminated by SWMUs and/or AOCs at the facility are not known to be occurring at concentrations above relevant action levels or not expected to be occurring above relevant action levels.

Therefore, there is no human exposure to contamination via an air route.

IV. STATUS CODE RECOMMENDATION FOR CA725:

As explained in Section III, because human exposures to contamination are not currently controlled for groundwater, surface water and soil, it is recommended that CA725 NO be entered into RCRIS. Page 7 of this memo is the summary table for the selection of the proper Status Code for CA 725.

V. GROUNDWATER RELEASES CONTROLLED DETERMINATION (CA750)

There are three (3) status codes listed under CA750:

- 1) YE Yes, applicable as of this date.
- 2) NA Previous determination no longer applicable as of this date.
- 3) NR No releases to groundwater.

SCDHEC in conjunction with EPA Region IV, has also added an additional RCRIS status code which tracks the initial evaluations in which a determination is made that groundwater releases are not controlled. This status code is listed as "NO, not applicable as of this date." Use of the regional status code is only applicable in the first CA750 evaluation. Evaluations subsequent to the first evaluation will use the national status codes (i.e., YE, NA and NR) to explain the current status of groundwater control.

Note that the three national status codes for CA750 are designed to measure the adequacy of actively or passively controlling the physical movement of groundwater contaminated with hazardous constituents above relevant action levels. The point where the success or failure of controlling the migration of hazardous constituents is measured is termed the designated boundary (e.g., the facility boundary, a line upgradient of receptors, the leading edge of the plume as defined by levels above action levels or cleanup standards, etc.). Therefore, every contaminated area at the facility must meet the definition before these event/status codes can be entered. Similarly, the regional status code is applicable if contaminated groundwater is not controlled in any area(s) of the facility.

This evaluation for CA750 is the first formal evaluation performed for the Charleston Naval Shipyard. Please note that CA750 is based on the adequate control of all contaminated groundwater at the facility.

The following discussions, interpretations and conclusions on contaminated groundwater at the facility are based on the following reference documents:

1. Memo from Lawson Anderson (EA/H) to Project Team
"Summary of Geoprobe Investigation CTO-290"
June 28 1996.
2. Zone H Draft RFI Report, July 5, 1996.
3. Zone A Draft RFI Report, September 12, 1996.
4. Memo from Lawson Anderson (EA/H) to Tony Hunt (SOUTHDIIV)
"Summary of SWMU 39 Investigations for DHEC Hess Oil Project Manager"
October 9, 1996.
5. Britton Dotson (EA/H) to Tony Hunt (SOUTHDIIV), February 5, 1997
"Updated Zone K 60% Meeting Notes"
6. TCE Plume Geoprobe Sampling Locations, March 21, 1997
7. TCE Plume Geoprobe Sampling Locations, May 13, 1997
8. Naval Annex and Vicinity TCE Plume Investigation, September 8, 1997

VI. STATUS CODE RECOMMENDATION FOR CA750:

Based on data contained in the documents referenced in Section V and summarized in the groundwater portion of Section III, releases from SWMUs and/or AOCs have contaminated groundwater at concentrations above relevant action levels. Additionally, references 2, 5, 6, 7 and 8 describe the identified TCE plume at SWMU 166. This plume has not been completely characterized yet. It is moving off-base.

Although the groundwater is contaminated above relevant action levels, control measures have not been implemented. Because all groundwater contamination at the facility is not controlled and this is the first evaluation at this facility, it is recommended that CA750 NO be entered into RCRIS.

On August 25, 1997 a group of sites were considered for expedited corrective measures. SCDHEC and EPA had asked the Navy to expedite Interim Measures/ Corrective Measures, at sites where off-site migration is possible and no controls are in place. The first submittal towards controlling off-site migration of chlorinated solvents at SWMU 39, SWMU 166 and AOC 607 is due on October 10, 1997. Other sites with groundwater contamination located within the base property will also be included in this submittal.

Table 1: Summary Table for Use in Selecting the Proper Status Code for CA725

OPTION	Media				STATUS CODE IF ALL MEDIA FALL UNDER THE SAME OPTION	STATUS CODE FOR SPECIFIC FACILITY
	Groundwater	Surface Water	Soil Sediment	Air		
1. Media not contaminated ¹				✓	NC	NO
2. The media is contaminated and cleanup standards met to the point of controlling plausible human exposures					YE (1A)	
3. The media is contaminated [<i>onsite and/or offsite</i>] and all plausible [<i>onsite and/or offsite</i>] human exposures are controlled by [<i>Stabilization/IM and/or Access Controls</i>] ²					YE (1B)	
4. The media is contaminated [<i>onsite and/or offsite</i>] and some plausible human exposures are not controlled	✓	✓	✓		NO (if first evaluation) NA (if second or subsequent evaluation)	

FOOTNOTES:

¹ If there is not enough concrete information available for an easy determination as to whether or not a medium is contaminated, then, a judgement must be made as to whether or not contamination can be reasonably expected given the site-specific nature of facility's operational history. If a reasonable assumption on contamination cannot be made for every environmental media, then a CA725 determination cannot be made.

² Stabilization/Interim Measures and/or Access Controls which account for all exposures in all media at the facility will be covered under this option. In addition to fences, soil covers, etc., Access Controls can include those specific cases where human exposures to onsite contamination are restricted due to a lack of human receptors (e.g., the groundwater is contaminated but there are no onsite drinking water wells and the facility recognizes that drinking water wells should not be installed). With regard to contamination that has migrated offsite, plausible human exposures cannot be considered controlled unless tangible control measures have been implemented to prevent human exposure to the offsite contamination.

SWMUs/ AOCs THAT CONTRIBUTED TO "NO" DETERMINATION FOR ENVIRONMENTAL INDICATORS

CODES CA 725 AND CA 750

CHARLESTON NAVAL SHIPYARD

September 03, 1997

(revision of June 16, 1997 version)

ZONE	SWMU OR AOC #	G.W. contaminants >MCLs (ug/L)	Soil contaminants >RBCs/Bkgd.. (ppb)	Plausible Human Exposure Pathways.	Stage of C.A. Process	Next C.A. Step	Observations
A	39 POL Storage Area	PCE (1-16) > 5 TCE (1-91) > 5 DCE (1.2-6.5) < 7 VC (1.9-5.8) > 2 *Benzene (25-170) >5 RISK RES: 8E-4 HI= 14 IND: 2E-4 III- 2 Major contributors, benzene, vinyl chloride, DCE, PCE and arsenic. Total 21 COCs in gw. - Off-site contamination from Hess tank farm.	*BEQs (15.2-5,780) > 88 Aroclor 1260 (26-1,100) > 83 RISK: RES: 4E-5 HI=0.6 IND: 7E-6 HI= 0.02 Major contributors are BEQs and beryllium. 7 COCs identified in total. *BEQs is the total number or equivalent for PAHs	- Marsh adjacent to plume - GW to SW possible transfer - Marsh/wetland sporadically used for fishing. - Marsh/wetland feed Noisette Creek - Apartment bldg... located About 300 ft of well # 9 where Vinyl Chloride was detected in intermediate gw in excess of MCL = 2 ug/L - Contaminated gw is migrating off Navy property	RFI Report in revision. Risk Assessment for this SWMU was received 8/20/97	Site to CMS	- No signs or controls in place. - Base north Gates now closed. - 6/11/97 agreed to perform Demo/TM project to prevent off-site contamination at the suspect base/marsh boundary. - Surface water and sediment sampling at the marsh area did not detect VOCs. - On 8/25/97 Navy agreed to present a plan to address this area. - GW is not known to be used as a drinking water source.

#1

ZONE	SWMU OR AOC #	G.W. contaminants >MCLs (ug/L)	Soil contaminants >RBCs/Bkgd.. (ppb)	Plausible Human Exposure Pathways.	Stage of C.A. Process	Next C.A. Step	Observations
H	SWMU9 includes SWMUs 19,20,121 & AOCs 649,650,651,654 Landfill & areas around	Surface Water: (WQC) Cr (194-221) >50 Cu (40.7-50.8) >2.9 Lead (73) >8.5 Groundwater: <u>Shallow GW main risk contributors:</u> Chlorinated benzenes Chlorinated Alkenes/Alkanes Arsenic Alkylphenols PAHs Antimony <u>Deep GW main risk contributors:</u> Chloroform Carbon Disulfide RISK 1st & 2nd quarter GW sampling: RES: 1E-1, 2E-3, HI=11 IND: 2E-2, 7E-4, HI= 6	SOILS RISK UNIT RES IND 121 2E-4 3E-5 19 6E-5 1E-5 20 1E-5 3E-6 650 6E-5 1E-5 The main contributors for soil risk were BEQs, PCBs and Metals.	-Site accessible by current workers. -GW to surface water transfer possible. -GW moves toward Shipyard Creek. - Occasionally high tide submerges marshy area located at the landfill boundary. -Nature of present landfill cover is not known. -Shipyard creek used for fishing??? -Marsh samples found high metals. - Zone J sediment and surface water samples would assess contamination in Shipyard Creek.	RFI Report was conditionally approved 8/28/97.	Site to CMS	-No signs or controls in place. -Zone J RFI will study water bodies to confirm releases from units adjacent to Shipyard Creek. Field investigation in progress. Preliminary results indicated areas with metals concentrations in excess of RBCs and/or SSL. - On 8/25/97 Navy agreed to propose a expedited IM Remedy for the site - GW is not known to be used as drinking water source.
H	17 Oil Spill Area, about 14,000 gallons	-Chlorobenzene : 4,750 > 3.9 -1,3 Dichlorobenzene: (550-13,000ppm) >600 -1,4 Dichlorobenzene: (830-23,000)ppm > 75 -1,2,4 Trichlorobenzene: (520-160,000)ppm > 70 -TPH GRO: 5,100 ug/L -Cyanide up to 1,100,000 ug/L >730(tap) -Benzidine (56) > 0.00029 -Aroclor 1260 up to 290,000 ppm RISK Residential: 2E-1, HI= 79/34 Industrial: 6E-2 , HI = 12	Aroclor 1260 (36-245,000) > 83 TPH (12-1,200) >100 ppm RISK 4E-4 residential 8E-5 industrial	- GW flow is toward the Cooper River ~ 1,200 ft. - Soils have no restricted access -Free product was reported in one gw sampling event - Release under a building(FMB 61) currently occupied by the Border Patrol School	RFI Report conditionally approved 8/29/97	site to CMS	- No signs or controls in place -Zone J will address/confirm water bodies contamination - On 8/25/97 Navy agreed to proposed expedited remedy/IM for this site. - GW is not known to be used as a drinking water source.

#3

ZONE	SWMU OR AOC #	G.W. contaminants >MCLs (ug/L)	Soil contaminants >RBCs/Bkgd.. (ppb)	Plausible Human Exposure Pathways.	Stage of C.A. Process	Next C.A. Step	Observations
F #4	607 Dry Cleaning Building	PCE (45,000) > 5 TCE (1,300) > 5 VC (9) > 2 total DCE (18-99) > 70 Lead (18-99) > 15		- Located ~ 150 ft. from base boundary, next to residential Area. - Deep GW flows toward residential Area and VOCs were detected at base boundary line -No Risk Assessment performed to date. - Exposure at end of sewer line is not known.	RFI Report in preparation	Review of RFI report	-No controls are in place. - Open area, accessible. - Assessment in progress. - Contamination appears have not reached the base boundary. GW is infiltrating sanitary sewer line which is affecting gw migration. - On 8/25/97 Navy agreed to propose an expedited action for this site.
C	44 Coal Storage Area	BEHP (800) > 6 Be (21.9) > 4 Pb (2.1-19.8) > 15 Ni (2-221) > 100 RISK 2E-3 residential HI= 33 6E-4 industrial HI= 5	As (1.3-103) > 9.44 Be (0.22-2.0) > 0.15 Cr(3.4-61.5) > 50.4 RISK Res: 2E-4 - 1E-5 Ind: 3E-5 - 2E-6	- GW flows toward Noisette Creek - Surface water samples indicated levels higher than EPA's Freshwater QC levels for metals - Creek used for fishing. - Creek flows toward Copper River.	RFI Report in revision, more samples being collected	CMS	- IM removed coal piles to reduce runoff-leachability - North Gate now remains locked. - Zone J RFI Investigation will address water bodies. Field Investigation in progress. - Preliminary non-validated results available for sediment and surface water samples.
K #2	SWMU 166 Sewer System at Naval Annex	TCE+DCE detections: Shallow GW (1-15,000) Intermediate: (1-86,000) Deep (4-137,000) Off-site locations: PCE (25-100) > 5 TCE (4-100) > 5 DCE (7-47) > 7	TCE (2-59,000) ppm in source area > 58,000ppm(RBC)	- TCE plume has reached off-base property, moving under (I-26). Concentrations at boundary reach 3,940 ug L. - Naval Annex access not controlled - Possible second source off-site. - No Risk Assessment available yet.	RFI field investigation and report preparation in progress. Collecting off-property samples to confirm second source of contamination	Review of RFI report	-Assessment phase not concluded. -Naval Annex is a non-contiguous property to the base. - On 8 25 97 Navy agreed to propose expedited interim measure/stabilization measure to stop contamination at the property boundary - No controls in place

ZONE	SWMU OR AOC #	G.W. contaminants >MCLs (ug/L)	Soil contaminants >RBCs/Bkgd.. (ppb)	Plausible Human Exposure Pathways.	Stage of C.A. Process	Next C.A. Step	Observations
E	SWMU 70, AOCs 548 & 549 Dip tank area, Hydraulic elevator, Scrap yard	Benzene, Chlorobenzene, 1,2-dichloroethene, vinyl chloride and trichloroethene exceeded MCLs in shallow groundwater, in all quarters. Related to SWMU 25 (adjacent to site), also detected VOCs Metals detection in GW exceeded MCLs, consistently in 4 quarters, especially chromium up to 7,350 ug/L in shallow gw to 52,500 ug/L in deep gw.	Not available yet.	-Sites located near the Cooper River. - GW flow is towards the Cooper River. - No risk assessment performed to date.	RFI Report in progress	Site to CMS	-This site is candidate to be expedited with a remedial action by the Navy. - GW is not known to be used as a source of drinking water. - No controls in place
E	SWMU 65 and AOCs 544, 546 Former Pb storage, Pickling Galvanizing Plant	-Deep groundwater contaminated with VOCs: Vinyl Chloride and Trichloroethene >MCLs in all quarters - Shallow groundwater, trichloroethene >MCL in all quarters - Antimony, Arsenic, Cadmium, Chromium, Copper, Lead, Mercury and Vanadium exceeded RBCs and MCLs through all quarters.	No information available yet.	-Sites located near the Cooper River. - GW flow is towards the Cooper River. - No risk assessment performed to date.	RFI report in progress	Site to CMS	-This site is candidate to be expedited with a remedial action by the Navy. - GW is not known to be used as a source of drinking water. - No controls in place

