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**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**  
CARIBBEAN ENVIRONMENTAL PROTECTION DIVISION  
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SAN JUAN, PR 00907-4127

January 5, 2011

Mr. Kevin Cloe  
Project Manager  
Commander Atlantic Division  
Naval Facilities Engineering Command  
6506 Hampton Boulevard  
Norfolk, VA 23508-1278

Re: Review of the Draft Expanded Site Inspection Sampling and Analysis Plan,  
UXO 15, Former Vieques Naval Training Range, Vieques, Puerto Rico

Dear Mr. Cloe:

The U.S. Environmental Protection Agency (EPA) completed the review of the Draft Expanded Site Inspection Sampling and Analysis Plan, UXO 15, Former Vieques Naval Training Range, Vieques, Puerto Rico, dated October 2010. Enclosed you will find our comments.

If you have any questions or comments, please contact me at (787) 741-5201.

Sincerely,

Daniel Rodriguez  
Remedial Project Manager  
Response and Remediation Branch

Enclosure

cc: Wilmarie Rivera, EQB, w/ encl.  
Richard Henry, FWS, w/encl.  
Brett Doerr, CH2M Hill, w/ encl.

**EPA REVIEW OF THE  
DRAFT EXPANDED SITE INSPECTION  
SAMPLING AND ANALYSIS PLAN, UXO 15  
FORMER VIEQUES NAVAL TRAINING RANGE  
VIEQUES, PUERTO RICO  
OCTOBER 2010**

**GENERAL COMMENTS**

1. The worksheets do not consistently describe the potential subsurface soil sampling that is proposed as part of the digital geophysical mapping (DGM) activities in PI 9, PI 13, and the two magnetic anomalies. The Executive Summary and Worksheet #10 indicate that subsurface soil samples will be collected from under locations where munitions and explosives of concern (MEC) are found and excavated. However, Worksheet #11, Project Quality Objectives/Systematic Planning Process, and Worksheet #14, Summary of Project Tasks, do not mention the subsurface soil sampling in these areas. Revise the Draft Expanded Site Inspection Sampling and Analysis Plan, UXO 15 (ESI SAP) to consistently describe the planned subsurface sampling in all worksheets.
2. The unexploded ordinance (UXO) avoidance, geophysical mapping, and waste disposal subcontractors have not been specified. Revise the ESI SAP to provide this information. Alternatively, if the subcontractors for these positions have not been obtained, indicate that this information will be submitted as a SAP addendum.
3. The rationale for the number and type of soil samples proposed in this ESI SAP has not been provided. It is unclear why one sample per debris pile is sufficient to meet project goals, and what type of sample is proposed (e.g., grab, composite, or multi-increment). Revise the ESI SAP to include the rationale for number and type of soil samples.
4. The ESI SAP does not provide the laboratory specific quality control (QC) acceptance limits for many analytes. Instead, the ESI SAP references the Department of Defense (DOD) Quality Systems Manual (QSM) limits. While it may be acceptable to use the DOD QSM acceptance limits, the ESI SAP should provide laboratory specific values to ensure the DOD QSM values can be met. Revise the ESI SAP to provide this information.
5. The ESI SAP does not discuss manual integrations for chromatographic analyses. Revise the ESI SAP to ensure that if manual integration is required, the supporting information (i.e., chromatograms before and after manual integration as well as a brief explanation for the manual integration) will be included in the data package deliverables and evaluated during data validation.

6. The ESI SAP indicates that metal analytes will be determined by EPA Method 6010B and 6020; however, there are newer methods available for these analyses. Revise the ESI SAP to indicate that Methods 6010C and 6020A will be used in place of Methods 6010B and 6020. Alternatively, if Method 6010B and/or 6020 will be used, ensure that a post digest spike (PDS) is analyzed when the matrix spike/matrix spike duplicate (MS/MSD) recoveries exceed acceptance criteria.
7. The ESI SAP discusses EPA Method 8330 for analysis of explosives; however, Method 8330B is more appropriate. Revise the ESI SAP to indicate that Method 8330B will be used for explosives analyses.
8. The ESI SAP does not contain data validation checklists. Instead, the ESI SAP references multiple guidance documents when discussing how data will be qualified. For each analytical method, either an applicable EPA data validation standard operating procedure (SOP) should be referenced, or a data validation checklist must be provided. Revise the ESI SAP to provide the data validation checklists or reference the applicable EPA Region 2 procedure.

