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RESPONSE TO SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL  
CONTROL COMMENTS ON DRAFT FINAL RESOURCE CONSERVATION AND RECOVERY  
ACT FACILITY INVESTIGATION ZONE C WORK PLAN CNC CHARLESTON SC

2/24/1995

ENSAFE/ ALLEN AND HOSHALL

**RESPONSE TO COMMENTS  
FROM  
SOUTH CAROLINA DEPARTMENT OF HEALTH AND  
ENVIRONMENTAL CONTROL (DHEC)**

**ON THE  
DRAFT FINAL ZONE C RFI WORK PLAN  
NAVAL BASE CHARLESTON  
CHARLESTON, SOUTH CAROLINA**

**Prepared for:  
SOUTHDIVNAVFACENCOM  
2155 Eagle Drive  
North Charleston, South Carolina**

**Contract Number: N62467-89-D-0318**

**Prepared by:  
EnSafe/Allen & Hoshall  
5720 Summer Trees Drive  
Memphis, Tennessee 38134  
(901) 383-9115**

**February 24, 1995**

**SOUTH CAROLINA DHEC GENERAL COMMENTS ON THE DRAFT FINAL ZONE C WORK PLAN**

**Comment 1:** According to the Draft Final RCRA Facility Assessment Report, Volume II, dated November 22, 1994, SWMU 49 - Battery Charging Station does not require investigation. However, this SWMU is included in the Zone C RFI Work Plan as requiring assessment. If SWMU 49 requires further assessment, then the RFA Report should be revised to accurately reflect the status of this unit.

**Response 1:** According to the *Draft Final RCRA Facility Assessment Report, Volume II* dated November 22, 1994, SWMU 49 (Battery Charging Area) is designated as requiring No Further Investigation. Because SWMU 49 requires No Further Investigation, it need not be investigated under this work plan. Therefore, the investigative discussion of SWMU 49 has been removed.

**Comment 2:** It was discovered in reviewing this work plan that Table 1-2 of the Draft RCRA Facility Assessment Report, Volume IV, dated November 1994, apparently contains an error. This table states that the Investigative Approach for AOC 517 (Building M-192 Indoor Firing Range) is No Further Investigation. However, according to the text of the RFA Report, specifically page 5-39, this AOC requires confirmatory sampling. Table 1-2 of the RFA Report should be revised as appropriate.

**Response 2:** This comment does not refer to the Zone C Work Plan.

**Comment 3:** The heading "Material Generated or Stored" included in the tables in the work plan should be changed to "Waste Characteristics." In this way, the work plan will not only be more consistent with the RFA Reports, but also will include information that will be more useful in review of the work plan.

**Response 3:** The heading Material of Concern is consistent with approved Zone H Work Plan, October 27, 1994, and is a more appropriate definition of the information included in the table. An example of a waste characteristic is: e.g., BTEX - benzene, toluene, and xylene are volatile organic compounds. These compounds are lighter than water and tend to float on the groundwater surface. Waste characteristics are physical attributes of compounds. To provide more useful review information, analytical requirements based on the materials of concern listed have been added to the table.

**Comment 4:** The reference to Figure 3-1 in the Geological and Hydrogeologic

Information paragraph of Section 1.1 apparently is in error. The correct figure should be 1-3 (NAVBASE Fill Areas). This should be corrected in the revised work plan.

**Response 4:** The reference to "Figure 3-1" on page 1-1, has been revised to read "Figure 1-3".

**Comment 5:** The last sentence in several Sampling and Analysis Plan sections of the work plan states "All sampling will adhere to the NAVBASE Final Comprehensive RFI Work Plan, unless otherwise stated." If the sampling proposed in this work plan will deviate from the Comprehensive Work Plan, then this is the appropriate location for stating such. If the sampling procedures of will follow the Comprehensive Work Plan, then the phrase "unless otherwise stated" should be deleted from the work plan. The work plan should be revised accordingly.

**Response 5:** The statement, "unless otherwise stated." has been deleted throughout the document.

**Comment 6:** The work plan consistently proposes to analyze samples collected from SWMUs and AOCs for an expansive list of constituents. However, it doesn't appear justified to analyze a every sample for a chemical, unless there is a reasonable suspicion that it was managed at the SWMU or AOC. The Department agrees that it may be appropriate to analyze a minimum number of samples for an expanded suite of constituents. Therefore, the work plan should be revised to provide an explanation that the constituents proposed for analyses are justified, given the information about the particular site.