ZONE	SWMU OR AOC #	G.W. contaminants >MCLs (ug/L)	Soil contaminants >RBCs/Bkgd.. (ppb)	Plausible Human Exposure Pathways.	Stage of C.A. Process	Next C.A. Step	Observations
G	8 Oil Sludge pits	Trenches with free product identified. Benzene 55>5 BEHP 46>6 13,000 gallons of free product recovered to date. Shallow aquifer affected with dissolved phase contamination	BEQs (850-1507)> 88	<ul style="list-style-type: none"> - Open area accessible to base workers. - Access not controlled - Office area (building leased and occupied) across the street ~ 50 ft. away. - Area of sludge pits could extent more than initially thought. - No risk assessment performed to date. - Contamination appears to be migrating towards headwaters of Shipyard Creek. 	RFI Report in preparation	Review of Report	<ul style="list-style-type: none"> - IM in process to remove (drain) oil from the trenches, and avoid further GW contamination. - Stabilization measure on discussion - No controls in place
G	6 7 AOC635 Public Works Storage Yard PCB Transform er Storage Yard		DDD (19,000) >2,700ppb DDE (1900-4000) >1900ppb DDT (2200-8600) >1900ppb Aroclor 1260 (8600) > 83ppb BEQs (285-4141) >88ppb	<ul style="list-style-type: none"> - Open area accessible to site workers - No risk assessment performed to date 	RFI Report in preparation	Review RFI Report	- IM to remove soils and contaminated concrete slab, in progress.
A	2 Lead Contamin ated Area DRMO	The major contributors to risk are: Arsenic and Beryllium. RISK: RES: 2E-4 HI= 10 IND 5E-5 HI= 2 Some lead detections above action level 15 ug L in gw.	Lead (1-89,000) >400 ppm Residential and commercial scenario could need some type of action at the site. RISK: RES: 3E-5 HI= 1 IND: 4E-6 HI= 0.07	<ul style="list-style-type: none"> - Cooper River potential receptor of surface water runoff & GW discharges. - Data gaps identified in lower soil level, - Site accessible now, after closing of the DRMO. - Not all the area paved. -Hazard and risk for lead was not calculated. 	RFI report in revision	site to CMS	<ul style="list-style-type: none"> - Assessment in progress. - On 8/25/97 Navy agreed to propose expedited action for the site.



2600 Bull Street
Columbia, SC 29201-1708

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March 10, 2000

Henry Shepard II, P.E.
Caretaker Site Office
NAVFACENCOM, Southern Division
P. O. Box 190010
North Charleston, SC 29419-9010

Re: Letter (CNC-Navy to SCDHEC) Notifying the withdrawal of Zone E Draft RFI Work Plan Addendum dated December 1, 1999 received December 9, 1999 for the Charleston Naval Complex (CNC).

Dear Mr. Shepard:

According to the Department's records, during October 20, 1999 CNC Project Meeting, the Navy stated the intension to retract the referenced work plan. As per the action item listed in the February 8, 9, & 10, 2000 meeting minutes, the Navy agreed to forward an official letter retracting the submittal of the referenced work plan to the Department by February 11, 2000. To date the Department has not received any letter to this effect. Therefore, if the Department does not receive a letter from the Navy regarding this matter by March 20, 2000, the Department will resume the review of this work plan. The Navy would then be expected to revise and implement the work plan under the CNC RCRA permit condition II.E.1 (RFI Work Plan).

Should you have any questions, please contact me at (803) 896-4088 or Paul Bergstrand at (803) 896-4016.

Sincerely,

M. P. Mehta

Mihir P. Mehta, Project Manager
Corrective Action Engineering Section
Bureau of Land & Waste Management

cc: Rick Richter, Trident EQC
Tony Hunt, SOUTHDIV
Dann Spariosu, EPA Region IV
Paul Bergstrand, Hydrogeology
Ann Clark, EQC Administration
Charles Watson, Corrective Action Engineering



2600 Bull Street
Columbia, SC 29201-1708

HENRY HNS 3/23
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March 22, 2000

Henry Shepard II, P.E.
Caretaker Site Office
NAVFACENGCOCOM, Southern Division
P. O. Box 190010
North Charleston, SC 29419-9010

Re: RFI Work Plan Addendums for SWMU 17 and SWMU 196 Located in Zone H of the Charleston Naval Complex (CNC) SCO 170 022 560.

Dear Mr. Shepard:

According to the Department's records, during February 8, 2000 CNC Project Meeting, the CNC Tier I team discussed and resolved the comments/responses that were generated for the referenced work plans. Based on this discussion the Department stated the intention to approve the referenced work plans by March 10, 2000. The approval of the referenced work plans were contingent upon the Navy submitting the revised responses to the Department prior to March 10, 2000. To date the Department has not received the revised comment responses to this effect. The Department expects Navy to submit the revised responses as soon as possible to avoid further delays in the clean up process for the referenced SWMUs.

Should you have any questions, please contact me at (803) 896-4088 or Paul Bergstrand at (803) 896-4016.

Sincerely,

M. P. Mehta

Mihir P. Mehta, Project Manager
Corrective Action Engineering Section
Bureau of Land & Waste Management

cc: Rick Richter, Trident EQC
Tony Hunt, SOUTHDIV
Dann Spariosu, EPA Region IV
Paul Bergstrand, Hydrogeology
Ann Clark, EQC Administration



Recd 4/25

Henry HNS 4/26

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MARY —
File

2600 Bull Street
Columbia, SC 29201-1708

April 21, 2000

Henry Shepard II, P.E.
Caretaker Site Office
NAVFACENGCOM, Southern Division
P. O. Box 190010
North Charleston, SC 29419-9010

Re: Comment Responses (faxed/e-mailed) for the RCRA Facility Investigation (RFI) Work Plan Addendum for SWMU 196; Located in Zone H of the Charleston Naval Complex, SCO 170 022 560, Revision 0, dated October 22, 1999.

Dear Mr. Shepard:

The South Carolina Department of Health and Environmental Control (Department) has reviewed the above referenced document according to applicable State and Federal Regulations, and the Charleston Naval Complex Hazardous Waste Permit, effective September 17, 1999. [REDACTED] the review of the [REDACTED]

[REDACTED] provided the Naval Complex with [REDACTED] a copy (s) within [REDACTED] days of the receipt of this letter. The [REDACTED] [REDACTED] of the Permit.

Should you have any questions regarding these comments, please contact Mihir Mehta at (803) 896-4088 or Paul Bergstrand at (803) 896-4016.

Sincerely,

David M. Scaturo, P.E., P.G., Manager
Corrective Action Engineering Section
Bureau of Land & Waste Management

Attachments: Memorandum from Susan Peterson to Mihir Mehta dated April 19, 2000.
Memorandum from Michael Danielsen to Mihir Mehta dated April 19, 2000.

cc: Susan Peterson, Corrective Action Engineering
Michael Danielsen, Hydrogeology
Paul Bergstrand, Hydrogeology
Rick Richter, Trident EQC
Tony Hunt, SOUTHDIV
Dann Spariosu, EPA Region IV

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South Carolina Department of Health
and Environmental Control

DIVISION OF
HYDROGEOLOGY
2600 Bull Street
Columbia, SC 29201
Telephone (803) 896-4010
Fax (803) 896-4002

MEMORANDUM

TO: Mihir Mehta, Environmental Engineer Associate
Corrective Action Engineering Section
Division of Hazardous and Infectious Waste Management
Bureau of Land and Waste Management

FROM: Michael W. Danielsen, Hydrogeologist
Hazardous Waste Section
Division of Hydrogeology
Bureau of Land and Waste Management

DATE: March 22, 2000

RE: Navbase Charleston (CNC)
Charleston, South Carolina
SC 170 022 560

Final Zone H RFI Work Plan Addendum
for SWMU 196
CNC
Revision 0, Dated October 22, 1999

The responses to comments on the document referenced above have been reviewed. The Department concurs that the additions that will be made to the work plan addendum are addressed in the Response to Comments.

The Department expects an official copy of the response to comments within 30 days.



South Carolina Department of Health
and Environmental Control

2600 Bull Street
Columbia, SC 29201
Telephone (803) 896-4010
Fax (803) 896-4002

MEMORANDUM

TO: Mihir Mehta, Environmental Engineer Associate
Corrective Action Engineering Section
Division of Hazardous and Infectious Waste Management
Bureau of Land and Waste Management

FROM: 
Susan Peterson, Environmental Engineer Associate
Corrective Action Engineering Section
Division of Hazardous and Infectious Waste Management
Bureau of Land and Waste Management

DATE: April 19, 2000

RE: Charleston Naval Complex (CNC)
Charleston, South Carolina
SC 170 022 560

Final Zone H RFI Work Plan Addendum
for SWMU 196
Revision 0, Dated October 22, 1999

The Department has reviewed the Navy's faxed/mailed responses to the Department's comments issued on the above work plan addendum. The Department has determined that they are adequately addressed. Please submit a hard copy of the responses within thirty (30) days upon receipt of this letter.



2600 Bull Street
Columbia, SC 29201-1708

Recd 4/28

Henry dhs 4/28

Matt mmtt 5/3

Mary file

April 25, 2000

Henry Shepard II, P.E.
Caretaker Site Office
NAVFACENGCOM, Southern Division
P. O. Box 190010
North Charleston, SC 29419-9010

Re: Charleston Naval Complex (CNC): Goals, Objectives, and Expectations for Effective Scoping and Technical Discussions During the CNC Team Meetings.

Dear Mr. Shepard:

Based on the recent meeting cancellation for the scoping of the technical issues and RFI completion strategy for Zone G, the Department would like to state the expectations for scoping and technical discussions during the team meetings.

The goal of scoping is to discuss issues that the Navy may have, and would like the Department's input on, prior to completion of field activities and prior to document submittal. Productive scoping can reduce the comments generated by the Department and expedite the review and approval process. Please be advised that, even after scoping, the Department still reserves all rights to comment during the document review, and that discussions or decisions for one specific site should not be generalized throughout the facility.

Scoping material should be provided to all parties at least 5 - 7 business days prior to the meeting or as agreed upon in order to have a productive discussion. The failure to provide timely scoping material compromises the Departments ability to provide meaningful discussion/comments and thereby may result in the cancellation of the discussion/meeting.

The information/package submitted to facilitate the scoping discussion should have adequate and succinct interpretive text and tables, appropriate maps/figures to support the text, discussion, and proposals. The scoping package should not constitute the draft of a document nor should it have raw data or information that is not directly related to the topic of discussion.

The Department has previously discussed these expectations during the March, 2000 team meeting and therefore, expects the Navy to meet the expectations stated in this letter to maintain the expedited schedule for the completion of the clean-up process at CNC.

Should you have any questions regarding this letter or need further discussion, please contact me at (803) 896-4088 or Paul Bergstrand at (803) 896-4016.

Sincerely,

m. p. mehta

Mihir Mehta, Project Manager
Corrective Action Engineering Section
Bureau of Land & Waste Management

cc: Ann Clark, EQC Administration
Melissa King, Corrective Action Engineering
Paul Bergstrand, Hydrogeology
Rick Richter, Trident EQC
Tony Hunt, SOUTHDIV
Dann Spariosu, EPA Region IV
Dean F. Williamson, P.E.
Todd Haverkost, P.G.



Rec'd 4/25

copy HNS 4/26
Matt Mehta

MAR'S
F.P.

2600 Bull Street
Columbia, SC 29201-1708

April 21, 2000

Henry Shepard II, P.E.
Caretaker Site Office
NAVFACENGCOM, Southern Division
P. O. Box 190010
North Charleston, SC 29419-9010

Re: Comment Responses (faxed/e-mailed) for the Corrective Measures Study Work Plan Addendum for SWMU 17; Located in Zone H of the Charleston Naval Complex, SCO 170 022 560, Revision 0, dated October 22, 1999.

Dear Mr. Shepard:

The South Carolina Department of Health and Environmental Control (Department) has reviewed the above referenced document according to applicable State and Federal Regulations, and the Charleston Naval Complex Hazardous Waste Permit, effective September 17, 1999. [REDACTED] the review of the comment responses the Department [REDACTED] Work Plan Addendum provided [REDACTED] you a hard copy (8) within thirty (30) calendar days of the receipt of [REDACTED] letter. The failure to do so may result in the violation of the [REDACTED]

Should you have any questions regarding these comments, please contact Mihir Mehta at (803) 896-4088 or Paul Bergstrand at (803) 896-4016.

Sincerely,

David M. Scaturo, P.E., P.G., Manager
Corrective Action Engineering Section
Bureau of Land & Waste Management

Attachments: Memorandum from Susan Peterson to Mihir Mehta dated April 19, 2000.
Memorandum from Michael Danielsen to Mihir Mehta dated April 19, 2000.

cc: Susan Peterson, Corrective Action Engineering
Michael Danielsen, Hydrogeology
Paul Bergstrand, Hydrogeology
Rick Richter, Trident EQC
Tony Hunt, SOUTHDIV
Dann Spariosu, EPA Region IV



2600 Bull Street
Columbia, SC 29201
Telephone (803) 896-4010
Fax (803) 896-4002

MEMORANDUM

TO: Mihir Mehta, Environmental Engineer Associate
Corrective Action Engineering Section
Division of Hazardous and Infectious Waste Management
Bureau of Land and Waste Management

FROM: 
Susan Peterson, Environmental Engineer Associate
Corrective Action Engineering Section
Division of Hazardous and Infectious Waste Management
Bureau of Land and Waste Management

DATE: April 19, 2000

RE: Charleston Naval Complex (CNC)
Charleston, South Carolina
SC 170 022 560

Final Zone H Corrective Measures Study Work Plan Addendum
for SWMU 17
Revision 0, Dated October 22, 1999 (Received 10-28-99)

The Department has reviewed the Navy's faxed/mailed responses to the Department's comments issued on the above work plan addendum. The Department has determined that they are adequately addressed. Please submit a hard copy of the responses within thirty (30) days upon receipt of this letter.



