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MCRD PARRIS ISLAND  
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LETTER OF TRANSMITTAL AND SOUTH CAROLINA DEPARTMENT OF HEALTH AND  
ENVIRONMENTAL CONTROL COMMENTS ON DRAFT REMEDIAL INVESTIGATION WORK  
PLAN FOR SITE 3 CAUSEWAY LANDFILL MCRD PARRIS ISLAND SC

*2/20/1997*

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL



Commissioner: Douglas E. Bryant

Board: John H. Burnss, Chairman  
William M. Hull, Jr., MD, Vice Chairman  
Roger Leaks, Jr., Secretary

Richard E. Jabbour, DDS  
Cyndi C. Mosteller  
Brian K. Smith  
Rodney L. Grandy

Promoting Health. Protecting the Environment

**CERTIFIED MAIL**

February 20, 1997

Commanding General, MCRD  
ATTN.: I&L ERR (NREAO)  
P.O. Box 19001  
Parris Island, SC 29905-9001

RE: Notice of Technical Inadequacy  
Review of Draft Remedial Investigation Work Plan  
Site 3 - Causeway Landfill  
Marine Corps Recruit Depot, dated December 1996  
Parris Island, South Carolina  
Beaufort County  
SC6 170 022 767

Dear Commanding General:

The Hazardous Waste Permitting Section and the Hydrogeology Section of the South Carolina Department of Health and Environmental Control (Department) have reviewed the MCRD's Draft Remedial Investigation Work Plan for Site 3 - Causeway Landfill, dated December 1996. Based on this review the Department has determined that the MCRD's Work Plan is technically inadequate. It needs to be revised by responding to the attached comments, provided by the Hazardous Waste Permitting Section and the Hydrogeology Section (memo Hargrove to Peterson). The response to comments should be in the form of a revised Work Plan or revised pages (with filing instruction included) to be inserted into the December 1996 document.

Should you have any questions regarding this issue, please contact me at (803) 896-4182 or Don Hargrove at (803) 896-4033.

Sincerely,

Susan C. Peterson, Environmental Engineer Associate  
Hazardous Waste Permitting Section  
Bureau of Land & Waste Management

Attachments

cc: Don Hargrove, Hydrogeology  
Mr. Russell Berry, SCDHEC-Low Country EQC  
Allison Humphris, USEPA Region IV  
Scott Glass, Southern Division  
Mark Speranza, Brown & Root Environmental  
Glenn Wagner, Brown & Root Environmental

## MEMORANDUM

TO: Susan Peterson, Engineering Associate  
Hazardous Waste Permitting Section  
Division of Hazardous and Infectious Waste Management  
Bureau of Land and Waste Management

FROM: Donald C. Hargrove, Hydrogeologist  
Hazardous Waste Section  
Division of Hydrogeology  
Bureau of Land and Waste Management



DATE: 20 February 1997

RE: Parris Island Marine Corps Recruit Depot (MCRD)  
Parris Island, South Carolina  
Beaufort County  
SC6 170 022 767

DRAFT Remedial Investigation Work Plan for Site 3 - Causeway Landfill  
(dated December 1996)

The Division of Hydrogeology has reviewed the DRAFT Remedial Investigation Work Plan for Site 3 - Causeway Landfill at MCRD. This work plan (dated December 1996) was received on 13 December 1996. This work plan provides a physical description of Site 3 that includes the history of the site. It briefly describes previous studies performed at the site and indicates that the previous studies have data gaps. This work plan proposes a sample strategy to fill the data gaps in order to fully characterize the nature and extent of contamination. This sample strategy includes fourteen (14) surface water samples, fourteen (14) sediment samples, sixteen (16) surface soil samples, thirty-two (37) subsurface soil samples, and five (5) groundwater samples.