## SPECIFIC COMMENTS

1. **Acronyms and Abbreviations, page VII:** This table does not include all of the acronyms used in the ESI SAP. For example, the acronyms NOSSA, TRVs, PQO, EADA, and SSLs are not defined. Revise the ESI SAP to include all acronyms and abbreviations used in the ESI SAP.
2. **Executive Summary, page XII:** In the third paragraph it is noted that if any subsurface anomaly is identified, it will be excavated and a subsurface soil sample will be collected below it. The discussion should also indicate the constituents of interest (explosives, perchlorate, metals) which will be included in the analysis.
3. **SAP Worksheet #1, Title and Approval Page, page 1:** It appears that space for the signatures of the Investigative Organization's (CH2M Hill's) Program Manager and Quality Assurance (QA) Officer has been omitted. Revise the ESI SAP to provide space for these personnel to sign.
4. **SAP Worksheet #5, Project Organizational Chart, page 11:**
  - a. The organizational chart does not include the subcontractors for the excavation activities or investigation-derived waste (IDW) disposal at the site. Revise the chart to include the excavation and IDW disposal subcontractors.
  - b. A test pitting subcontractor has been included in the organizational chart, but Worksheet #14 indicates that test pitting will no longer be conducted. Revise the chart to remove the test pitting subcontractor.

5. **SAP Worksheet #6, Communication Pathways, pages 13 to 14:** It is unclear from this table if EPA and other regulatory agencies will be notified when significant corrective actions or deviations from the SAP occur. Revise the ESI SAP to indicate that EPA and other regulatory agencies will receive notification of significant corrective actions and deviations from the SAP. Also, revise the ESI SAP to include the form of communication and timeframe for these notifications.
6. **SAP Worksheet #7, Personnel Responsibilities Table, pages 15 to 16:** This table appears to be missing the project responsibilities for the Project Managers of both analytical laboratories and the project responsibilities for the UXO avoidance, geophysical, and excavation subcontractors. Revise the ESI SAP to provide the project responsibilities for the personnel who will perform the aforementioned activities.
7. **SAP Worksheet # 9, Consensus Decisions, page 21:** The second bullet should clearly indicate that 4 soil samples will be collected underneath debris piles A-D, and a sediment sample will be collected under debris pile E. Please note that discrete samples will be collected SAP worksheet # 14 (page 44).
8. **SAP Worksheet # 10, Problem Definition, Conceptual Site Model, Physical Characteristics, page 24:** Please note whether debris pile E is considered part of the tidal swamp.
9. **SAP Worksheet # 10, Problem Definition, Potential Source of a CERCLA Releases and Release Mechanism, first paragraph, page 25:** The first sentence should indicate that the surface soil and sediment samples will only be collected under debris piles; the environmental characterization outlined in this SAP does not involve sampling over the entire site.
10. **SAP Worksheet # 11, Project Quality Objectives/Systematic Planning Process Statement, 2. What are the Project Action Limits (PALs)?, second bullet, page 29:** Please include the reference CH2M HILL, 2010C which is the Master ERA Protocol Update 1, August 2010.
11. **SAP Worksheet #11, Project Quality Objectives/Systematic Planning Process Statement, 2. What are the Project Action Limits (PALs)?, seventh bullet, page 30:** The discussion of limits of detection (LODs) exceeding project action limits (PALs) states that past experience has shown that SSLs are not reliable predictors of leaching to groundwater because they are overly conservative for the Vieques site. However, it is unclear how this conclusion was derived as information to support this statement has not been provided or referenced. Revise the ESI SAP to provide this information or specifically reference (i.e., document name, date, and section) where it can be found.