DIVISION OF
HYDROGEOLOGY
2600 Bull Street
Columbia, SC 29201
Telephone (803) 896-4010
Fax (803) 896-4002

MEMORANDUM

TO: Mihir Mehta, Environmental Engineer Associate
Corrective Action Engineering Section
Division of Hazardous and Infectious Waste Management
Bureau of Land and Waste Management

FROM: Michael W. Daniels, Hydrogeologist
Hazardous Waste Section
Division of Hydrogeology
Bureau of Land and Waste Management

DATE: April 19, 2000

RE: Navbase Charleston (CNC)
Charleston, South Carolina
SC 170 022 560

Final Zone H Corrective Measures Study Work Plan Addendum
for SWMU 17
CNC
Revision 0, Dated October 22, 1999 (Received 10-28-99)

The responses to comments on the document referenced above have been reviewed. The Department concurs that the additions that will be made to the work plan addendum are addressed in the Response to Comments.

Therefore The Department approves the document referenced above and expects an official copy of the response to comments within 30 days.



Rec'd
5/10

Henry HNS 5/10

Matt Matt 5/13

2600 Bull Street
Columbia, SC 29201-1708

File

MATT, WE NEED TO WORK WITH
TONY TO RESPOND TO THIS LETTER.

TR,
HNS

May 5, 2000

Henry Shepard II, P.E.
Caretaker Site Office
NAVFACENCOM, Southern Division
P. O. Box 190010
North Charleston, SC 29419-9010

Re: Charleston Naval Complex (CNC): Status of Action Items Recorded During the February, March, and/or April 2000 Tier I Team Meetings.

Dear Mr. Shepard:

Based on the meeting minutes and the Departments record the following action items have not been accomplished:

1. ~~Retraction letter from the Navy to the Department for the Zone E RFI Work Plan Addendum.~~
The intent to do so was first referred to by the Navy in January 2000. According to the action item recorded during the February 8, 2000 team meeting the official letter was to be submitted to the Department by February 11, 2000. During the March 28, 2000 team meeting the action item for submitting the retraction letter was intended to be completed by end of March 2000. The Department has to date not received any such letter.
2. ~~The Department has to date not received the official submittal from the Navy, for the revised comment responses for SWMU 17 and SWMU 196 located in Zone H.~~ The Department has approved the referenced documents provided the official submittal is received.
3. According to the March 28, 2000 team meeting (action item recorded) the submittal date for ~~Zone H RFI Report Addendum~~ to the Department for review and approval was April 7, 2000. Also, the submittal date for ~~Zone H SWMU 159/AOC 653 CMS Work Plan~~ was April 17, 2000. The Department was informed that the documents will be submitted by May 1, 2000. ~~The Department has not received any of the documents to date.~~
4. ~~Zone G RFI Work Plan Comment Responses have not been received.~~ According to the cover letter (dated March 31, 2000) and the RCRA Permit conditions the responses should be submitted to the Department within thirty calendar days from the date the comments were sent to the Navy.
5. ~~The date for the submittal of Zone F RFI Report has not been decided by the tier I project team.~~ According to the FY 2000 cooperative agreement, the milestone for submitting the Zone F RFI Report was September 1999.

6. ~~Zone H SWMU 196. The data indicating the release of contamination into the surface water body was discussed during and February 8, 2000 team meeting.~~ The Department had requested the Navy to evaluate the need for interim measures to control the release of contamination into the surface water body by the March 29, 2000 team meeting. The Department has not received any strategy or proposal from the Navy to address this concern. Please be advised that according to the Permit the Department may/can impose an interim action to address this concern.

The Department is concerned that not accomplishing the action items during agreed or appropriate time periods may impede corrective actions that are necessary to mitigate further migration of contamination, thus causing harm to human health and the environment. The Department considers the action items, noted during the team meetings, as measures/steps that are necessary and significant in order to ultimately meet the RCRA Permit requirements, the milestones as stated in the cooperative agreement between the Navy and the Department, and the goals for CNC property transfer.

The Navy is advised that by not accomplishing the action items during appropriate and agreed upon time period may ultimately result in the violation of the RCRA Permit Conditions and an enforcement action against the Navy without future notice. The Department recommends that the Navy provide adequate dates for the completion of the above stated action items before May 15, 2000 team meeting.

Should you have any questions regarding this letter or need further discussion, please contact me at (803) 896-4088 or Paul Bergstrand at (803) 896-4016.

Sincerely,

m. p. mehta

Mihir Mehta, Project Manager
Corrective Action Engineering Section
Bureau of Land & Waste Management

cc: Ann Clark, E.Q.C. Administration
Melissa King, Corrective Action Engineering
Paul Bergstrand, Hydrogeology
Michael Danielsen, Hydrogeology
Charles Watson, Corrective Action Engineering
Susan Peterson, Corrective Action Engineering
Rick Richter, Trident E.C.
Tony Hunt, SOUTHDIV
Dann Spariosu, EPA Region IV
Dean F. Williamson, CH2M HILL



*Rec'd
5/25*

*1000 HNS 5/25
[Signature]*

2600 Bull Street
Columbia, SC 29201-1708

File

May 23, 2000

Henry Shepard II, P.E.
Caretaker Site Office
NAVFACENGCOM, Southern Division
P. O. Box 190010
North Charleston, SC 29419-9010

Re: RFI Work Plan Addendum Comment Responses and Scoping Package for Zone F of the Charleston Naval Complex, SCO 170 022 560, dated May 5, 2000, received May 19, 2000.

Dear Mr. Shepard:

The South Carolina Department of Health and Environmental Control (Department) acknowledges the receipt of the referenced RFI Work Plan Addendum Comment Responses and Scoping Package. During the April 2000 team meeting the Navy's intentions to transfer the future work necessary to complete the Zone F RFI from one contractor to another (EnSafe to CH2MHILL/J A Jones) were noted. Due to this change the Department defers the review and approval of the referenced document until the new contractor and the Navy resubmits their responses and strategy to complete the field investigations.

The Department recommends that the Navy provide detail schedule to complete the RFI process for Zone F within thirty (30) calendar days of the receipt of this letter.

Should you have any questions regarding this letter, please contact me at (803) 896-4088 or Paul Bergstrand at (803) 896-4016.

Sincerely,

M. P. Mehta

Mihir Mehta, Project Manager
Corrective Action Engineering Section
Bureau of Land & Waste Management

cc: Charles Watson, Corrective Action Engineering
Paul Bergstrand, Hydrogeology
Rick Richter, Trident EQC
Tony Hunt, SOUTHDIV
Dann Spariosu, EPA Region IV
Dean Williamson, CH2M HILL



*Rec'd
6/6*

Henry HNS 6/6

Matthew 6/20

File

2600 Bull Street
Columbia, SC 29201-1708

June 1, 2000

CERTIFIED MAIL

COMMISSIONER:
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Henry Shepard II, P.E.
Caretaker Site Office
NAVFACENCOM, Southern Division
Post Office Box 190010
North Charleston, South Carolina 29419-9010

Re: Environmental Baseline Survey for Transfer/Finding of Suitability to Transfer
(FOST) for EDC Phase I Parcels
Charleston Naval Complex - SC0 170 022 560
Dated April 2000

Dear Mr. Shepard:

The South Carolina Department of Health and Environmental Control (Department) has reviewed the referenced document. Based on this review, the Department has generated comments and concerns that have been attached for your information. It should be noted that some of these comments and concerns were included in a previous review of this document and that adequate responses were not included in this revision.

Because of these concerns, the Department does not concur with the transfer of the following parcels:

- | | | | |
|-------|-------------------------------------|-------|------------------------------------|
| | The Annex Area | | |
| 12-A | Public Works Office | 12-B | Public Works Office |
| NS-32 | D. & T. Personnel Barracks | NS-43 | Enlisted Men's Barracks |
| NS-46 | Naval Station Headquarters Building | X-56 | Ammunition Storage |
| 65 | Barracks | NS-66 | Barracks |
| 83 | Business Opportunity Center | 178 | Steam Flow Meter House |
| 214 | Filter House for Facility 184 | 245 | Fire Station Support Bldg |
| 334 | Concrete Ramp | 513 | RR Track Scales |
| 668 | Barracks | 669 | Barracks |
| 670 | Racquet & Fitness Center | 1070 | Haz Flammable Storage Bldg |
| 1448 | Filter House for Facility NS-59 | 1501 | Warehouse |
| 1509 | Storage | 1622 | Polaris Materials Office Warehouse |
| 1514 | Pumping Station | 1623 | Polaris Material Office Warehouse |
| 1632 | Storage Warehouse | 1634 | Band Saw Shelter |
| 1656 | Transit Cargo Handling Warehouse | 2501 | Radar Lounge |
| OL-1 | Open Land Area | SCEG | Storage Yard. |

H.Shepard
FOST/EDC Phase I - CNC
June 1, 2000
Page 2

Additionally, the Department has concerns with the sanitary sewer system, stormwater management system, and railroad system that transect the tract. This system is identified as Zone L for which an RCRA Facility Investigation has not been completed (i.e. the nature and extent of any existing contamination has not been delineated).

The Department concurs with the transfer of the remaining parcels in the tract. However, please be advised that this approval is based on the information available at this time. If additional information becomes known and if a determination is made that additional action is required, then as provided by law the Navy is responsible.

To facilitate future FOST reviews, the Navy should provide adequate responses to the Department's comments and concerns. The FOST review and approval process can be improved by following the technical recommendations of the Department.

Should you have questions or require additional information, please contact Melissa King at (803) 896-4218.

Sincerely,



Robert W. King, P.E.
Assistant Deputy Commissioner
Environmental Quality Control

RWK:MJK/mjk

attachments: May 31, 2000 Memorandum (Bristol to King)
May 26, 2000 Memorandum (Preston to King)
June 1, 2000 Memorandum (Mehta to King)

cc: Dann Spariosu, EPA
Mihir Mehta, BLWM/SCDHEC
Paul Bergstrand, BLWM/SCDHEC
Melissa King, BLWM/SCDHEC
Heather Preston, BA/SCDHEC
Paul Bristol, BW/SCDHEC
Tony Hunt, SOUTHDIV/Navy
Dean Williamson, CH2MHill/Jones
Rick Richter, Trident/SCDHEC



Memorandum

Date: 31 May 2000

To: Melissa King
Bureau of Land and Waste Management

From: Paul L. Bristol *PLB*
Bureau of Water

Re: Environmental Baseline Survey For Transfer
EDC Phase I Parcels
Charleston naval Complex
Charleston, SC
Charleston County

The author has completed technical review of the referenced document with regard to petroleum storage sites. As submitted, the document addresses concerns previously identified by the author (memorandum Bristol to Mehta, 28 January 2000). No additional comments have been generated by this review. With this consideration, the author concurs with the conclusions concerning environmental condition of property classifications, as detailed in section 2.4, for those sites known or suspected of storing and/or utilizing petroleum products on site.

Should you have any questions I may be reached at 898-3559 or e-mail @bristopl.



TO : Melissa J. King, P.E.
DoD Site Coordinator/ BLWM

FROM: Heather Preston *JL for AK*
Bureau of Air Quality

DATE: May 26, 2000

RE: **Comments on the Finding of Suitability to Transfer (FOST) for the
Charleston Naval Complex**

Asbestos

Several asbestos surveys have been conducted at the base in the past and many of the facilities on the base have asbestos warning signs posted. The narrative describes the surveys as "limited in nature and should not be taken as a comprehensive study of the subject facilities." Furthermore, no surveys were conducted to support the Environmental Baseline Survey Transfer (EBST).

From our perspective, the obvious concern would be that if these buildings are going to be renovated for future use or demolished, that they be done so in accordance with the National Emission Standards for Hazardous Air Pollutants, 40 CFR 61 Subpart M, and DHEC regulations 61-86.1.

Chlorine Gas and the Chemical Accident Prevention Provisions (112r)

Facility numbers 214 and 1448 were used in the past as filter houses for a swimming pool and a bathhouse respectively. Both facilities contained chlorine gas and still contain the gas tanks. Whether those tanks are empty or not is unclear. The threshold limit for facilities subject to the requirements of R.61-62.68, Chemical Accident Prevention Provisions (112r), for chlorine is 2,500 lbs and as these appear to be fairly large tanks, there is the potential that these facilities could be subject to the 112r regulations. Furthermore, the conditions that the tanks are being stored in are less than ideal. The narrative describes facility number 1448 as follows, "Chlorine tanks are present and standing water covers the entire floor." Facility number 214 is not described in this manner, but a picture clearly shows that the tanks are also standing in water.

Boilers

Numerous boilers are in buildings scattered around the base. Some of the boilers are in use; others are not. The only boiler that is permitted by the Bureau of Air Quality is a natural gas boiler located at facility number 1079. This boiler is apparently no longer in use. Our concern would be that if that if the ownership of this facility is transferred, that the new owner be made aware of the permit and the permit conditions. Finally, as no information is given concerning the other boilers, it is difficult to assess if they require permits. Thus, the new owner should be made aware of the potential for permitting requirements for these boilers.



2600 Bull Street
Columbia, SC 29201-1708

MEMORANDUM

TO: Melissa King, P.E., DoD Site Coordinator
Corrective Action Engineering Section
Division of Hazardous and Infectious Waste
Bureau of Land and Waste Management

FROM: Mihir Mehta, Project Engineer *mhm*
Corrective Action Engineering Section
Division of Hazardous and Infectious Waste
Bureau of Land and Waste Management

DATE: June 1, 2000

RE: Charleston Naval Complex (CNC)
South Carolina
SCO 170 022 560

Draft Environmental Survey for Transfer and Draft Finding of Suitability to Transfer for the EDC Phase I Parcels, Charleston Naval Complex, SCO 170 022 560, Revision 1.0, dated April 2000, received May 4, 2000.