**Response 6:** The expansive list of analytes (full spectrum) was included at past direction of USEPA. However, based upon recent conversations, it has been decided that sites where considerable knowledge exists from the RFA concerning the types of waste materials stored, generated, or disposed of there, that these sites may be considered for reduction of analytes to those known or suspected to be present.

It should be noted that this reduction will only be made at SWMUs or AOCs where considerable waste information is available and documented. Otherwise, the absence of contaminants must be verified.

**SOUTH CAROLINA DHEC SPECIFIC COMMENTS ON DRAFT FINAL ZONE C RFI WORK PLAN**

**Section 2.1 - SWMU 44, Coal Storage Area**

**Comment 7:** The work plan summarizes previous data collected from the area of SWMU 44 (Coal Storage Area). Reference is made to a map included in Appendix B of the work plan. The map in Appendix B apparently indicates the locations of the samples collected previously from the vicinity of SWMU 44. However, the correlation between the sample locations shown on the figure, and the data summarized in Table 2-2 (SWMU 44 Previous Investigations) is ambiguous, since it is impossible to determine the sampling locations that the analytical results correspond to. This correction should be clarified in the revised work plan.

**Response 7:** The map found in Appendix B, SWMU 44 Coal Storage Area Previously Identified Sampling Locations, has been revised in order to establish a better correlation with Table 2-2, SWMU 44 Previous Investigations. Besides revising the map, a statement has been added to the text preceding Table 2-2 to further enhance the correlation.

**Section 2.2 - AOC 516, Wash Area and SWMU 47, Burning Dump**

**Comment 8:** The work plan proposes the installation of 15 groundwater monitoring wells in the vicinity of SWMU 47 and AOC 516. However, the work plan does not discuss how this number was determined. Fifteen wells appears to be an excessive number for the area of SWMU 47 and AOC 516. The work plan should be revised to include a justification for the number and locations of wells proposed at SWMU 47.

**Response 8:** Justification for the number and location of wells has been added to the Sampling and Analysis section of AOC 516 and SWMU 47.

**Comment 9:** According to Figure 23 (AOC #516 Former Wash Area and SWMU #47 Former Burning Area Proposed Sampling Locations), several wells will be installed within Buildings 64, 66 and 67. The work plan should be revised to justify locating monitoring wells inside these buildings. In addition, the work plan should be revised to indicate any particular problems that might be encountered due to installation of the wells inside Buildings 64, 66 and 67.

**Response 9:** A discussion on locating wells inside Buildings 64, 66, and 67 has been added to the Sampling and Analysis section of AOC 516 and SWMU 47.

**Section 2.5 - AOC 523, Former Gas Station and SWMU 49, Lead-Acid Battery Charging Area**

**Comment 10:** AOC 523 is a gas station storage area that operated between 1958 and 1962. According to the work plan, it is unknown if AOC 523 ever included Underground Storage Tanks (USTs). However, the work plan does not propose investigative measures to determine the existence of USTs at AOC 523. The work plan should be revised to propose such measures, or to include documentation proving that the USTs have been removed.

**Response 10:** A discussion on proposed investigative measures to determine the presence of USTs has been added to the Sampling and Analysis section of AOC 523.

**Comment 11:** The work plan does not discuss the most likely direction of groundwater flow in the area of SWMU 49. The most likely direction of groundwater flow should be noted in the work plan and the locations of the monitoring wells chosen based on such a direction. It is recognized that the direction of groundwater flow may be strictly conjectural, nevertheless, an attempt should be made to estimate it.

**Response 11:** Because it has been discovered that SWMU 49 requires No Further Investigation, this comment has been evaluated for AOC 523, which was to share the monitoring wells in question. The text has been revised to indicated the assumed direction of groundwater flow is east toward the Cooper River. In addition, a justification for the monitoring well locations has also been added to the Sampling and Analysis section of AOC 523.