This document was reviewed with respect to R.61-79 of the South Carolina Hazardous Waste Management Regulations (SCHWMR), and appropriate guidance documents. Based on this review, the Division of Hydrogeology finds that this work plan is technically deficient and should be revised. This work plan should be resubmitted after being revised to address the following specific comments:

- 1) **Section 2.1, Site Description:**  
The text describes the pipes installed through the causeway for tidal flow as “two corrugated metal pipes”. During a site tour, I recall seeing two separate tidal culverts each with two concrete pipes. Please verify and revise as necessary.
- 2) **Section 3.3, Groundwater:**  
This section states that “The causeway was constructed across a tidal marsh and the surficial groundwater is anticipated to be shallow and tidally influenced. However, the marsh deposits underlying the landfill [causeway] are anticipated to be a barrier to the deeper aquifer.” The marsh deposits discussed are not previously described. There is no discussion about the thickness of the marsh deposits or evidence showing that the marsh deposits are continuous and have not been adversely impacted during installation of the causeway. These deposits cannot be anticipated as a barrier if thickness, continuity, and hydrologic characteristics have not been assessed. Please revise the text to address this data gap.
- 3) **Section 4.1, Investigation Rationale, page 4-1:**
  - a) **Groundwater:** Note that as per R.61-68 of the Water Classification and Standards, “...all South Carolina groundwater is classified **GB** effective on June 28, 1985.” Groundwater classified as “GB” is considered a potential underground source of drinking water. The analysis proposed to determine if the groundwater is “...suitable for use as a drinking water source” is not necessary. All groundwater in the state is classified as a potential drinking water source. Please revise the text to either justify this analysis better or omit this analysis altogether.
  - b) **Air:** It should not be assumed that airborne contamination poses no risk since the surface of the causeway is a dirt road that is periodically graded. Please revise the text to include address the issue of airborne contamination risk and the dirt road.
- 4) **Table 4-1, Investigation Rationale, text page 4-4:**  
The section discussing data gaps/needs for the groundwater proposes risk assessment. As stated in comment 3(a), all groundwater in the state is classified as a potential drinking water source. In accordance with R.61-68 Water Classification and Standards, all groundwater of the State is classified as Class GB. This classification requires that concentrations of inorganic and organic constituents must not exceed established MCLs. Completing a risk assessment of the concentrations of contaminants found in the groundwater is inappropriate when concentration limits are established by regulation. In addition, MCLs are established at concentrations that already account for risk to human health.
- 5) **Section 6.4, Monitoring Well Installation and Construction:**
  - a) **Page 6-3:** The use of bentonite chips in the seal is not recommended. Bentonite chips have longer hydration times and complete hydration cannot be assured. Bentonite pellets are recommended due to faster/more complete hydration.
  - b) **Page 6-4:** The grout should not be installed to the ground surface. It should be installed to a point below the frost line. The concrete used to form the pad will fill the remaining

annular space. Figure 6-1 of this work plan correctly depicts the relationship between the grouted interval and the concrete pad.

**NOTE:** Refer to Section 6.4.5 "Grouting the Annular Space" in the Environmental Investigations Standard Operating Procedures and Quality Assurance Manual (May, 1996) from the U.S. Environmental Protection Agency, Region IV.

- c) Page 6-4: This section is incomplete. The text and figures should also include:
- i) Specifications for an identification plate that will be affixed to the well with information including: Well name, date drilled, depth of well, the driller's name and certification number.
  - ii) Specifications for the formation of the concrete pad.
  - iii) Specifications for the protective stickups to be installed around the completed concrete pad.

**NOTE:** These specifications are already listed in the Master Work Plan for MCRD. The text should be revised to either include complete specifications, or properly reference the Master Work Plan.

- 6) Figure 6-1, Typical Monitoring Well Detail:  
This diagram should have the specifications for the protective stickups shown (see comment 5 above). Please revise the text accordingly.
- 7) Section 7.2.1, Surface Water Sampling, page 7-1:
  - a) The text does not specify if the surface water samples will be taken before, during, or after high tide. It is preferable that all the surface water samples be taken during like tidal conditions. Please revise the text to include a sample protocol that describes the timing of the sampling events.
  - b) The text specifies that background samples collected for Site 2 will be used to determine background conditions at Site 3. Sites 1, 2, and 3 are all located close to each other. Please revise the text to include a comparison of the background samples taken from Site 1 as well.