The South Carolina Department of Health and Environmental Control (Department) has reviewed the above referenced documents according to applicable State and Federal Regulations. The attached comments were generated based on this review.

South Carolina Department of Health and Environmental Control comments on: Draft Environmental Survey for Transfer and Draft Finding of Suitability to Transfer for the EDC Phase I Parcels, Charleston Naval Complex, SCO 170 022 560, Revision 1.0, dated April 2000, received May 4, 2000.

Comments By Mihir Mehta:

1. Section 5.0.

This section provides very general information regarding the past use/operation of the property to be transferred. One of the criteria for identifying the “uncontaminated parcel of land” per EPA guidance is to have a complete understanding of its past operation or use. Therefore, please provide a detail discussion for the operation of the buildings and spills or accidents that may have temporarily released contaminants into the surrounding media. This comment was previously submitted. The Navy has revised the document but the information provided does not clearly indicate or detail the past and current use.

For example: Page 5-8. Facility #2501 is labeled as “Radar Lounge”. The past use is indicated as handling and storing the gasoline, oil, and detergent. Current use “not observed” due to presence of asbestos. What is the condition of facility 2501 with respect to environmental risk/hazard? Without this information the Department cannot concur with the transfer of this facility.

For example: Building 245. What are the miscellaneous chemicals being stored currently? Also, state the releases from the past activities. Navy’s response that material were stored does not mean that there was a release has merits only if the past use records are available due the industrial nature of the operations. Without further information the Department cannot concur with the transfer of this building.

2. Section 5.0.

Page 5-9. Facility: Open Land Area (OL-1). Past use indicates that 55-gallon drums were abandoned in this area. The Department has never been notified nor informed of such activities in this area. Has this area been investigated? Have the drums been removed? Was there a release of contaminants from these drums? What is the current condition of the property? Please address this concern as deemed appropriate.

3. Section 5.0. Findings for Subject Property.

As written this section does not provide any information or details regarding the past history of use or operation (with respect to releases, spills, or accidental environmental impact) and no data has been collected (and if collected and analyzed not presented) to show that there is no threat to human health and the environment. Per EPA guidance and CERCLA 120 (h) (4) the above stated information is necessary for concurring with the proposal that the referenced parcel of land is uncontaminated. Table 5-10; page 5-44 in this section lists only PCB related spills. All releases and spills should be identified and also state its current condition with respect to environmental risk/hazard.

Facility 1509: Paint, used oil and Varsol cleaner. What is the past use and was there a release? The facility is currently used by tenant but Navy should provide the past use and conditions.

Facility 669 and 668 (barracks): This section indicates that a release had occurred and the remediation is unknown. What is the release about? What was the response action and was it appropriate for unrestricted land use? The Department does not concur with the property transfer based on the information provided.

Facility NS 43 and NS 46: This section indicates that the remediation has occurred. What was the problem and how was it remediated is not mentioned. The Department has not seen any documentation related to this incident. The Department does not concur with the property transfer based on the information provided.

Facility 670 (Racquet and Fitness Center): Based on the information provided in the table the two reported releases of 100 and 500 gallons of PCB containing fluid occurred. The spill was remediated. The Department has not reviewed nor approved any such remediation proposal. What was the remediation goal? What is the current condition of the property? The release has occurred and therefore, it should not be classified as uncontaminated property without the Departments approval. The Department does not concur with the property transfer based on the information provided.

4. Section 5.3.

Provide a single map or a figure that adequately shows the location of the parcel of land to be transferred with respect to SWMUs and AOCs adjacent to or in the vicinity (as listed in Table 5-2) and their association as deemed appropriate. This information was requested during the review of the previous version of the document.

5. Section 5.0.

The Department had previously requested (comment #12) that the Navy provide adequate information for the facilities listed in Table 5-1. The following are few examples noting the Departments specific concerns. Please revisit the buildings listed in this table to be transferred under the referenced FOST.

Facility 1509. It is stated that the building was used for storage in the past and currently is used for maintenance and storage for paint, used oil, and varsol parts cleaner. The Navy's response was, "The materials are related to current tenant activities. No action is warranted." The Department does not agree with this response. According to the EBS Section B the building was constructed and used as a warehouse since 1963. Therefore, the past use of the facility by the Navy indicates that there could be a possibility to contaminant release or spill. The Navy may not have complete records for the industrial operations conducted at this facility and therefore, cannot transfer all the liability to the current tenant activities.

Facility 1656. It is stated that the building was used as transit cargo handling warehouse (oil,

antifreeze, commercial cleaners, solvents, and petroleum products) in the past and currently is used as maintenance garage for new and used oil, hydraulic fluid, and acetylene canisters. The Navy's response was, "The materials are related to current tenant activities. No action is warranted." The Department does not agree with this response. The past use of the facility by the Navy indicates that there could be a possibility to contaminant release or spill. The Navy may not have complete records for the industrial operations conducted at this facility and therefore, cannot transfer all the liability to the current tenant activities. Also, according to the EBS (1995) an oil water separator was noted at this facility

6. Section 5.18. Wetlands.

Please provide a map or a figure that would show all wetlands in and around the EDC phase I land parcel and how are the associated. This comment was previously submitted to the Navy. The Navy's response is to reference another document to address this comment. The Department does not agree with the response and would prefer the information as requested as a part of this document. The information requested is helpful to correlate the proposed property to be transferred with any wetlands nearby.

7. Section 6.0; Findings for Adjacent Property.

This section does not present any information that would help understand the risk associated with the adjacent property and how does it relate the subject property. Please revise the entire section to include adequate information regarding the risk, hazard, or other issues related to adjacent property as deemed appropriate. This being one of the important criteria to be evaluated the Department recommends that Navy provide detail.

The Navy has revised the document but has not clearly described the risk associated with the adjacent property and how does it relate the subject property. Table 6-1 on page 6-2 provides current status of the RFI Reports.

It states that for some Zones the Draft RFI report submitted to DHEC. The Department has no Zone RFI Reports pending review except Zone H RFI Report Addendum that was submitted last week. Therefore, the table should be revised to state the current status of the RFI reports.

Also, this table does not provide any information related to the nature and extent of contamination (soils, groundwater, and/or surface water), risk/hazard associated with it, and any corrective action if conducted. The goal is not to know the status of RFI reports but to provide the information as stated in this comment.

8. Please see the comments: Memo. From Paul Bergstrand to Mihir Mehta, dated May 31, 2000.

MEMORANDUM

TO: Mihir Mehta, Environmental Engineer Associate
Corrective Action Engineering Section
Hazardous and Infectious Waste Management
Bureau of Land and Waste Management

FROM: Paul M. Bergstrand, P.G., Hydrogeologist
Hazardous Waste Section
Division of Hydrogeology
Bureau of Land and Waste Management



DATE: 31 May 2000

RE: Charleston Naval Base (CNAV)
Charleston County, South Carolina
SC0 170 022 560

Draft EBST Report
EDC I
Dated April 2000, Revision 0

The materials referenced above have been reviewed with respect to the requirements of R.61-79 of the South Carolina Hazardous Waste Management Regulations, The Environmental Protection Agency's (EPA) RCRA Facility Investigation Guidance Document dated May 1989, the EPA Region IV Environmental Compliance Branch Standard Operating Procedures and Quality Assurance Manual (SOP/QAM) dated May 1996, the CNAV Final Comprehensive Sampling and Analysis Plan dated 30 August 1994, CERFA 120(h) as amended, DoD FOST Guidance and EPA BRAC FOST Guidance.

The document submitted does not provide adequate support for the request of "Finding of Suitability to Transfer" for all sites or facilities listed. Comments on the Draft EBST Report are provided.

Draft EBST Report Comments
Paul M. Bergstrand
31 May 2000

Please note, previous comments, dated 24 January 2000, were provided to the Navy on a Draft EBST dated October 1999.

GENERAL COMMENTS

1. The following comment was not adequately addressed.

3. Chapter 3 and Appendix B do not adequately identify the adjoining SWMUs and AOCs and fails to identify those sites which may pose a risk to the facilities being transferred. This information should be revised.

The response to comments stated “This information does not need to be included in Chapter 3 or Appendix B”. Chapters 3, 5 and 6 and Appendix B do not adequately communicate risks from nearby SWMUs and AOCs to the facilities being transferred. In regards to the SWMUs and AOCs within Zones where the RFI Report is not complete, risk levels should be considered as unknown. Risk information should be included in the final document.

2. The following comment was not adequately addressed.

4. Tables 1-1, 5-2 and 7-1 describe the Last Use of the facility but not the actual former use of the buildings or the property during Navy control of the property. This information should be revised.

The response to comments states “No revisions will be made”. A description of all prior use and activity in the buildings or on the land during Navy control of the property should be included in the final document. Examples of this information include dredge fill materials found in Zones B, C, H and I, a pistol range and explosives storage in Zone H.

3. The following comment was not adequately addressed.

8. Numerous facilities in this document are associated with RFI investigations which have not been completed. Facilities such as warehouses, storage yards and piers are surrounded by rail lines and all facilities are associated with sewer lines. How this data was considered and evaluated should be included.

How the RFI data from incomplete reports was considered and evaluated should be included in the final document.

4. The following comment was not adequately addressed.

9. Zone J data relating to exceedences in Noisette Creek and the surrounding facilities has not been accounted for. How this data was considered and evaluated should be included.

The response to comments stated “These areas are not included in EDC Phase I. No evaluation is warranted.” Because of the incompleteness of the Zone J RFI, the Navy has not demonstrated the sewer lines are not the associated with these exceedences. How this data was considered and evaluated should be included in the final document.

SPECIFIC COMMENTS.

5. The response to the following comment did not address the questions.

13. Building NS-46, Page 3-4

This building has an armory in the northeast corner. An armory would have potentially utilized solvents and petroleum products. Also, this armory has a sink and toilet which waste solvents and petroleum products may have been disposed. This issue was identified in the March 1999 site visit. The armory has not been identified as a SWMU or an AOC and has not been investigated in the RCRA Process.

It should also be noted that the Navy Base did not develop a sanitary sewer system until the 1970's. All liquid waste disposed of in sinks, floor drains, or storm drains prior to this time was

directly discharged into the nearest waterways. A storm sewer line runs along Hobson, next to the armory, and discharges into the Cooper River between Piers T and U. Analytical samples collected at this discharge point and reported in preliminary Zone J document indicated VOC and SVOC constituents in sediments which could be related to the armory.

The Navy has not provided any proof or evidence the armory has or has not been the source of a spill or release to the environment. This area of the building should be considered as a SWMU or AOC and investigated as such. This building should be removed from the EDC I until the armory is documented and properly investigated.

6. The following comment has not been resolved.

18. Facility 334, Page 3-12

The description states the Navy built a seaplane ramp in 1972. This description is not clear since the last Navy seaplane made it's last flight in 1967. Furthermore a seaplane would require some additional facilities such as tie-down, fueling, etc. which do not appear to be present. It is possible that this structure was constructed just as a boat ramp. The response to comments, however, state that "tanks were located adjacent to Facility 334". This is new information and there is no evidence or documentation the tanks, if present, were assessed or removed. This facility should be removed from the EDC Phase I until these issues are resolved.

7. The following comment was not adequately addressed.

19. Facility 513, Page 3-13

This section describes a catch basin as part of the railroad track scales. Other sections of the report indicate an oil water separator is also part of this facility. There has not been any indication this OWS was identified or investigated as a SWMU or AOC. This facility should be removed from the EDC I until this information is provided.

The response to comments stated "It has been determined that the text mis-stated the presence of an Oil/Water Separator at this facility. The structure described is actually a sump. The text of the EBST and FOST have been modified accordingly. No further investigation is

warranted.” The incomplete Zone L RFI Report ,which was intended to investigate potential spills or released along rail lines, did not include this structure. The simple fact that a sump was installed indicate previous uncontrolled releases occurred in this area. This facility should be removed from the EDC Phase I until the site is investigated.

8. The following comment was not adequately addressed.

20. Building 1079, Page 3-17

This facility is reported to have 5 AST “Holding Tanks” that have stains under the tanks. Other sections of this report fail to mention the tanks. It also appears the tanks have not been identified or investigated as a SWMU or AOC. This facility should be removed from the EDC I until this information is provided.

The sheet for building 1079 in Appendix B states “According to facility records, a few minor spills have occurred and remediation was conducted immediately.” And “ Floor drains observed throughout the building lead to five separate holding tanks. The 500 gallon holding tanks were used to catch spills. Floor stains were observed underneath holding racks.”

The response to the comment states “The EBST mentions stains under the racks, not tanks. Furthermore, there were 3 “holding tanks” that were sealed. No releases have ever been reported in association with these tanks. This facility will not be removed from EDC Phase I.” The response is not adequate for the following reasons. Spills were reported. Stains (unspecified) were reported. ASTs at the site were not reported in the EBST and were apparently not addressed by the navy Tank program. This facility should be removed from the EDC Phase I until the site is investigated and these issues are addressed.

9. The following comment has not been resolved.

21. Building 1501, Page 3-20

This building is reportedly a scrap warehouse. Table 5-6, however, indicated a waste oil AST was also a part of this facility. There has not been any indication this AST

was identified or investigated as a SWMU or AOC. This facility should be removed from the EDC I until this information is provided.

The response to comments states “The waste oil AST is associated with current tenant activities.” If the current tenant has installed and is responsible for the waste oil AST, the Department can agree with the transfer. If the AST was at the facility before the tenant occupied the building the Navy has not adequately assessed the site and the facility should be removed from the EDC Phase I transfer.

10. The previous comment has not been adequately addressed.

22. *Building 1622, Page 3-23*

This building is reported in Appendix B to have had analytical data documenting a mercury spill. The report, however, was not referenced. This building was not identified or investigated as a SWMU or AOC. This facility should be removed from the EDC I until this information is provided.