**Section 2.6 - Other Sites Designated CSI, Including AOCs 510, (General Purpose Lab NH 21), 512 (Incinerator at Former Building 67), 513 (Old Morgue), 517 (Former Firing Range M-192), 518 (Coal Bins), and 520 (Garbage House)**

**Comment 12:** Table 2-13 (Other Sites Designated CSI Sampling Plan) includes a summary of all the samples to be collected from the sites listed above. However, this table should be revised to list the number of samples, the types of samples, and analyses proposed for each site.

**Response 12:** Table 2-13, Other Sites Designated CSI Sampling Plan, follows the format of the associated table (Table 2.28, Sampling Plan) approved in the Zone H RFI Work Plan dated October 27, 1994. Table 2-13 indicates that full scan analyses will be run on all samples for all sites. The type and number of samples are shown on the respective figures.

**RESPONSE TO COMMENTS  
FROM  
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (EPA)**

**ON THE  
DRAFT FINAL ZONE C RFI WORK PLAN  
NAVAL BASE CHARLESTON  
CHARLESTON, SOUTH CAROLINA**

**Prepared for:  
SOUTHDIVNAVFACENGCOM  
2155 Eagle Drive  
North Charleston, South Carolina  
  
Contract Number: N62467-89-D-0318**

**Prepared by:  
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5720 Summer Trees Drive  
Memphis, Tennessee 38134  
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**February 24, 1995**

**U.S. EPA GENERAL COMMENTS ON THE DRAFT FINAL ZONE C RFI WORK PLAN**

- Comment 1:** Page iv and globally. The first time an abbreviation is used, it needs to be identified, e.g., MSDSs.
- Response 1:** A global search has been conducted and the work plan revised to identify all first-time abbreviations.
- Comment 2:** The information in the Tables in the Zone C RFI Work Plan should be in the same format as Zones H and I RFI Work Plans.
- Response 2:** The tables in this work plan have been revised to reflect the table formats found in the Zones H and I Work Plans.
- Comment 3:** For Areas Of Concern (AOCs) and Solid Waste Management Units (SWMUs) having vegetated areas, e.g., AOC 512 (Page 2-31, Table 2-12), potential receptors need to be identified.
- Response 3:** Potential receptors have been identified and discussed in accordance with the equivalent subsection in the approved Zone H RFI Work Plan. Sites will be assessed for contamination prior to additional ecological concerns.
- Comment 4:**
- a) There is a brief discussion of how background soil samples will be collected. Background soil samples should be collected from native soil types and from the fill material. Before background soil types are collected, the classification of various soil types present at the facility with mapped locations should be produced. For each different type of soil that is contaminated at the facility, a background group of soil samples should be collected to represent the particular soil type. Contaminant background levels for native soil may be different than background levels for fill areas. Once the data are collected, geostatistical techniques may be used to determine the data distribution and to manipulate the data so that appropriate background levels may be selected. Geostatistical software should be used for data manipulation. The software will allow the user to easily perform data file management, data transformation, univariate statistics, contour mapping, etc.
  - b) Once contaminants of potential concern have been selected for soils, soil cleanup goals or Soil Action Levels (SALs) should be calculated for each contaminant. To derive specific SALs, the soil/water partitioning coefficient (Kd) should be calculated for

several soil samples representing each contaminated soil type. Kd values may be determined using a leachate procedure such as Toxicity Characteristic Leaching Procedure (TCLP), batch, or column testing. The Kd values are used in conjunction with dilution/attenuation factor obtained from modeling efforts to determine appropriate SALs. The approach used to determine the model selected for calculating SALs should be proposed and submitted to the EPA for review.

- c) More information should be presented on the hydrogeology in the area of Zone C. The regional geologic/hydrogeologic description in the RFI Work Plan is inadequate and does not include a local description. The discussion should include depths and thickness of formation, lithologic descriptions of aquifers, approximate hydraulic properties of aquifers and confining beds, cross sections, and boundary conditions. Although ground water elevation data is limited, a potentiometric surface map for the surficial aquifer that approximates the direction of groundwater flow should be included. The Comprehensive Sampling and Analysis Plan states that groundwater in the surficial aquifer flows to the north-northeast into the Cooper River and south-southwest into Shipyard Creek. The potentiometric surface map should indicate approximately the local groundwater flow directions and groundwater divides.
- d) Monitoring wells are proposed for several SWMUs but are not proposed for several others, such as the former incinerators, paint shop, and coal bins. Justification for not installing monitoring wells at these locations should be presented in the document.
- e) Each "Objectives" section for each SWMU states that, "... the objectives of the proposed field investigation are to collect the data necessary to confirm whether COPCs are present.". This statement indicates that COPCs have not been established. Because COPCs have not been established, the sentence should be changed to indicate that the objectives are to determine whether various media are contaminated.

