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EMAIL OF TRANSMITTAL AND SOUTH CAROLINA DEPARTMENT OF HEALTH AND  
ENVIRONMENTAL CONTROL COMMENTS ON SAMPLING AND ANALYSIS PLAN FOR  
EIGHT MUNITIONS RESPONSE SITES MCRD PARRIS ISLAND SC

4/2/2009

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

**From:** [Meredith Amick](#)  
**To:** [Annie Gerry](#); [Priscilla Wendt](#); [llamas.lila@epa.gov](mailto:llamas.lila@epa.gov); [Charles Cook](#); [tom.dillon@noaa.gov](mailto:tom.dillon@noaa.gov); [Mac McRae](#); [Sladic, Mark](#); [Heber Pittman](#); [Timothy Harrington](#)  
**Subject:** MRP Comments  
**Date:** Thursday, April 02, 2009 3:02:29 PM  
**Attachments:** [SAP for Munitons Response Program- 8 Munitions Response Sites.doc](#)  
[09mcrd3.doc](#)

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Hi team,

Here are our MRP Comments. I know that it was said that we could just submit them electronically, but we had to send a hard copy b/c of receiving a hard copy.

Let me know if you have questions. I'll be out all next week on vacation.  
Meredith

## MEMORANDUM

**TO:** Meredith Amick, Engineering Associate  
Corrective Action Engineering Section  
Division of Waste Management  
Bureau of Land and Waste Management

**FROM:** Annie Gerry, Hydrogeologist  
Federal Facilities Groundwater Section  
Division of Waste Management  
Bureau of Land and Waste Management

**DATE:** April 2, 2009

**RE:** Marine Corps Recruit Depot  
SC6 170 022 762

Review of Sampling and Analysis Plan (SAP) for Munitions Response Program (MRP) Site Inspections at Eight Munitions Response Sites, Marine Corps Recruit Depot (MCRD), Parris Island, South Carolina dated February 13, 2009

The above referenced document has been reviewed with respect to the conditions of the Federal Facility Agreement (FFA) that the Department entered into with the Navy and EPA Region 4 in January 2005. The Navy has participated in numerous activities that involve explosives and munitions training. Munitions and explosives of concern (MEC) and munitions constituents (MC) may be present at sites at MCRD Parris Island. The Department of Defense (DoD) has established the MRP to address MC and MEC at closed ranges.

The Department has reviewed this document and generated the following comments.

### General Comments

1. Please provide Munitions Items Disposition Action System (MIDAS) documents for the 8 sites. This will provide information for all the munitions that were possibly used and will help aid and review of the document.
2. In the **SAP Worksheet #15- Reference Limits and Evaluation Table**, it shows a proposed list of six metals (antimony, arsenic, copper, lead, tin, and zinc) that will be analyzed in soil samples. The Department is requesting that all soil samples be analyzed for Target Analyte List (TAL) metals rather than just the six listed in that table.

3. Groundwater, surface water, and sediment samples have not been proposed for this stage of investigation. However, it is likely that such samples will be necessary before the Department can concur that no further investigation is required for these sites. The number and locations of groundwater, surface water and/or sediment samples will be dependent on the findings of the proposed investigation.
4. Please include a discussion in the SAP on the fate and transport of MECs in the environment (i.e. Solubility, adsorption to soil).

Should you have any questions regarding this memo, please contact me via email at [GerryAM@dhec.sc.gov](mailto:GerryAM@dhec.sc.gov) or by phone at (803) 896-4018.

April 2, 2009

Commanding Officer  
NAVFAC Southeast  
ATTN: Mr. Charles Cook  
PO Box 30  
Ajax Street North, Bldg 135  
Jacksonville, Florida 32212

RE: Review of the Sampling and Analysis Plan for MRP SIs at 8 MR Sites  
Marine Corp Recruit Depot  
Parris Island  
SC6 170 022 762

Dear Mr. Cook:

The Corrective Action Engineering Section and the Federal Facilities Groundwater Section of the South Carolina Department of Health and Environmental Control (Department) has completed the review of the above referenced document received February 13, 2009. Based on this review and the informative discussion held in the March 17-19 Partnering meeting, the Department has comments. Please refer to the attached engineering and hydrogeology comments. Please note some of the comments were discussed during the referenced Partnering meeting but are included herein for completeness. Additionally, the addition of MRP sites to the FFA should be an ongoing discussion at future Partnering meetings.

If you have any questions or concerns, please feel free to contact me at (803) 896-4218.