The response to the comment states that “The mercury spill involved 1 teaspoon of mercury, and was remediated.” It is not clear if the analytical data reported in Appendix B was collected before or after the stated spill, or before or after the stated remediation took place. Since the volume of mercury spilled appears to be known, the Navy should be able to provide documentation of the remediation and that the clean up was made to unrestricted residential land use. Without this information the Department is unable to concur with an unrestricted residential land use transfer.

11. The following comment has not been resolved.

26. *4.1 Physiography*

This would be an excellent section to provide maps representing the dredge filling of the Naval Shipyard over time.

The comment response stated “Maps will not be provided in this document”. This issue is directly related to the issue of prior use of the property. There are several large areas in Zones B, C, H and I that were former dredge spoil areas that have since been built upon and are now included in

the EDC Phase I. The section of the document where the dredge spoil information is placed is not critical. The information should be included.

12. The following comment has not been resolved.

32. *Appendix B*

The following buildings or facilities should be changed from Light Green or Blue to Red. This change is because of information provided indicating that there have been releases reported, there have been no samples collected or the determination of no clean up necessary is not conclusive.

664 *Mercury in a liquid*

The response to comments states “There is no evidence that mercury was ever stored at this facility”. The sheet for Facility 664 in Appendix B clearly confirm the analytical detection of mercury in two samples. This is evidence that mercury was used or stored at this facility. It is now the Navy’s responsibility to confirm the presence or absence of contamination at this facility. The Department is unable to concur with an unrestricted residential land use transfer.

13. Buildings 12A and 12B, Table 5-1

The description of past use indicates paint, blasting grit and commercial cleaning supplies. The use of blasting grit would result in old paint dust and possibly the release of metals into the environment. It should be noted that the buildings have recently been used as temporary classrooms for the Charleston Magnet School. There is no evidence that samples were ever collected or analyzed from this area. It is the Navy’s responsibility to confirm the presence or absence of contamination at this facility. The Department is unable to concur with an unrestricted residential land use transfer.

14. Building 1656, Appendix B

The sheet for this building indicates the presence of an oil water separator which has not been investigated. If this separator was installed before the the current tenant occupied the building, the facility should be removed from the EDC Phase I until the site is investigated.

15. EDC Phase I Map, Southern Portion, Charleston Naval Complex

There is a small area within the footprint of building NS-46 that is not included in the proposed transfer. The area appears to be building number 1889. No explanation is offered as to why this area is being omitted. It is not clear what mechanism will be employed to keep such a small area out of a unrestricted land use transfer. Please address.

16. EDC Phase I Map, Southern Portion, Charleston Naval Complex.

The area containing SWMU 14 and Building 1899 has been included in the proposed transfer. Please correct.



2600 Bull Street
Columbia, SC 29201-1708

*Rec'd
6/27*

Henry HNS 6/28

Matt

P. 10

June 19, 2000

Henry Shepard II, P.E.
Caretaker Site Office
NAVFACENGCOM, Southern Division
P. O. Box 190010
North Charleston, SC 29419-9010

Re: Scoping Document for the Draft RCRA Facility Investigation (RFI) Report for Zone J (Part One) of the Charleston Naval Complex, SCO 170 022 560, Revision 0, dated April 24, 2000, received April 25, 2000.

Dear Mr. Shepard:

The South Carolina Department of Health and Environmental Control (Department) has reviewed the above referenced document according to applicable State and Federal Regulations, and the Charleston Naval Complex Hazardous Waste Permit, effective September 17, 1999. The attached comments were generated based on this review.

The Department believes that the attached comments and the discussions held during the Zone J scoping meeting (dated May 17, 2000) will facilitate the path forward for the completion of the Zone J RFI work plans and/or reports. Also, the attached comments and the discussions provide technical issues that the Department believes should be adequately addressed to fulfill the RFI requirements for the Zone J.

The Navy should provide a written strategy detailing the future work and the time period to complete the Zone J RFI process within 30 calendar days (or within an agreed upon time period) of the receipt of this letter.

Should you have any questions regarding these comments, please contact me at (803) 896-4088 or Paul Bergstrand at (803) 896-4016.

Sincerely,

M. P. Mehta

Mihir P. Mehta, Project Manager
Corrective Action Engineering Section
Bureau of Land & Waste Management

Attachments:

1. Memorandum from Susan Byrd & Rachel Breidling to Mihir Mehta dated June 12, 2000.
2. Memorandum from Michael Danielsen to Mihir Mehta dated May 31, 2000.

cc: Susan Byrd, Corrective Action Engineering
Rachel Breidling, Corrective Action Engineering
Michael Danielsen, Hydrogeology
Paul Bergstrand, Hydrogeology
Rick Richter, Trident EQC
Tony Hunt, SOUTHDIV
Dann Spariosu, EPA Region IV
Todd Haverkost, EnSafe
Dean Williamson, CH2MHILL



2600 Bull Street
Columbia, SC 29201-1708

MEMORANDUM

TO: Mihir P. Mehta, Environmental Engineer Associate
Corrective Action Engineering Section
Division of Hazardous and Infectious Waste
Bureau of Land and Waste Management

FROM: Susan K. Byrd, Risk Assessor *Susan K. Byrd*
Rachel Breidling, Risk Assessor *R. Breidling*
Corrective Action Engineering Section
Division of Hazardous and Infectious Waste
Bureau of Land and Waste Management

DATE: June 12, 2000

RE: Charleston Naval Base
Charleston, South Carolina
SC 0170022560

Document:
Zone J Draft RCRA Facility Investigation Report
NavBase Charleston
Part One
Dated April 24, 2000

GENERAL COMMENTS:

- 1.) One background data set from Rathall Creek was used to establish background comparisons for all three Zone J water bodies. More detailed information should be provided describing the samples collected and how they are comparable to Zone J. A "control" data set may be more realistic for comparison to the the Cooper River samples since naturally occurring levels of inorganics would be nearly impossible to attain, and offsite organic contaminants are present. Strategic and localized sampling may help alleviate some of these problems.
- 2.) The references text states that this document contains the first two

steps of EPA's ERA guidance; however, the report seems to include detailed receptor specific modeling. Since this not the "typical" CNC Zone RFI report, more information should be provided to link contaminant migration from a SWMU or AOC to the water body. In a "normal" RFI, this information would have been obtained prior to submitting the ERA. Generic information is given regarding SWMUs or AOCs with similar contaminants present; however, the levels detected and how they are migrating to Zone J is not presented. Please provide enlarged maps and figures that show the relationships between the sites and Zone J.

3.) The Zone L RFI Map shows numerous different outfalls; however, the text only refers to four along the edge of Zone E. Please clarify why all outfalls were not evaluated during the Zone J assessment, and please provide an enlarged map showing the outfall locations in relation to the samples collected from Zone J. Any additional potential migration routes to Zone J such as ditches or culverts should also be identified.

4.) The report seems to focus primarily on the groundwater to surface water pathway. Please justify more clearly why the other pathways are not relevant for the SWMU/AOC specific discussions for each water body.

5.) Figures presented in Appendix B be should be separated for each water body so that the scale can be enlarged. Many sample location points overlap, and exact location orientation can not be determined with the maps in Appendix B. Also, no map was provided showing the cumulative contamination at each sample location. GIS will help the resolve this problem.

6.) A more detailed dredging map should be provided as well as a description of sample locations in relation to the dredging activities. Is not clear which samples from the Cooper River are in areas that are regularly dredged. Please show the dates of the most recent dredging activity along with the dates of sampling. This will give the reader a better understanding of sediment deposition and potential Navy Base influence.

7.) Since Zones L and K are not referenced on maps, please provide brief descriptions of each when first mentioned in the text.

8.) Table 3.1 reports maximum concentrations greater than the SSVs for antimony, DDE, PCB and many of the semivolatle organic compounds eg.dibenzo(a,h)anthracene. Please provide figures plotting sample locations in Appendix B.

SPECIFIC COMMENTS:

- 1.) Page 1-1, Paragraph 4 states, "...sediment and surface water samples collected as part of zone-specific investigations were sometimes analyzed for only the COPCs related to a specific source rather than a full scale analysis." The text goes on to say, on page 1-2, that the zone specific investigations are not complete, and therefore not all sources and potential COPCs are known. By limiting the analysis in Zone J, potential contamination may be overlooked.
- 2.) Page 2-1, Paragraph 1 refers to AOCs 500,501, and 502. Please explain in more detail why these site would not potentially impact Zone J. A map or figure may be helpful.
- 3.) To help make the Zone J Draft RFI report a "stand alone" document, please provide more information regarding the organotins and PAHs detected in the 1992 USACE report. Please provide a figure showing the sample locations in relationship to the site and other Zone J samples collected.
- 4.) The Conceptual Site Model will be revised to provide more detail in later stages of the ERA process; therefore, please refer to the model in Figure 3-1 as a Preliminary Conceptual Site Model.
- 5.) Page 2-12, Section 2.3.2, refers to a toxicological study of effects to marine organisms in Shipyard Creek. Paragraph 1 states that only Site 5 was deemed applicable to the evaluation of Zone J. Please provide more information to show how this information correlates to Zone J and how it will be used in future evaluations.
- 6.) Silver is noted on the map in Appendix B as being detected in eight locations at a greater concentration than the SSV. However, Table 3.1 shows the maximum concentration detected in both the Cooper River and Shipyard Creek as lower than the SSV. It appears from Table 3.1 that silver was not tested for in the Noisette Creek samples. Please clarify.
- 7.) The maps in Appendix B for DDD and DDT show widespread contamination at levels above the SSVs in all three water bodies but Table 3.1 reports that levels of these contaminants were greater than the SSV in Shipyard Creek only. Please clarify.
- 8.) Appendix B- Numerical values of SSVs are not consistently provided in the key of the COPC maps. Please include.
- 9.) Table 3.1- Not Applicable (NA) is used in the SSV column for both contaminants that have not been detected and for contaminants that have been detected but have no available SSV in the literature. Perhaps alternative acronyms could be used to distinguish.

If you have any questions concerning these comments, please contact Susan Byrd (803)896-4188 or Rachel Breidling (803)896-4131.



**DIVISION OF
HYDROGEOLOGY**
2600 Bull Street
Columbia, SC 29201
Telephone (803) 896-4010
Fax (803) 896-4002

MEMORANDUM

TO: Mihir Mehta, Environmental Engineer Associate
Corrective Action Engineering Section
Division of Hazardous and Infectious Waste Management
Bureau of Land and Waste Management

FROM: Michael W. Danielsen, Hydrogeologist
Hazardous Waste Section
Division of Hydrogeology
Bureau of Land and Waste Management

DATE: May 31, 2000

RE: Navbase Charleston (CNC)
Charleston, South Carolina
SC 170 022 560

Zone J RFI Report, part 1 (scoping package)
Revision 0, Dated April 24, 2000 (received April 25, 2000)

The document referenced above has been reviewed as a scoping package to facilitate the development of the Draft RFI Report.

Based on the results of that review, comments are attached. The Department will be amenable to discuss and resolve these comments.

Zone J RFI Report, part 1 Charleston Naval Complex (CNC)

General Comments

1. The Zone G, H, and I RFI Reports are incomplete and therefore unapproved. The Department has requested that additional fieldwork be done on all three RFIs to complete site characterization. The fact that the reports are incomplete is further demonstrated in the text as stated, “no groundwater samples were taken at [SWMUs 21, 54, 81, and AOCs 555, and 556], but the soil-to-surface water path is valid.” The much needed additional work on the individual Zone RFIs will help to complete the subsequent Zone J document. The Navy must plan to take additional samples to address these areas. Therefore the Zone J document is, consequently, also incomplete and is pre-mature to be submitted at this time.
2. Since the previous RFIs were submitted using SSLs based on a DAF of 20, what effect will that have on the results of the RFIs when they are re-calculated using more appropriate site specific DAFs?
3. The Zone J document, as submitted, does not include any conclusions or recommendations, which makes the document incomplete and unable to be approved.
4. The Department understands that the Cooper River is a dynamic system. The Navy has directly discharged sewage, storm water, sand blast grit & paint flakes, paint operation wastes, etc and also had accidental releases into the surrounding water bodies. The Navy has not been the only party to induce contaminants into the River, but at the same time the Navy needs to stand up and take responsibility for past operations that may have contaminated the Cooper River, as well as Noisette Creek and Shipyard Creek. The Navy must take great care to properly characterize all of the water bodies and sediments stated in the Zone J report with sediment transport and water flow studies.

The recent sampling locations are a start but must be refined to complete the proper sediment and surface water sample locations adjacent to outfalls and other possible release points.

Specific Comments

5. **Page 1-3, Section 1-1, Site Investigation Background and Strategy, 3rd paragraph**
This paragraph states that previous efforts to provide Risk Managers with meaningful surface water data and contaminant distributions have proven unsuccessful. The text states a problem but does not offer any alternatives proposed to correct this situation. Please explain.
6. **Page 1-9, Site Map**
The site map does not provide correlations of sampling locations with outfalls associated with the Navy Base or outfalls of the Navy’s neighbors. Please provide a map showing all

outfall locations.

The sampling locations may need to be evaluated with respect to the outfalls and may need to be re-located and re-sampled to properly characterize the sediment associated with the Navy Base. Please evaluate and address.

7. Page 2-5, Section 2.2.1, development Impacting the Cooper River, 1st paragraph

This paragraph states the mean flow into the Pinopolis Dam, but does not explain how the Charleston Harbor has been affected. Please explain

8. Page 2-7, Section 2.2.2, Other Investigations in the Cooper River

The text states that the USACE collected 11 pre-dredge samples in 1994 and 17 samples in 1997 from the Charleston Harbor. There is not any indication of where these sampling locations, analytical parameters or the analytical results may be found. Please provide a figure indicating the sample locations and a table listing the analytes tested for and found in the referenced pre-dredge samples.

9. Page 2-9, Section 2.2.2, Other Investigations in the Cooper River, Contaminants

This section states the type of analysis, but does not show where samples were located. Please provide the sample locations on a map/figure.