- 12. SAP Worksheet #11, Project Quality Objectives/Systematic Planning Process Statement, Further Investigation or Action Determination (Steps 5 and 6 of Figure 1), page 32:** The section describing further investigation or action based on the data collected for this SAP is unclear. The text states that further investigation will be determined by evaluating the data collected from the proposed sampling. Revise this section to clarify that if additional investigation is required, a new SAP or SAP addendum will be prepared.
- 13. SAP Worksheet # 11, Project Quality Objectives/Systematic Planning Process Statement, Further Investigation or Action Determination (Steps 5 and 6 of Figure 1), page 33:** As previously discussed, please clearly indicate that four soil samples and one sediment sample will be collected. The second sentence discusses additional sampling should debris piles of "comparable" size be found. Please indicate what the comparable size is, and what size would constitute the need for an additional sample.
- 14. SAP Worksheet #13, Secondary Data Criteria and Limitations, page 39:** The discussion of Limitations on Data Use should provide a more quantitative description for determining which existing data are appropriate for use. Revise Worksheet #13 to provide this information.
- 15. SAP Worksheet # 14, Summary of Project Tasks, Digital Geophysical Mapping, Biological Assessment Prior to Vegetation Clearance, page 41:** EPA would appreciate a copy of the completed biological assessment report.
- 16. SAP Worksheet #14, Summary of Project Tasks, Sample Location Mark-out, page 43:** This worksheet indicates that the sampling locations will be established using a global positioning System (GPS) unit, but does not discuss the accuracy of the GPS. Revise the ESI SAP to discuss the accuracy requirements of the GPS unit and how they will be met when establishing sample locations.
- 17. SAP Worksheet #14, Summary of Project Tasks, Equipment Decontamination, page 45:** The ESI SAP indicates IDW will be managed in accordance with the Master Protocols. However, the ESI SAP does not reference or provide any specific protocols. Revise the ESI SAP to specifically reference the applicable protocols. Further, indicate specifically where the protocols can be found.
- 18. SAP Worksheet #14, Summary of Project Tasks, Data Management, page 45:** The description of data management is insufficiently detailed. Worksheet #14 indicates that data are entered into a database, but it is unclear if the database is compared to the hard copy data to ensure its accuracy and if validation qualifiers will be entered into the database to ensure qualifications are considered when using the database. Revise the ESI SAP to provide the details discussed in Section 2.8 of the *Uniform Federal Policy for Quality Assurance Project Plans Manual*, March 2005 (UFP QAPP Manual).

**19. SAP Worksheet # 15-1 Reference Limits and Evaluation Table, page 47:**

Please note that as soil TRVs for aluminum and iron are based on pH levels they are not included in this table. However, soil pH levels should be taken into account when determining whether these inorganics pose risk to ecological receptors.

**20. SAP Worksheet #15, Reference Limits and Evaluation Table, pages 47 to 51:**

- a. The table indicates that the project action limit (PAL) is less than the LOD in many cases. Revise the ESI SAP to discuss why a potentially more sensitive method (e.g., Method 6020A) is not proposed.
- b. The difference between the LOD, limit of quantification (LOQ), and the detection limit (DL) are not established. Revise the ESI SAP to discuss how the LOD, LOQ, and DL are obtained and discuss the differences between them.
- c. The upper tolerance limits (UTLs), defined as Vieques background inorganics levels in soil, do not appear to be included in Worksheet #15. Worksheet #11 defines these levels as PALs for determining if a release of metals has occurred. Revise the ESI SAP to provide these UTLs.
- d. The table does not indicate whether quantitation limits (QLs) and PALs for soil samples are based on wet or dry weight. Revise the table to indicate that QLs and PALs are based on dry weight, and ensure that the laboratory results are reported as dry weight.

**21. SAP Worksheet # 15-2, Reference Limits and Evaluation Table, page 50:**

Please note that the soil TRV for nitrobenzene (NB) should be 2,260 ug/kg rather than 2,200 ug/kg (as per the ERA Protocol, Table 18).

**22. SAP Worksheet #17, Sampling Design and Rationale, page 57:** The table identifies 4 soil samples and 1 sediment sample to be collected from UXO 15 and references Figure 17 for the location of these proposed samples. However, Figure 17 does not include sample locations; it includes 4 pink dots showing debris piles, 1 green dot showing a small arms pile, and 2 orange dots showing depressions observed by FWS. An assessment of the number and locations of samples cannot be made from this figure. The figure should be revised to more clearly delineate the debris piles and arms pile, so that the sample locations can be evaluated. EPA agrees that the purpose of the sampling for the ESI is to determine whether a release has occurred, but a total of 4 samples for this area may be insufficient to make that determination.

**23. SAP Worksheet # 18, UXO 15 Sampling Locations and Methods/SOP**

**Requirements Table, page 59:** The sampling interval for the sediment sample should be the same interval as the soil sample for the Debris Piles Samples, 0-6-

inches bgs for explosives and metal, rather than 0-2 inches which will be used for the potential MEC samples.

**24. SAP Worksheet #19, Analytical SOP Requirements Table, page 61:**

- a. The aqueous sample holding time before extraction for EPA Method 8330 is defined as 14 days; however, the sample should be extracted within seven days. Revise the ESI SAP to list the seven day holding time required for aqueous analyses.
- b. The table does not specify the type of glass container to be used for the collection of soil samples for perchlorate analyses. SOP WS-LC-0012 states that soil samples to be analyzed for perchlorate must be collected in amber glass containers. Revise the ESI SAP to specify that an amber glass container will be used for samples to be analyzed for perchlorate.