Sincerely,

Meredith Amick, Environmental Engineer Associate  
Corrective Action Engineering Section  
Division of Waste Management

cc:

Tim Harrington, MCRD Parris Island  
Annie Gerry, Hydrogeology  
Priscilla Wendt, SCDNR  
Russell Berry, EQC Region 8, Beaufort

Lila Llamas, EPA Region 4  
Tom Dillon, NOAA  
Mark Sladic, TtNUS  
Heber Pittman, MCRD Parris Island

ENGINEERING COMMENTS  
Prepared by Meredith Amick  
Marine Corps Recruit Depot (MCRD)  
April 2, 2009

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General Comments

1. A summary table at the beginning of the document would be helpful. This could contain the UXO number, Site name, number and type of samples to be taken for MC, constituents for samples to be analyzed and reasoning, MEC screening method to be used and reasoning for that method.
2. Please refrain from using the terminology NFA. The Department reads this to mean No Further Action at a Site/SWMU, which is a remedy selection. An identified munitions site cannot have NFA selected as a remedy. At a minimum LUCs will be required and should include a note in the Base Master Plan to indicate the area was previously used as a range, depiction on the Base GIS, notation in the Base EMS, and completion of a Notice of Changes of Procedures when any potential ground disturbing activities are to take place, etc.
3. Please provide figures that better depict how the ranges are set up (i.e. firing points, targets, etc). These figures should indicate if the firing points, targets, or other range features were moved over time. The figures should also indicate how the boundaries of these sites were decided (i.e. are there other active ranges in these areas that overlie a portion of the closed range that is identified). Finally the figures should include identification of any other SWMUs or MRP sites within the area depicted.
4. The Department is unclear on why only a limited number of surface soil samples are proposed to be taken at these sites to investigate MC. (Please clarify which sites will have sediment samples taken rather than surface soil samples.) It is also unclear why only the “dry areas” are to be swept for MEC. At a minimum subsurface samples (also see hydrogeology memo for groundwater and surface water requirements) must be taken for MC and the “wet areas” must be swept for MEC prior to the Department making a remedy decision for these sites.
5. It should be noted that some of the technologies (aerial magnetometry) discussed in this document are wide area assessment tools and should not be used to declare the sites clear of MEC.

6. Please clarify how these 8 UXO sites were chosen from the PA report to become MRP sites. Additionally please clarify the status of the other sites discussed in the PA as well. The Department needs a hard copy of the PA for their records.
7. It is often mentioned that 5 MRP sites are to be addressed by this work plan; however, there are 8 UXO sites named in this document. Please clarify.
8. Because of the recommendation to perform no further investigation at UXO 1, please clarify why it was carried through from the PA to SI stage. Although from statements in the PA that say the only known past use is as a range and the planned future use is as a range, the Department feels that further investigation of this site is necessary. Additionally the conceptual site model lists visitors and recreational users as potential MEC receptors. The conceptual site model also states that this site is located “within the current family housing area”, but also states that “The archive search identified only ordnance related uses associated with this range...and envisions continued use of this site as a range.” Please clarify the location of this range, the future use of this range, and why the recommendation was made to perform no further investigation at this site. The Department will need proof to concur with no further investigation (aerials, etc). Additionally the statement in the conceptual site model that “Future construction, excavation and/or maintenance at the site could also act as a release mechanism allowing further contamination migration” appears to be an indication that Land Use Controls are needed on this site.
9. Several times in this report it is stated that, “Military personnel, construction and maintenance workers, and fauna may be exposed to MEC through direct contact during intrusive subsurface activities including construction and/or excavation.” These sites should be included in an approval process for performing construction/maintenance activities. A similar process (Notice of Changes of Procedures) exists for Site 3. Please discuss whether the Notice of Changes of Procedures is being implemented at these sites. (Note: This will be part of the process for implementing and accounting for LUCs on these sites.)
10. Please clarify the reason for limiting the metals analytical data at these sites. This should include at a minimum a discussion of the type of munitions used at the range.
11. Please discuss if activities such as fill placed on top of these ranges or ground working (tilling, etc) considered when recommending surface soil samples as well as the different technologies for performing MEC sweep. Because it is likely that the munitions present at these sites are deeper than 0-1 feet bgs, the Department feels that subsurface soil sampling is relevant.
12. The background data must be proven to be applicable to each of the individual sites, prior to using them as screening values for that particular site.