10. Page 2-12, Section 2.3.2, Other Shipyard Creek Investigations, 4th paragraph

The text refers to Site 5 but does not indicate where site 5 is located. Please provide a figure indicating the location of Site 5.

11. Page 2-18, Section 2.4, Noisette Creek

The text refers to Microtex, but does not explain the meaning. Please explain/clarify.

12. Page 3-12, AOC 675/676/677 (Zone I)

This section states that a 495-gallon OWS is located north of the UST. Please explain if the OWS/tank is still in place. If the tank/OWS has been removed please summarize results and reference the report.

AOC 676

This section states that unknown materials were burned in the incinerator. Please explain where ash from incinerator operations was disposed.

AOC 677

This section states that an OWS was used at this site. Please explain the status of the OWS and associated system. If this system has been removed please summarize results and reference the report.



2600 Bull Street
Columbia, SC 29201-1708

*Rud
7/7*

Henry HNS 7/10

Matt HNS 7/13

File

June 30, 2000

Henry Shepard, II, P.E.
Caretaker Site Office
NAVFACENGCOM, Southern Division
P.O. Box 190010
North Charleston, SC 29419-9010

RE: **Negotiated Environmental Indicator Schedule
Charleston Naval Complex
SC0 170 022 560**

Dear Mr. Shepard :

Attached is the Environmental Indicator (EI) Schedule for the Charleston Naval Complex. The schedule is a result of discussions with your facility and reflects interim milestones and tentative dates for achieving controls for human exposure (CA725) and/or contaminated groundwater migration (CA750), which were mutually agreed upon.

Please note that the Environmental Indicator Schedule may not encompass all corrective action at the facility, and achieving controls for the Environmental Indicators may not constitute remedy in place or final remediation. The Environmental Indicators are evaluated for current land use only. Potential future land use or groundwater use, and ecological exposure or receptors are not considered.

Thank you for your cooperation and assistance in this matter. If you have any questions or require additional information, please do not hesitate to contact me at (803) 896-4185 or at scaturdm@columb34.dhec.state.sc.us.

Sincerely,

David Scaturo, P.E., P.G.
Manager, Corrective Action Engineering Section
Division of Hazardous and Infectious Waste Management
Bureau of Land and Waste Management

attachment

cc: Ms. Dawn Taylor, USEPA Region IV
Mihir Mehta, Corrective Action Engineering Section
Paul Bergstrand, Hazardous Waste Hydrogeology Section
BLWM File

Project Schedule for Meeting Environmental Indicators

I. Basic Information

Name and I.D. No.	Location (City or Town)	Date of Latest EI Memo	CA 725 Decision	CA 750 Decision
Charleston Naval Complex SC0 170 022 560	Charleston, SC	September 18, 1997	NO	NO

II. Brief Facility Background

The Charleston Naval Base was closed on April 1, 1996 and was renamed the Charleston Naval Complex (CNC). The CNC consists of 1,588 acres and is located along the Cooper River in Charleston County, South Carolina. The CNC is divided into 12 zones (alphabetically from Zone A to K) to facilitate RCRA corrective action processes and for conveyance of the property for redevelopment. The CNC operated approximately 18 major industrial shops. The hazardous waste generated primarily included paint waste, waste solvents, boiler cleaning solutions, acids, sludge from metal plating at the ship pretreatment facility, and small quantities of mixed waste (radiologically contaminated hazardous waste).

The CNC corrective action program is governed by the RCRA Permit (SC0 170 022 650), issued by the SCDHEC on August 17, 1998. Appendix A of the referenced permit lists the 196 solid waste management units (SWMUs) and 209 areas of concern (AOCs) identified at the CNC that are in various stages of corrective action.

The EPA generated a National Corrective Action Priority System (NCAPS) ranking for the site in March of 1992. The result of this ranking was a high rating. SCDHEC conducted an environmental indicator (EI) evaluation of the CNC on September 18, 1997. This evaluation examined plausible human exposure, groundwater migration, surface water contamination, and whether controls are in place to prevent exposure at the facility.

III. Brief Outline of Issues Leading to an EI of NO or IN

A. CA 725

Numerous portions of the CNC have soils contamination above relevant action levels. The risk associated with these contaminant (organics, in-organics, PCBs, PAHs, and BaP) concentrations is above acceptable levels (i.e., well above 1E-6 and 1E-4) for both future industrial and residential land use scenarios. (For example: SWMU 9 is an 11 acre landfill that received industrial and domestic waste and has no cover/cap. Since the base is closed and as reuse is in progress the CNC has not provided access control to prevent trespassers from entering the referenced site)

B. CA 750

Shallow, intermediate, and deep zones of the surficial aquifer had detections of metals and solvents above their respective Maximum Contaminant Levels (MCLs). Major areas affected include the west boundary (SWMU 39) of the CNC, which is adjacent to a marsh and close to a residential area, AOC 607 in Zone F, adjacent to a residential property, SWMU 196 in Zone H discharging contamination into Shipyard Creek, and the Naval Annex property. At this stage, no controls are in place to stop the groundwater from migrating off site or to prevent access to the marsh area, Shipyard Creek, and the headwaters of Noisette Creek.

IV. Discussion of What is Needed to Get to Yes, with Schedule (a.k.a EI Interim Milestone)

A. CA725

Based on the complexity of the project and the incomplete RFI process, the CNC Tier I team used a more conservative approach to develop the attached schedule. The interim measures and focused CMS process will be used to achieve the EI of “YES”.

B. CA 750

Based on the complexity of the project and the incomplete RFI process, the CNC Tier I team used a more conservative approach to develop the attached schedule. The interim measures process will be used for groundwater source and hot spot reduction. The interim measures and focused CMS process, for groundwater migration control and plume reduction, will be used to achieve the EI of “YES”.

V. Level of Confidence in Meeting EI's, and Major Issues

		Schedule	Actual
CA725 YES	Current Human Exposures Under Controlled	6/30/04	3/31/04
	Comment: High Confidence		
CA750 YES	Migration of Contaminated Groundwater Under Control	Schedule 3/31/05	Actual 9/30/04
	Comment: Medium to High Confidence		

Zone	SWMU/AOC Number	SWMU/AOC Name	Activites (Events as Defined in RCRIS)	Activity CA RCRIS Event Code	Scheduled Date (QTR & FY)	EI Code (725/750)	Remarks
A	42	Former Asphalt Plant and Tanks (next to AOC 505)	CMS Report Approved, CMI Work Plan Approved, Stabilization Measure Implemented	CA350, CA 500, CA 600	3/31/2001, 12/31/01, 3/31/02	725	Remedy to be selected in CMS, Implemented with CMI process
C	44	Coal Storage Yard	CMS Report Approved, CMI Work Plan Approved, Stabilization Measure Implemented	CA350, CA 500, CA 600	3/31/2001, 12/31/01, 3/31/02	725	Remedy to be selected in CMS, Implemented with CMI process
C	700	Golf Maintenance, Building 1646	CMS Report Approved, CMI Work Plan Approved, Stabilization Measure Implemented	CA350, CA 500, CA 600	3/31/2001, 12/31/01, 3/31/02	725	Remedy to be selected in CMS, Implemented with CMI process
E	596	Former Torpedo Storage, Building 101	CMS Report Approved, CMI Work Plan Approved, Stabilization Measure Implemented	CA350, CA 500, CA 600	3/31/2002, 12/31/02, 3/31/03	725	Remedy to be selected in CMS, Implemented with CMI process
F	36	Battery Shop, Building 68	CMS Report Approved, CMI Work Plan Approved, Stabilization Measure Implemented	CA350, CA 500, CA 600	9/30/2001, 6/30/02, 9/30/02	725	Remedy to be selected in CMS, Implemented with CMI process
G	646	Operational Storage, Building 3906Q, Chicora	CMS Report Approved, CMI Work Plan Approved, Stabilization Measure Implemented	CA350, CA 500, CA 600	9/30/2001, 6/30/02, 9/30/02	725	Remedy to be selected in CMS, Implemented with CMI process
H	9	Closed Landfill	Interim Measures Plan Approved, Interim Measure Report Received	CA630, CA640	3/31/2001, 6/30/01	725	Access Control Implementation
H	14	Chemical Disposal Area	CMS Report Approved, CMI Work Plan Approved, Stabilization Measure Implemented	CA350, CA 500, CA 600	3/31/2001, 12/31/01, 3/31/02	725	Remedy to be selected in CMS, Implemented with CMI process

H	15	Incinerator	CMS Report Approved, CMI Work Plan Approved, Stabilization Measure Implemented	CA350, CA 500, CA 600	3/31/2001, 12/31/01, 3/31/02	725	Remedy to be selected in CMS, Implemented with CMI process
H	178	Site of Apparent Transformer Fire	CMS Report Approved, CMI Work Plan Approved, Stabilization Measure Implemented	CA350, CA 500, CA 600	3/31/2001, 12/31/01, 3/31/02	725	Remedy to be selected in CMS, Implemented with CMI process
H	649	Braswell Shipyards Storage Area	CMS Report Approved, CMI Work Plan Approved, Stabilization Measure Implemented	CA350, CA 500, CA 600	6/30/2001, 3/31/02, 6/30/02	725	Remedy to be selected in CMS, Implemented with CMI process
H	650	Metal Trades Storage Area	CMS Report Approved, CMI Work Plan Approved, Stabilization Measure Implemented	CA350, CA 500, CA 600	6/30/2001, 3/31/02, 6/30/02	725	Remedy to be selected in CMS, Implemented with CMI process
H	651	Sandblasters Storage Area	CMS Report Approved, CMI Work Plan Approved, Stabilization Measure Implemented	CA350, CA 500, CA 600	6/30/2001, 3/31/02, 6/30/02	725	Remedy to be selected in CMS, Implemented with CMI process
I	16	Paint Storage Bunker	CMS Report Approved, CMI Work Plan Approved, Stabilization Measure Implemented	CA350, CA 500, CA 600	3/31/2003, 12/31/03, 3/31/04	725	Remedy to be selected in CMS, Implemented with CMI process
K	693	Fuse and Primer House, Clouter Island	Interim Measures Plan Approved, Interim Measure Report Received	CA630, CA640	3/31/2001, 6/30/01	725	Access Control Implementation
K	694	Former Naval Ammunition Depot, Clouter Island	Interim Measures Plan Approved, Interim Measure Report Received	CA630, CA640	3/31/2001, 6/30/01	725	Access Control Implementation
L	504	Railroad System, Basewide	CMS Report Approved, CMI Work Plan Approved, Stabilization Measure Implemented	CA350, CA 500, CA 600	3/31/2003, 12/31/03, 3/31/04	725	Remedy to be selected in CMS, Implemented with CMI process
Total Facility			Current Human Exposure Under Control Determination	CA725	6/30/04	725	Revised EI Memorandum

Zone	SWMU/AOC Number	SWMU/AOC Name	Activities (Events as Defined in RCRIS)	Activity CA RCRIS Event Code	Scheduled Date (QTR & FY)	EI Code (725/750)	Remarks
A	39	POL Drum Storage	CMS Report Approved, CMI Work Plan Approved, Stabilization Measure Implemented [OE&S]	CA350, CA 500, CA 600	12/31/01, 9/30/02, 12/31/02 [12/31/03]	750	Remedy to be selected in CMS, Implemented with CMI process
E	25	Old Plating Operation, Building 44	CMS Report Approved, CMI Work Plan Approved, Stabilization Measure Implemented [OE&S]	CA350, CA 500, CA 600	6/30/02, 3/31/03, 6/30/03 [6/30/04]	750	Remedy to be selected in CMS, Implemented with CMI process
E	65	Lead Storage, Building 221+C57	CMS Report Approved, CMI Work Plan Approved, Stabilization Measure Implemented [OE&S]	CA350, CA 500, CA 600	12/31/02, 9/30/03, 12/31/03 [12/31/04]	750	Remedy to be selected in CMS, Implemented with CMI process
F	607	Dry Cleaning, Building 1189	CMS Report Approved, CMI Work Plan Approved, Stabilization Measure Implemented [OE&S]	CA350, CA 500, CA 600	12/31/02, 9/30/03, 12/31/03 [12/31/04]	750	Remedy to be selected in CMS, Implemented with CMI process
H	196	Building 1838	CMS Report Approved, CMI Work Plan Approved, Stabilization Measure Implemented [OE&S]	CA350, CA 500, CA 600	6/30/02, 3/31/03, 6/30/03 [6/31/04]	750	Remedy to be selected in CMS, Implemented with CMI process
K	166	Automobile Service Shop	CMS Report Approved, CMI Work Plan Approved, Stabilization Measure Implemented [OE&S]	CA350, CA 500, CA 600	9/30/02, 6/30/03, 9/30/03 [9/30/04]	750	Remedy to be selected in CMS, Implemented with CMI process
Total Facility			Migration of Contaminated Groundwater Under Control	CA750	3/31/05	750	Revised EI Memorandum



DEPARTMENT OF THE NAVY

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
P.O. BOX 190010
2155 EAGLE DRIVE
NORTH CHARLESTON, S.C. 29419-9010

5090/11
Code 18B1
28 July, 2000

Mr. John Litton, P.E.
Director, Division of Hazardous and Infectious Waste Management
Bureau of Land and Waste Management
South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia, SC 29201

Subj: SUBMITTAL OF MEMBRANE INTERFACE PROBE PILOT STUDY, PHASE I,
CORRECTIVE MEASURES STUDY WORK PLAN

Dear Mr. Litton,

The purpose of this letter is to submit the Membrane Interface Probe (MIP) Pilot Study, Phase I, Corrective Measures Study (CMS) Work Plan for Naval Base Charleston. . The Workplan is submitted to fulfill the requirements of condition IV.E.2 of the RCRA Part B permit issued to the Navy by the South Carolina Department of Health and Environmental Control and U.S. Environmental Protection Agency.

The document is distributed under separate cover letter by CH2M Hill. Appropriate certification is provided under that correspondence. We request that the Department and the EPA review this document and provide comments or approval whichever is appropriate. If you should have any questions, please contact Matthew Humphrey or Matthew A. Hunt at (843) 743-9985 and (843) 820-5525 respectively.

Sincerely,

A handwritten signature in black ink that reads "Matthew A. Hunt".