If you have any questions regarding these comments, please contact me at (803)896-4033.

COMMENTS ON DRAFT REMEDIAL INVESTIGATION WORK PLAN  
FOR SITE 3 - CAUSEWAY LANDFILL  
FOR MARINE CORPS RECRUIT DEPOT  
PARRIS ISLAND, SOUTH CAROLINA

1. Overall

This document was reviewed to meet the requirements of an RFI Work Plan. Please change the title to reflect this.

2. Section 1.1, Scope and Objective

- a) The 1st sentence should be deleted. This is information already stated in Section 1.0 and it has nothing to do with Scope and Objective.
- b) The objective of this investigation is less specific than that of the Master Work Plan. The scope and objective should be specific since this is a site specific work plan. Please rewrite to give the reader a clear statement of the specific objectives of the investigation. In some cases, the objectives of the study may be to generate data to justify a "no-further action" decision.  
Describe fully the objectives of Site 3.

3. Section 2.0, SITE BACKGROUND

Based on this sentence, it would be logical to either rename Section 2.1 to Site Description and History or rename Section 2.1 to Site History and add a Section 2.2 named Existing Site Conditions (and of course renumbering the following sections).

4. Section 2.1, Site Description

- a) As mentioned above, you could consider renaming the section Site Description and History. Due to the status of the landfill, the description is history.
- b) The paragraphs are not in chronological order and should be corrected. This could be accomplished by making the 1st paragraph the 3rd, the 2nd the 1st, and the 3rd the 2nd (if you choose not to add a separate section for Site History).
- c) Paragraph 1 (existing)  
State what year the former landfill began functioning as a causeway.
- d) Paragraph 1 (existing)  
State the year of the causeway's completion (4th line). This sentence gives the impression that work (therefore time) was necessary to complete the construction of the causeway after the 2 sections met (supposedly in 1972).

- e) Paragraph 1 (existing)  
Clarify the material of the road surface at the time of its completion. You describe it as dirt in this section however in Section 3.5 it is described as gravel.
- f) Paragraph 1 (existing)  
State the existing road covering material. Is it dirt, gravel, or pavement as it appears in the enclosed photographs. This is a present tense paragraph and this information needs to be included.
- g) Paragraph 2 (existing)  
Consider this wording: The Causeway Landfill (Site 3) functioned as the major Depot disposal area...
- h) Paragraph 2 (existing)  
Inform the reader as to when Site 3 ceased to function as a landfill. Clarify with a sentence if operations stopped after 1972.
- I) Paragraph 2 (existing)  
**\*Also between 1969 and 1972, other solid and hazardous constituents...**  
If what is bolded is not the case, clarify. If so, include.
- j) Questions:  
**\* During its years operating as a landfill, was it ever used as a causeway?**  
**\*Was this an excavated pit that was slowly filled up and tamped down until solid enough to support traffic?**
- k) Paragraph 3 (existing):  
Is your only means of determining when the 2 sections of causeway met the aerial photographs? This raises some doubts in the mind of the reader as to the actual (or general) date.
- l) Paragraph 3 (existing):  
Be more explicit with the years of the aerial photographs. For example, **Examination of aerial photos taken in 1959, 1963, 1969, and 1972 showed...**
- m) Paragraph 3 (existing):  
**Aerial photograph should be referenced in the text and therefore included in the REFERENCES section. Include a xerox copy of the photographs in the work plan.**

5. Figure 2.1

This quadrangle is 18 years old. Is there anything that has changed that would warrant additions or deletions?

6. **Section 6.2, Site Restoration**

**This paragraph states “the site will be restored to its original condition prior to investigation activities.” It should be explained what “original condition” means, and why the site will be restored prior to the investigation activities and then will be disturbed again to do the investigation. The paragraph is vague and should be more specific and/or correct the proposed approach.**