13. Please provide the rationale for taking a maximum of 8 soil samples for each range. The Department believes that a minimum of 8 soil samples should be taken, with the larger ranges requiring significantly more.
14. The following sentence is repeated in this document: “The need to collect additional data should be carefully considered when concentrations in the surface soil are within 5 percent of screening or background levels.” Please discuss the origin of the 5 percent rule.
15. In the data tables that will be provided in the report following this work, please provide all screening values for surface soil not just the lowest of the compared screening values. This will allow a quicker review time.
16. Recent munitions training sessions emphasized that geophysical surveys be conducted around firing points, as it was common practice to bury unused munitions near the firing point. The workplan should be revised to include geophysical investigation around the firing points to help determine if there any buried munitions.
17. In the PA UXO4 (Field Artillery West Main Range) was noted as being used for borrow material. Please discuss where this material was placed. The location of the placement of fill should be named a new SWMU and should be investigated as a munitions site.
18. Please depict where the dredge spoils are placed and where the borrow pit area is at UXO 2. Also please discuss where the dredge spoils are coming from and where the borrow pit material is placed. If the waterway within the UXO 2 boundary has been dredged, please discuss where the fill was placed. Any place that received dredge spoils or borrow material from within the UXO 2 boundary should be named a new SWMU or included within the UXO 2 boundary and investigated as a munitions site. Additionally part of the LUCs for UXO 2 property will need to be notation that a portion of the range is a dredge spoils area. Additionally discuss if any of the UXO 2 waterway area was dredged and added to the island east of the waterway. The area of land east of the waterway that is included within the UXO 2 boundary should be investigated for munitions and munitions constituents.
19. Please explain for all figures what the red and white lines represent (including which is the site boundary).
20. Potential contaminant migration via surface water runoff should be discussed for each of the 8 UXO sites.
21. Please include UXO # with all range names on section headings.
22. Please provide a table and discussion of how deep the geophysical surveys will go for each site and how deep the munitions are expected to be. Also discuss the difference in

spacing for survey lines in the geophysical surveys at each site. (A map with transects would be helpful.) This could be added to the SAP Work Sheet #18.

23. Please discuss the adequacy of the survey method for the Aerial Bombing Target at the Golf Course considering the 5-6 feet of fill placed on the Golf Course after the bombing activities took place.
24. Based on discussions in the March team meeting, it is the Departments understanding that an all metals detector will be used to ground truth any assumptions made as well as help identify targets, etc at UXO 2. Please revise the document accordingly.
25. Because of the potential of misfires, short fires, etc. MEC needs to be investigated at UXO 5 in both the “dry” and “wet” areas.
26. A dry dock is mentioned on page 2 of Appendix B (Conceptual Site Model). Please provide the location of this dry dock.
27. Please clarify what Maximum Detection Depth means on the tables in Appendix B. If this is maximum detection depth of the geophysical equipment used to find MEC, the methods do not seem to be adequate to find the items, as their max penetration depth is much deeper than the max detection depth.
28. In the conceptual site model it is mentioned for several sites that, “The potential for current risk is limited because access restrictions are in place.” Please discuss these access restrictions, where they are documented (if applicable). Please note that these access restrictions will become part of the LUCs for this site when the remedy is selected.
29. Please discuss if the area being tidally influenced will affect the geophysical survey technologies. This has been an issue at other coastal bases in SC.
30. Please provide rationale for only performing MEC sweep on grassy areas of UXO 3 (construction plans for the parade deck, construction reports, and discussion with EOD personnel to determine if any munitions were discovered during the construction would be helpful). Part of the LUCs for UXO 3 will be to maintain pavement over the currently paved area.
31. Please define non-munitions debris. Additionally disposal manifests should be provided for the non-munitions debris stockpiled from each UXO site.

## Specific Comments

1. SAP for MC Work Sheet #2 item 4

Please provide dates of when the meetings were held or are going to be held.

2. SAP for MC Work Sheet #4

Please add Annie Gerry as part of the Regulator Project Team Personnel.

3. SAP for MC Work Sheet #6

- DHEC should be notified prior to detonating any MEC to make sure an emergency permit is not needed. Please indicate in future reports where any MEC is found and where it is detonated.
- DHEC should be notified prior to any changes made based on “Field issues that require change in field tasks”, “SAP/QAPP amendments”, or “Field issues that require changes in the scope of field work;” so that approval can be obtained.
- Please include any “Field or laboratory data issues” and “Corrective action for field program” in the report based on this work.

4. SAP for MC Work Sheet #9

The Projected Date of Sampling listed is August 2008. Please correct.

5. SAP for MC Work Sheet 11.1 Step 5 and Step 7

This section discusses MC samples only being analyzed for metals; however, previously metals, explosives and nitroglycerin were recommended to be analyzed. Please clarify the discrepancy.

6. SAP for MC Work Sheet #14 Drilling and Soil Sample Collection Tasks

- Please clarify the sentence, “Soil Borings may be advanced sites.”
- This section references a SOP for DPT. Will this method be used during the investigation at these sites?

7. SAP for MC Work Sheet #14 Drilling and Soil Sample Collection Tasks

This section references a SOP related to composite sampling. Will the soil samples taken be composited?

8. SAP for MC Work Sheet #14 Project Report

This section states, “TtNUS will submit the draft report before any additional sampling begins.” Is the draft report referenced an interim submittal of the MEC sweep information, such that the project team will be allowed to chose soil sample locations?

9. SAP for MC Work Sheet #37 page 137

The sentence reads, “However, the average of original and duplicated samples will be used to represent the concentration at a particular location.” The Department does not agree with this approach, as a duplicate sample should be used to confirm the result received in the original sample.

10. Appendix B Page 38

Please clarify the planned future use for UXO 5 and 6.