**Response 4:**

- a) This approach would be a deviation from that approved in the Comprehensive Baseline Risk Assessment Work Plan dated August 30, 1994, and therefore will not be incorporated into this plan. The grid-based sampling approach was proposed and approved and allows for the flexibility of determining background relative to differing soil types across the base.

- b) Refer to Response 4a above.
- c) The hydrogeologic information is included in the Comprehensive RFI Work Plan. The Comprehensive Plans were approved as of August 30, 1994.
- d) Justification for not installing monitoring wells at certain sites has been added to the applicable Sampling and Analysis sections.
- e) The text within each subsection has been revised as requested.

**Comment 5:** For the former incinerator areas e.g., AOCs 508, 515 and 512 (Page 2-18, Table 2-7; Page 2-23, Table 2-9; and Page 2-41, Table 2-13), the list of analyses for media samples should also include dioxins and furans.

**Response 5:** On Page 2-20, Table 2-7; Page 2-25, Table 2-9; and Page 2-36, Table 2-13, in the Notes section it states "... with a minimum of 10% duplicates analyzed for all Appendix IX constituents at DQO Level IV." The full Appendix IX list includes dioxins.

**Comment 6:** Previous health effects related comments of a general nature submitted on the Zone H RFI Work Plan were not addressed in the Zone C RFI Work Plan.

**Response 6:** Please refer to the Comprehensive Baseline Risk Assessment Work Plan dated and approved August 30, 1994, for all detailed risk assessment discussions. The comments provided with the September 28, 1994, letter on Zone H have been reviewed and are incorporated where appropriate in the Zone C Work Plan.

**Comment 7:** For each SWMU and AOC, there is discussion regarding the relationship between the biased sampling plan for that SWMU/AOC and the systematic grid-based zone-wide sampling plan. These discussions greatly improve this document.

**Response 7:** Comment noted. Thank you!

**Comment 8:** Receptors are discussed in a general way only. It is important that current and potential future occupational and residential land use scenarios be included in the Baseline Risk Assessment.

**Response 8:** The Comprehensive Baseline Risk Assessment Work Plan was prepared and approved to be all encompassing for risk assessment issues on the base and covers the potential future occupational and residential land use

scenarios as they relate to base closure.

**Comment 9:** Where appropriate, reference should be made to the Baseline Risk Assessment Work Plan. The linkage between documents should be made clear to the readers of the documents.

**Response 9:** Please see Response 8.

#### **U.S. EPA SPECIFIC COMMENTS ON THE DRAFT FINAL ZONE C RFI WORK PLAN**

**Comment 1:** Page iv. The Tables should be titled in the same manner as the Zone I RFI Work Plan so the term "Site Site" does not appear in the title.

**Response 1:** The term "Site Site" found on Page iv and accompanying tables has been revised to read, e.g., "AOC 516 and SWMU 47 Site Information and Description."

**Comment 2:** Page 2-3, Section 2.1.1. Page 2-7, Table 2-7 indicates that the analyses of the upcoming investigation of SWMU 44 will include only metals and cyanide. Page 2-3, Table 2-2 presents the analytical results from previous investigations at SWMU 44 but does not indicate the full suite of analyses conducted during those investigations. In order to determine whether the analyses in Table 2-3 are sufficient, the types of analyses conducted for those previous investigations should be listed in the text.

**Response 2:** A discussion on the types of analytical sampling conducted at SWMU 44 has been added to the Previous Investigations section.