**25. SAP Worksheet #20, Field Quality Control Sample Summary Table, page 63:**

- a. The footnote (4) indicates that the number of equipment blanks is based on the number of sampling days each site will require and that soil sampling will occur over two days. Worksheet #12 indicates that equipment rinse blanks will be collected for each day of sampling. Revise this worksheet to indicate that a equipment blank will be collected for each day that sampling occurs.
- b. This table does not include the QC samples for the potential subsurface samples where MEC is identified by DGM. Revise the ESI SAP to include the potential subsurface samples and the appropriate QC samples in this table.

**26. SAP Worksheet #22, Field Equipment Calibration, Maintenance, Testing, and Inspection Table, page 67:** This worksheet does not provide a table listing the field equipment required for the proposed sampling activities. The sampling activities described in the ESI SAP appear to require metal detectors and GPS units for identifying sample locations. Revise the ESI SAP to include all field equipment that will be used for the planned sampling activities at UXO 15 as discussed in Section 3.1.2.4 of the UFP QAPP Manual.

**27. SAP Worksheet #25, Analytical Instrument Equipment Calibration, Maintenance, Testing, and Inspection Table, page 73:** It appears that two SOPs cited in this table are incorrect. SOP CA-708 cited for analysis of pH and the SOP CA-773 cited for hexavalent chromium do not appear to be included in the attached SOPs. Revise this ESI SAP worksheet to cite the correct analytical SOPs.

**28. SAP Worksheet #23, Analytical SOP References, page 69:** The revision dates are missing for several SOPs. Revise the ESI SAP to include the revision dates in the final draft.

**29. SAP Worksheet #27, Sample Custody Requirements Table, page 77:**

- a. The process for how field duplicate samples will be identified is not provided. Revise the ESI SAP to ensure that QC samples are submitted as blind duplicates.
- b. The worksheet includes a discussion of labels for solid volatile organic compounds (VOCs). However, VOCs samples will not be collected. Further, example sample labels have not been included. Revise the ESI SAP to remove the discussion of solid VOC labels and include example sample labels for the proposed sampling.
- c. It is unclear if custody seals will be used during shipment of samples. According to the SOP attached for chain of custody procedures (SOP H-4), custody seals will be used to prevent tampering with samples. However, this worksheet does not indicate that custody seals will be used. Additionally, example custody seals have not been provided. Revise the ESI SAP to clarify that custody seals will be used for sample shipment, and include example custody seals.

**30. SAP Worksheet #28, Laboratory QC Samples, pages 79-81:** The corrective action for non-compliance matrix spike recoveries states "Examine the project-specific DQOs". However, this is not a laboratory corrective action. Revise Worksheet #28 to correct this discrepancy.

**31. SAP Worksheet #28, Laboratory QC Samples, pages 85 and 95:** This worksheet does not include surrogates for explosives. Revise the ESI SAP to discuss surrogates for explosives analyses.

**32. SAP Worksheet #29, Project Documents and Records Table, page 99:**

- a. Extraneous documents appear to be mentioned in this worksheet. Worksheet #22 indicates that no field equipment requiring calibration will be used, but several instruments are listed in this Worksheet. Revise the ESI SAP to correct this discrepancy.
- b. The information presented in this table is insufficiently detailed. For example, it is unclear how long project documents will be maintained or archived before disposal. Further, the documents listed do not include project report deliverables, laboratory data package deliverables, or what specifically is included in the laboratory data packages. Revise the ESI SAP to indicate the length of time that projects documents will be maintained or archived before disposal, include all applicable project

documents, and to present a detailed list of what will be included in the laboratory data packages.

**33. SAP Worksheet #37, Usability Assessment, pages 119 to 120:**

- a. The discussion of the Usability Assessment is insufficiently detailed. For example, this worksheet does not discuss how the data quality indicators (DQIs) (e.g., precision, accuracy, representativeness, completeness, comparability, and sensitivity) will be calculated and/or assessed. Revise the ESI SAP to include a detailed discussion of the DQIs and include the calculation of each DQI.
- b. The contents of the data quality evaluation (DQE) report have not been specified. Please revise this section to indicate that the information discussed in Worksheet #37 will be included in the DQE.

**34. Figure 3, Aerial and Hand Held Magnetometer Survey Results:** The areas which will undergo test pitting should be clearly indicated.

**35. Figure 17, Proposed Sample Locations:** The figure key should identify the red dots as soil samples and the green dot as a sediment sample. Please discuss the significance of the depression areas identified by orange dots.