Matthew A. Hunt, P.E.
Environmental Engineer
BRAC Division

Copy to:
SCDHEC (4),
USEPA (Dann Spariosu)
CSO Naval Base Charleston (Matt Humphrey)
CH2M-Hill (Dean Williamson)



2600 Bull Street
Columbia, SC 29201-1708

August 15, 2000

Henry Shepard II, P.E.
Caretaker Site Office
NAVFACENGCOM, Southern Division
P. O. Box 190010
North Charleston, SC 29419-9010

Re: Groundwater Monitoring Interim Measures Work Plan for Charleston Naval Complex (CNC)
for Fiscal Year 2000, dated July, 2000, received July 13, 2000.

Dear Mr. Shepard:

The South Carolina Department of Health and Environmental Control (Department) has reviewed the above referenced Document according to applicable State and Federal Regulations, and the Charleston Naval Complex Hazardous Waste Permit, effective September 17, 1999. The attached comments were generated based on this review. These comments must be addressed prior to the submittal of final document for review and approval. Further, the Department is available to clarify any of the attached comments before the submittal of the comment responses and the revised document in order to expedite the resolution of these issues.

Should you have any questions regarding these comments, please contact me at (803) 896-4088 or Paul Bergstrand at (803) 896-4016.

Sincerely,

Mihir P. Mehta, Project Manager
Corrective Action Engineering Section
Bureau of Land & Waste Management

Attachments:

1. Memorandum from Paul M. Bergstrand to Mihir Mehta dated August 3, 2000.
2. Memorandum from Michael W. Danielsen to Mihir Mehta dated August 15, 2000.

cc: Paul Bergstrand, Hydrogeology
Michael Danielsen, Hydrogeology
Rick Richter, Trident EQC
Tony Hunt, SOUTHDIV
Dann Spariosu, EPA Region IV
Dean F. Williamson, CH2M HILL



2600 Bull Street
Columbia, SC 29201-1708

MEMORANDUM

TO: Mihir Mehta, Environmental Engineer Associate
Corrective Action Engineering Section
Division of Waste Management
Bureau of Land and Waste Management

FROM: Paul M. Bergstrand, P.G., Hydrogeologist
Hazardous Waste Section
Division of Hydrogeology
Bureau of Land and Waste Management

DATE: 3 August 2000

RE: Charleston Naval Base (CNAV)
Charleston County, South Carolina
SC0-170-022-560

Groundwater Monitoring Fiscal Year 2000
Interim Measures Work Plan
Dated July 2000, Revision No. 00

The materials referenced above have been reviewed with respect to the requirements of R.61-79 of the South Carolina Hazardous Waste Management Regulations, The Environmental Protection Agency's (EPA) RCRA Facility Investigation Guidance Document dated May 1989, the EPA Region IV Environmental Compliance Branch Standard Operating Procedures and Quality Assurance Manual (SOP/QAM) dated May 1996, the CNAV Final Comprehensive Sampling and Analysis Plan dated 30 August 1994, CERFA 120(h) as amended, DoD FOST Guidance and EPA BRAC FOST Guidance.

Groundwater Monitoring Fiscal Year 2000 Comments

Paul M. Bergstrand

3 August 2000

1. Section 2

The description of work and sample analysis found in Section 2.0 and Tables 2-1 and 2-2 have minor discrepancies. The Department believes these are typographical oversights and that the work will fulfill the agreements reached in the meeting with Tom Beisel on June 6.

2. SWMU 14

Please check the new analytical data with the previous soil and groundwater data. The previous data can be found in the RFI Report and the Interim Measures Completion Report for SWMU 14.

3. SWMU 25

It was noted in Figure 2-6 that no wells from SWMU 25 were included in this plan. Two or more wells from SWMU 25 need to be included in this sample event.

4. Monitored Wells

The list of all wells to be monitored is subject to revision.



**DIVISION OF
HYDROGEOLOGY**
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Columbia, SC 29201
Telephone (803) 896-4010
Fax (803) 896-4002

MEMORANDUM

TO: Mihir Mehta, Environmental Engineer Associate
Corrective Action Engineering Section
Division of Hazardous and Infectious Waste Management
Bureau of Land and Waste Management

FROM: Michael W. Daniels, Hydrogeologist
Hazardous Waste Section
Division of Hydrogeology
Bureau of Land and Waste Management

DATE: August 15, 2000

RE: Navbase Charleston (CNC)
Charleston, South Carolina
SC 170 022 560

Interim Measures Work Plan
Groundwater Monitoring Fiscal year 2000
Revision 0, Dated July 2000 (received July 13, 2000)

The document referenced above has been reviewed with respect to the requirements of R.61-79 of the South Carolina Hazardous Waste Management Regulations, The Environmental Protection Agency's (EPA) RCRA Facility Assessment Guidance Document dated October 1988, and the revised EPA Region IV Environmental Compliance Branch Standard Operating Procedures and Quality Assurance Manual (SOP/QAM) dated May 1996.

Based on the results of that review, the Department approves the IM Work Plan as written, with the addition and implementation of the attached comments. Of note, the Department is amenable to discuss and resolve the comments:

**Interim Measures Work Plan,
Groundwater Monitoring Fiscal Year 2000,
Charleston Naval Complex (CNC)**

General Comments

1. Great usage of air photos and GIS!
2. The plan does not address the ongoing maintenance such as, but not limited to, inspecting the wells for locks and usability, inspecting for damage, and keeping the pads clear of vegetation for all of the monitoring wells on base. The Navy must provide the Department some written plan for assuring the general maintenance of all the monitoring wells. This issue may be resolved no later than the October 2000 CNC Partnering Team Meeting.

Specific Comments

3. **Page 1-1, Section 1.1, Purpose of This Interim Measure, 3rd paragraph**
This paragraph states that SCDHEC and CH2M-Jones developed a list of SWMUs and AOCs recommended for monitoring. Based on this list, SCDHEC and CH2M-Jones developed a list of specific monitoring wells and analytes for those wells. Note: The referenced IM Work Plan is a “living” dynamic document. Upon approval of the Project Team, the plan may have additions if further information is discovered to support such a recommendation. Please revise to reflect this in the present plan.
4. **Page 2-2, SWMU 14**
The history for this SMWU must be re-examined to include information from wells H014GW002 shallow and deep. These wells have a history of VOC, SVOC and pesticide “hits” and may need to be added into the next rounds of sampling for SVOCs and pesticides.
5. **Page 3-1, Section 3.0, Sampling, Analysis, and Reporting**
This section states that the groundwater sampling and analysis described in this IM will follow the procedures found in the approved CSAP portion of the RFI Work Plan. The IM should at least state the fieldwork proposed (i.e. groundwater level measurements, pH, DO, etc) for collecting the samples described in this IM.



2600 Bull Street
Columbia, SC 29201-1708

Bud
8/24

Matt

Rick

Andy AD

Johnny

File

August 17, 2000

Henry Shepard II, P.E.
Caretaker Site Office
NAVFACENCOM, Southern Division
P. O. Box 190010
North Charleston, SC 29419-9010

Re: Corrective Measures Study (CMS) Work Plan for SWMU 166 Membrane Interface Probe (MIP) Pilot Study Phase I located in Zone K Annex of the Charleston Naval Complex, SCO 170 022 560, Revision 0, dated July 2000, received August 4, 2000.

Dear Mr. Shepard:

The South Carolina Department of Health and Environmental Control (Department) has reviewed the above referenced document according to applicable State and Federal Regulations, and the Charleston Naval Complex Hazardous Waste Permit, effective September 17, 1999. Based on this review the referenced CMS Work Plan is approved provided the Navy addresses the attached two comments during the field implementation and future work.

Should you have any questions regarding these comments, please contact Mihir Mehta at (803) 896-4088 or Paul Bergstrand at (803) 896-4016.

Sincerely,

M. P. Mehta for

David M. Scaturo, P.E., P.G., Manager
Corrective Action Engineering Section
Bureau of Land & Waste Management

Attachments: Memorandum from Paul Bergstrand to Mihir Mehta dated August 16, 2000.

cc: Paul Bergstrand, Hydrogeology
Rick Richter, Trident EQC
Tony Hunt, SOUTHDIV
Dann Spariosu, EPA Region IV
Dean F. Williamson, CH2MHILL/JONES



2600 Bull Street
Columbia, SC 29201-1708

MEMORANDUM

TO: Mihir Mehta, Environmental Engineer Associate
Corrective Action Engineering Section
Division of Waste Management
Bureau of Land and Waste Management

FROM: Paul M. Bergstrand, P.G., Hydrogeologist
Hazardous Waste Section
Division of Hydrogeology
Bureau of Land and Waste Management

DATE: 16 August 2000

RE: Charleston Naval Base (CNAV)
Charleston County, South Carolina
SC0-170-022-560

Corrective Measures Study Work Plan
Membrane Interface Probe (MIP) Pilot Study
Dated July 2000, Revision No. 0

The materials referenced above have been reviewed with respect to the requirements of R.61-79 of the South Carolina Hazardous Waste Management Regulations, The Environmental Protection Agency's (EPA) RCRA Facility Investigation Guidance Document dated May 1989, the EPA Region IV Environmental Compliance Branch Standard Operating Procedures and Quality Assurance Manual (SOP/QAM) dated May 1996, the CNAV Final Comprehensive Sampling and Analysis Plan dated 30 August 1994, CERFA 120(h) as amended.

Membrane Interface Probe (MIP) Pilot Study Comments

Paul M. Bergstrand

16 August 2000

1. Figures 1-1 and 2-1

The two figures represent the annex with monitoring wells. Figure 1-1 includes TCE analytical results from three sampling events in numerical form adjacent to the monitoring wells. In the event that the MIP process is found suitable for selection for delineation of contamination and free product, the subsequent workplans should include figures representing known contamination with isocontours or some other suitable process for comparison purposes. This comment does not require any revisions of the workplan.

2. Section 3.0

The text states the investigative-derived waste (IDW) consisting of purge water will be collected in a labeled 55-gallon drum and left onsite. It is imperative that the drums of IDW be kept in a secure location until properly disposed. This comment does not require any revisions of the workplan.



2600 Bull Street
Columbia, SC 29201-1708

*Recd
8/30*

Matt _____

Rick _____

Jim _____

Johnny _____

Mary _____

August 24, 2000

Henry Shepard II, P.E.
Caretaker Site Office
NAVFACENGCOM, Southern Division
P. O. Box 190010
North Charleston, SC 29419-9010

Re: Zone K RCRA Facility Investigation Course of Action and Name Change Request for the Charleston Naval Complex (CNC) RCRA Permit, dated August 15, 2000, received August 21, 2000.

Dear Mr. Shepard:

The South Carolina Department of Health and Environmental Control (Department) acknowledges the receipt of the letter dated August 15, 2000 from Mr. M. A. Hunt to Mr. John Litton. The letter indicates the Navy's intentions to separate the combined Zone K RFI into two areas, the "Naval Station Annex" and the "Clouter Island". The reason for the separation is because the Navy has contracted the completion of investigation, evaluation, and corrective action work to two different contractors. The Department recognizes the need to separate the two areas in order to facilitate the corrective action work in an expeditious manner. Therefore, the Department agrees with the proposed separation and recommends to rename the Zone K to "Zone K Naval Station Annex" and "Zone K Clouter Island". _____ the proposed change should be incorporated

Should you have any questions regarding these comments, please contact Mihir Mehta at (803) 896-4088 or Paul Bergstrand at (803) 896-4016.

Sincerely,

M P Mehta

Mihir P. Mehta, Project Manager
Corrective Action Engineering Section
Bureau of Land & Waste Management

cc: Paul Bergstrand, Hydrogeology
Rick Richter, Trident EQC
Tony Hunt, SOUTHDIV
Dann Spariosu, EPA Region IV
Dean F. Williamson, CH2MHILL/JONES
Todd Haverkost, EnSafe



2600 Bull Street
Columbia, SC 29201-1708

Matt

Rich

2000

11/19/00 file

September 5, 2000

Henry Shepard II, P.E.
Caretaker Site Office
NAVFACENGCOM, Southern Division
P. O. Box 190010
North Charleston, SC 29419-9010

Re: Groundwater Monitoring Interim Measure Work Plan for Fiscal year 2000, Charleston Naval Complex, SCO 170 022 560, Revision 1.0, dated August 23, 2000, received August 24, 2000.

Dear Mr. Shepard:

The South Carolina Department of Health and Environmental Control (Department) has reviewed the above referenced document according to applicable State and Federal Regulations, and the Charleston Naval Complex Hazardous Waste Permit, effective September 17, 1998. Based on this review the referenced Interim Measure Work Plan is approved provided the Navy acknowledges the attached two comments during future work.

Should you have any questions regarding these comments, please contact Mihir Mehta at (803) 896-4088 or Paul Bergstrand at (803) 896-4016.

Sincerely,

David M. Scaturo, P.E., P.G., Manager
Corrective Action Engineering Section
Bureau of Land & Waste Management

Attachments: Memorandum from Paul Bergstrand to Mihir Mehta dated August 30, 2000.
Memorandum from Michael Danielsen to Mihir Mehta dated September 1, 2000.

cc: Paul Bergstrand, Hydrogeology
Michael Danielsen, Hydrogeology
Rick Richter, Trident EQC
Tony Hunt, SOUTHDIV
Dann Spariosu, EPA Region IV
Dean F. Williamson, CH2MHILL/JONES



2600 Bull Street
Columbia, SC 29201-1708

MEMORANDUM

TO: Mihir Mehta, Environmental Engineer Associate
Corrective Action Engineering Section
Division of Waste Management
Bureau of Land and Waste Management

FROM: Paul M. Bergstrand, P.G., Hydrogeologist
Hazardous Waste Section
Division of Hydrogeology
Bureau of Land and Waste Management

DATE: 30 August 2000

RE: Charleston Naval Base (CNAV)
Charleston County, South Carolina
SC0-170-022-560

Groundwater Monitoring Fiscal Year 2000
Interim Measures Work Plan
Dated 23 August 2000, Revision No. 01

RECEIVED
SEP 11 2000

LABORATORY
L-1000

The materials referenced above have been reviewed with respect to the requirements of R.61-79 of the South Carolina Hazardous Waste Management Regulations, The Environmental Protection Agency's (EPA) RCRA Facility Investigation Guidance Document dated May 1989, the EPA Region IV Environmental Compliance Branch Standard Operating Procedures and Quality Assurance Manual (SOP/QAM) dated May 1996, the CNAV Final Comprehensive Sampling and Analysis Plan dated 30 August 1994, CERFA 120(h) as amended, DoD FOST Guidance and EPA BRAC FOST Guidance. The referenced document can be approved without revision. Please note the following comment.