**Comment 3:**

- a) Page 2-6, Section 2.1.4. The text briefly mentions wetlands. The type of wetlands present and their extent should be discussed in the text and included on a figure.
- b) Table 2-3. The contaminants that will be tested for at SWMU 44 are metals and cyanide. These constituents were selected based on contaminations detected in pooled leachate samples, storm water runoff, soil samples and surface water samples. It is possible that volatiles and semivolatiles exist in the groundwater and were not detected in the surface water samples. It is recommended that the soil, sediment, surface water and groundwater samples be analyzed for the full TAL/TCL group of contaminants to determine the contaminants of concern of each medium.
- c) In order to determine the leachability of coal constituent to the

groundwater, a leachability test such as TCLP should be conducted on a sample from the coal piles to determine the potential for contaminant migration to groundwater.

- d) Figure 2-2 illustrates surface water/sediment sample locations in the areas where streams/drainage ditches are not indicated on the map. If streams/ditches exist in these area, they should be included on the figure.
- e) The fill material in the area of SWMU 44 and south-southeast of SWMU 44 should be characterized, i.e., the depth, soil composition, etc.

**Response 3:**

- a) Because the wetlands discussed in the work plan are not on NAVBASE, an extensive wetlands review has not been conducted. However, their location will be noted on Figure 2-2.
- b) The Notes section states "... with a minimum of 10% duplicates analyzed for all Appendix IX constituents at DQO Level IV." A full Appendix IV analysis includes volatiles and semivolatiles.
- c) A Note has been added to Table 2-3 indicating that a leachability test will be conducted on a sample from the coal pile.
- d) A statement has be added to the text stating that surface water and sediment sample locations not located directly in the drainage ditch or Noisette Creek are small runoff accumulation areas and that samples will be collected after runoff has accumulated in them.
- e) As stated in the Engineering Parameter section of Table 2-3, Shelby tubes will be used to note depth and soil composition. These data will be recorded in well logs and field log books. In addition, grid-based sampling will be conducted in the area of SWMU 44 to further determine soil characteristics.

**Comment 4:**

Page 2-7, Table 2-3

- a) Figure 2-2 should be the page before this Table.
- b) The surface water samples should also be analyzed for general water quality parameters, i.e., field measurements of temperature, ph, dissolved oxygen, and conductivity.
- c) The sediment samples should also be analyzed for grain size and

total organic carbon.

- Response 4:**
- a) In order to remain consistent with the Zones H and I work plans, each subsection within Section 2.0 will begin on the top of a new page. Upon revising the work plan in this way, it alleviated the arrangement of figures and tables.
  - b) A statement has been added to Table 2-3 indicating, surface water samples will be analyzed for general water quality standards.
  - c) A statement has been added to Table 2-3 indicating sediment samples will be analyzed for grain size and total organic carbon.
- Comment 5:** Page 2-9, Figure 2-2. Add an arrow showing the surface water flow direction (both ebb and flood, if tidal) in the Noisette Creek.
- Response 5:** Figure 2-2 has been revised to indicate the direction of surface water flow for both ebb and flood in Noisette Creek.
- Comment 6:** Page 2-10, Table 2-4. Metals should be added as a material of concern at SWMU 47.
- Response 6:** In Table 2-4, metals have been added to the SWMU 47 Materials Generated and Stored list.
- Comment 7:** Page 2-26, Section 2.5. Dust and wipe sampling for asbestos is proposed. Air sampling should also be conducted.
- Response 7:** No reference to asbestos was found on Page 2-26 or elsewhere in the work plan.
- Comment 8:** Page 3-1, Section 3.0. Explain how the determination of soil and groundwater background areas will be used "to establish reference area determinations as needed for the ecological risk assessment conducted under Zone J," since Zone J refers to the surface water bodies.
- Response 8:** The statement "... to establish reference area determinations as needed for the ecological risk assessment conducted under Zone J." should and has been revised to read "...to establish reference area determinations as needed for both the Zone C and Final NAVBASE BRAs."
- Comment 9:** Appendix D.
- a) Add General Radioactive Material (G-RAM).

- b) A brief explanation of the Naturally Occurring Radioactive Materials (NORM), (sources, concentrations, and uses of materials containing NORM) and resulting problems in determining background concentrations would be very helpful.

**Response 9:** Appendix D has been deleted from the work plan.

**Comment 10:** Appendix E. This section is missing.

**Response 10:** Appendix E has been deleted from the work plan. A copy of all the MSDSs are present at the field trailer for all field personnel.