Groundwater Monitoring Fiscal Year 2000

Interim Measures Work Plan Comments

Paul M. Bergstrand

30 August 2000

1. Section 2

The description of work and sample analysis found in Section 2.0, Table 2-2 has minor discrepancies. The Department understands that in subsequent sampling events SWMU 17 will include some level of PCB analysis and SMWU 25/70 will include VOC analysis and possibly additional monitoring wells per the 23 August 2000 agreements reached in teleconference with Tom Beisel.



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MEMORANDUM

TO: Mihir Mehta, Environmental Engineer Associate
Corrective Action Engineering Section
Division of Hazardous and Infectious Waste Management
Bureau of Land and Waste Management

FROM: Michael W. Danielsen, Hydrogeologist
Hazardous Waste Section
Division of Hydrogeology
Bureau of Land and Waste Management

DATE: September 1, 2000

RE: Navbase Charleston (CNC)
Charleston, South Carolina
SC 170 022 560

Final Interim Measures Work Plan for
Groundwater Monitoring Fiscal Year 2000
CNC
Revision 01, Dated August, 2000 (received August 24, 2000)

The document referenced above has been reviewed with respect to the requirements of R.61-79 of the South Carolina Hazardous Waste Management Regulations, The Environmental Protection Agency's (EPA) RCRA Facility Assessment Guidance Document dated October 1988, and the revised EPA Region IV Environmental Compliance Branch Standard Operating Procedures and Quality Assurance Manual (SOP/QAM) dated May 1996.

Based on the results of that review, the Department approves the IM Work Plan as written.
Please note the attached comment.

**Final Interim Measures Work Plan for
Groundwater Monitoring Fiscal Year 2000
CNC
Michael W. Danielsen**

1. Table 2-1

The Draft Groundwater Monitoring Plan table 2-1 indicated VOC, SVOC, inorganics, and PCB as recommended parameters for SWMU 17. However, table 2-1 in the final revision of the groundwater monitoring plan has inorganics and PCB omitted. This difference in recommended parameters may be considered addressed in Table 2-2.



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Columbia, SC 29201-1708

Matt _____
Rick _____
Amy _____
Mary _____ *File*

September 11, 2000

Henry Shepard II, P.E.
Caretaker Site Office
NAVFACENGCOCM, Southern Division
P. O. Box 190010
North Charleston, SC 29419-9010

Re: Corrective Measures Study (CMS) Report for SWMU 159 and AOC 653 located in Zone H of the Charleston Naval Complex, SCO 170 022 560, Revision 0, dated May 23, 2000, received May 30, 2000.

Dear Mr. Shepard:

The South Carolina Department of Health and Environmental Control (Department) has reviewed the above referenced document according to applicable State and Federal Regulations, and the Charleston Naval Complex Hazardous Waste Permit, effective September 17, 1998. The attached comments were generated based on this review. These comments must be addressed prior to the approval of the above referenced document.

To facilitate the approval process of the referenced CMS report the comments generated by engineer and hydrogeologist are attached. The Department will forward the comments based on the risk assessment review at a later date.

Further, the CNC should submit, to the Department, the draft comment responses to address these comments within thirty (30) calendar days of the receipt of this letter. This would facilitate the comment resolution meeting and expedite the review and approval process.

Should you have any questions regarding these comments, please contact Mihir Mehta at (803) 896-4088 or Paul Bergstrand at (803) 896-4016.

Sincerely,

m p mehta

Mihir Mehta, Project Manager
Corrective Action Engineering Section
Bureau of Land & Waste Management

Attachments: Memorandum from Susan Peterson to Mihir Mehta dated August 17, 2000.
Memorandum from Mansour Malik to Mihir Mehta dated September 8, 2000.

cc: Paul Bergstrand, Hydrogeology
Mansour Malik, Hydrogeology
Susan Peterson, Corrective Action Engineering
Rick Richter, Trident EQC
Tony Hunt, SOUTHDIV
Dann Spariosu, EPA Region IV
Dean F. Williamson, CH2MHILL/JONES
Todd Haverkost, EnSafe



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MEMORANDUM

COMMISSIONER:
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TO: Mihir Mehta, Project Manager
Corrective Action Engineering Section
Division of Waste Management
Bureau of Land and Waste Management

FROM: Susan Peterson, Environmental Engineer Associate
Corrective Action Engineering Section
Division of Waste Management
Bureau of Land and Waste Management

DATE: August 17, 2000

RE: Charleston Naval Complex (CNC)
Charleston, South Carolina
SC 170 022 560

Zone H Draft Corrective Measures Report,
AOC 653 and SWMU 159
Dated May 23, 2000

Upon review of this report, the Department has the following comments:

General Comments

1. Site Close-out strategies to support NFA recommendation.
At the May, 2000 meeting, the team discussed the need to include/evaluate Oil Water Separators, Zone J, Zone L, inorganics in groundwater, and indoor air quality issues when closing out a SWMU (recommending an NFA). As currently written, the Navy does not evaluate these issues to support their NFA recommendation. The Department will not concur with an NFA recommendation until these issues are addressed.

2. DET reports
The Navy has used the completion of Interim Stabilization Measure (ISM) reports to support their RFI addendum recommendations. An example of this is SWMU 159 and AOC 653. The Navy must

- a) Provide a copy of the ISM report to the Department
- b) Incorporate, as deemed appropriate, the necessary information from the ISM report to support the RFI addendum recommendations.

The Department is unable to concur with any recommendations until the Navy provides this information.

Comments
Zone H Draft Corrective Measures Report for AOC 653 and SWMU 159
Prepared by Susan Peterson
August 17, 2000

3. Changes in SWMUs/AOCs due to an ISM

The Navy has included figures in the RFI addendum report for SWMUs/AOCs 136, 663, 666, 138, 667, 197, and 17 that did not represent the current conditions they claimed to represent. An example of this was AOC 666 at which the Charleston DET conducted an ISM. Due to the discrepancies found in that document, the Department requests that the Navy review Figure 4 for AOC 653 and Figure 4 for SWMU 159 to determine if the figures are truly accurate. This report should illustrate pre- and post-ISM conditions of the SWMU/AOC to support the proposed recommendation.

Specific Comments, per SWMU/AOC

SWMU 653

Navy recommends an NFA

Based on the information provided in the report, the Department is unable to concur with the Navy's recommendation. The following comment(s) support this decision:

1. Close-out strategies

The Navy has not addressed the close-out strategies (see General comments).

2. DET reports

The soil sampled during the initial RFI contained hits of BEQs, and Aroclors 1248 and 1260, which yielded a human health risk of 9.1E-07. Thus the purpose of the ISM was to excavate petroleum-impacted soil, rather than decrease a human health risk value. Nonetheless, the Department still requires particular information in order to make a determination on the Navy's NFA recommendation. Please refer to General Comment #3.

SWMU 159

Navy recommends an NFA

Based on the information provided in the report, the Department is unable to concur with the Navy's recommendation. The following comment(s) support this decision:

3. Close-out strategies

The Navy has not addressed the close-out strategies (see General comments).

4. Ecological concerns of the adjacent marsh

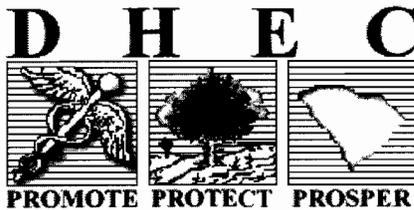
The Navy has responded to the Department's June 1999 comment about the lack of discussion on an adjacent marsh area. The Navy responded by saying that the Zone J work plan will be revised to meet the requirements of the new ERA Process document. The Navy further responded by stating that it believes that this evaluation will adequately address any potential ecological concerns for the adjacent wetlands.

Comments
Zone H Draft Corrective Measures Report for AOC 653 and SWMU 159
Prepared by Susan Peterson
August 17, 2000

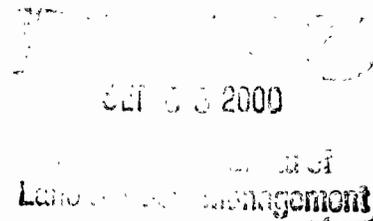
The Department is stating this information as a reminder, since this addresses one of the close-out strategies.

5. Revised risk values

The Navy claimed that the soil and sediment that contributed to the human health and ecological risk values has been excavated and removed via an ISM conducted by the DET. The Navy has not provided the Department with information to support this claim. The Department requires this information, which would likely include a table showing the results of the confirmatory sampling, and revised human health and ecological risk values, if applicable.



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M m randum:

To: Mihir Mehta, Environmental Engineer Associate
Corrective Action Engineering Section
Division Of Hazardous and Infectious Waste Management
Bureau of Land and Waste Management

From: Mansour N. Malik 
Hazardous Waste Section
Division of Hydrogeology
Bureau of Land and Waste Management

Date: 9/11/00

Re: Navbase Charleston (CNC)
Charleston, South Carolina
SC 1 70 022 560

Zone H, AOC 653 Corrective Measure Study Report and

Zone H, SWMU 159 Corrective Measure Study (CMS) Report

Revision 0, Dated May, 23rd, 2000

The Document referenced above has been reviewed with respect to the requirement of R.61-79 of the South Carolina Hazardous Waste Management Regulations, The Environmental Protection Agency's (EPA) RCRA Facility Assessment Guidance Document dated October 1988, and the revised EPA Region IV Environmental Compliance Branch Standard Operating Procedures and Quality assurance Manual (SOP/QAM) dated May 1996, the CNAV Final Comprehensive Sampling and Analysis Plan dated 30 August 1994, CERCLA 120(h) as amended.

Based on the results of the current review, the Department has the following comments:

General Comments:

1. The document appears to be well prepared, with satisfactory illustrations and maps. Revision of some might be required. Please see specific comments.
2. This report as presented was supposed to address the CMS activities plus the ISM (Interim Stabilization Measure) in terms of final remedy. Based on the attached document, justification towards an NFA (No Further Action) is not fulfilled. The Department would like to see more soil and groundwater sampling to make sure no risk is posed on human health or the environment.
3. In referring to other relative documents, this document does not bring in some of the important information regarding the geological and hydrogeological settings of the area in concern. This document failed to build a comprehensive correlation with data from adjacent SWMUs and AOCs, and therefore creates data gaps that make it impossible to come to a conclusion. Please revise and include all neighboring SWMUs and AOCs, and any oil-water separators, plus the pertinent hydrogeological data.
4. This documents does not relate to the unfinished work in Zone L and Zone J. It does not concur with proposed NFA.
5. Evaluation of the fate and transport potential of the Arsenic as from soil-to-groundwater is insufficient to support the claim that "Arsenic did not have the potential to migrate from soil to groundwater". It is evident that in the subsurface soil concentration of Arsenic exceeds that of the surface soil as proved throughout the current work and the background correlation reported. For the Department to consider an NFA, the soil-to-groundwater pathway for Arsenic and VOCs must be extensively studied.

6. The lack of information related to the locations and settings of the oil-water separators form a data gap for present and future evaluation of this site. The Department recommends that the Navy must include OWS (Oil Water Separators) data linkages to all SWMUs and AOCs to help enhance the quality of evaluation and assessment.

Zone H, AOC 653:

7. Fig 2 failed to show correlation with associated SWMUs and AOCs, and OWS as it should. Building 1508 is associated with SWMU 124; the Satellite Accumulation Area. Building 1347 is associated with SWMUS 92,93 and 115. Building 636 is associated with SWMUs 122, 123, SAA and PSWMUs 92, 93 and 115. None of the information cited, is included on the figures nor commented on, throughout the text. Please revise and include comments on correlations.
8. AST 640 and UST 640B are in the range of 250-300 ft east of AOC 635. Although groundwater flow direction is generally northeast, a correlation might be useful in predicting source and extent of the contaminants in concern. Please check and include relative information.
9. Table 3.3 on page 3.6 shows the TPH as non detect out of one round of sampling RFI (1996), while in Section 3.2 Navy DET (Environmental Detachment) ISM stated TPH was detected in all soil samples with a high of 42,000 mg/kg and also exceeded its 100 mg/kg screening level. Please clarify.
10. Section 6.2, 2nd line, SWMU 136/AOC 663 never appeared in any of the maps and figures throughout the document. However, the text has used them for correlation. Please revise and include relative information.
11. Section 4.1 2nd paragraph, last line. "Fig 3 shows..." Please be advised that wells NBCHGRD003/03D and BCHGRD006/06D were not indicated anywhere in the figure mentioned. Please check and include wells with their relevant parameters.
12. All of the figures presented lack information related to the wells parameters. Please revise well locations, depths, groundwater levels and any relevant hydrogeological data.

Zone H, SWMU 159:

13. Fig 6 shows TCE concentration values in soil as increasing downgradient (9, 13, 15, 21) mg/kg. In order to thoroughly investigate what is beyond that, the Department believes it is necessary to conduct more sampling downgradient both for the surface and subsurface intervals.

14. Fig 3: Sediment sample locations are not indicated in the legend. Please revise and include the information on the figure.
15. In order to support the claim that TCE has no potential to migrate from soil to groundwater, the Navy must complete more extensive data research/sampling and include better interpretations to support conclusion.
16. Section 4.2.1.1, Line 8: The document points out that reviewing archived soil data for three confirmation sample points at AOC 653 were reviewed to help evaluate SWMU 159. Please be advised that no figure throughout the documents ever ties the two sites together. The results of the evaluation are nowhere to be found in the text. For better correlation, Please revise and include an illustrating figure connecting the two locations with pertinent hydrological data. Also include the evaluation referenced.