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CNC CHARLESTON
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RESPONSE TO SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL
CONTROL RESOURCE CONSERVATION AND RECOVERY ACT FACILITY INVESTIGATION
DRAFT FINAL WORK PLAN CNC CHARLESTON
2/24/1995
ENSAFE/ ALLEN AND HOSHALL

**RESPONSE TO COMMENTS
FROM SCDHEC**

ON THE

ZONE I DRAFT FINAL WORK PLAN

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

Contract Number: N62467-89-D-0318

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February 24, 1995

GENERAL COMMENTS

Comment 1: A list of acronyms should be included in the front of the workplan.

Response 1: The list of acronyms will be included in the Final Work Plan.

Comment 2: Shipyard Creek is referred to as "Shipyard River" in the Zone I RFI Workplan. This should be corrected to state Shipyard Creek in the revised version of the workplan.

Response 2: The U.S. Army Corps of Engineers has stated that the correct identification is Shipyard River; however, for consistency the Zone I Work Plan will be revised to identify it as Shipyard Creek.

Comment 3: The workplan consistently proposes to analyze samples collected around SWMUs and AOCs for an expansive list of constituents, including pesticides, cyanide, and PCBs. However, the workplan does not justify how the proposed list of analytes was determined. The analyses to be conducted should be dependent upon the waste constituents that were managed or that were potentially managed at a SWMU or AOC. For SWMUs or AOCs for which information is limited, and/or into which a variety of waste constituents may have been disposed (SWMU 9, the Old Landfill is a classic example), an extensive list of analytes should be analyzed for. The workplan should be revised to include an explanation that the constituents proposed for analyses are justified, given the information about the particular SWMU or AOC.

Response 3: The expansive list of analytes (full spectrum) was included at the 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.

Comment 4: The workplan contains sections that this reviewer does not believe are necessary. For example, throughout the workplan, many of the sections titled Treatment Alternatives, Potential Receptors, Objectives, and Screening Alternatives contain the same language. The value of including the same wording in these sections in more than one location in the

workplan appears limited. If other reviewers find the information in these sections useful, then it should remain in the workplan. However, it appears redundant to include the same information in each section describing the assessment of a SWMU or AOC. If possible, the information included in these sections should be stated once in the workplan.

Response 4: This information was requested by USEPA and follows the format in the approved Zone H RFI Work Plan dated October 27, 1994. Therefore, no changes to the document are planned as a result of this comment. However, future work plans will incorporate this recommendation for consolidation of information.

Comment 5: Dioxins have been detected in sediment samples collected on the southern tip of the base. However, the workplan does not propose the collection of any samples for analysis of dioxins. Since dioxin is potentially a constituent of concern in Zone I, the workplan should be revised to propose analyses for dioxins in appropriate samples. The workplan should be revised accordingly.

Response 5: As stated on Page 2-56, Table 2.20, in the Notes section states, "...with a minimum of 10 percent duplicates analyzed for all Appendix IX constituents at DQO Level IV." The full Appendix IX list includes dioxins.

However, for additional verification/confirmation analyses for dioxins and dibenzofurans will be added to the standard sediment analyses list in Table 2.20.

Comment 6: The heading "Material of Concern" included in the tables in the workplan describing the SWMUs and AOCs (such as Table 2.1, Table 2.3, etc.) should be changed to "Waste Characteristics". In this way, the workplan will not only be more consistent with the RFA Reports, but also will include more useful information that can be used in review of the workplan.

Response 6: 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 that is 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 7: Major sections of chapter 2.0 (SWMU and AOC-Specific Investigatory Approach) should begin at the top of a page. Currently, it is sometimes difficult to locate the beginning of such a section since it may begin anywhere on a page. For example, see Section 2.3 (AOC 675 - Fuel Oil Storage Tank NS-4; AOC 676 - Former Incinerator; and AOC 677 - Grounds of Building NS-2), which begins at the bottom of page 2-12, is difficult to locate. This should be corrected in the revised workplan.

Response 7: The work plan will be revised to start each subsection within Section 2.0 (i.e. 2.1, 2.2, 2.3, etc.) at the top of a page.

Comment 8: Adequate justification for the types of samples to be collected (such as soil, groundwater, sediment), the number of samples and locations is not provided in the workplan. The Department has commented on this issue in a previous review of an RFI Workplan (see comment 12 in Bowers to Walton, dated 8/9/94, which was transmitted to NAVBASE in Brittain to Dearheart, dated 9/9/94). The Department will not approve this RFI Workplan until adequate justification is provided, as described in comment 12 of Bowers to Walton, dated 8/9/94. The workplan should be revised accordingly.

Response 8: The justification for types and number of samples will be added to the Sampling and Analysis section of each of the SWMU and AOC subsections.

Comment 9: The following sentence appears in the Radiological Potential sections of the workplan: "Personnel frisking and equipment decontamination will be addressed the Site-specific Health and Safety Plan." However, if personnel frisking or other site-specific measures are necessary to protect field personnel, then this should be detailed in the Zone I Health and Safety Plan (Section 4.0 of this workplan.) Section 4.0 of this workplan should be revised to include such measures.

Response 9: Health and safety measures for personnel relating to radiological hazards are detailed discussed in the Zone Health and Safety Plan. The radiation protection program appendix has been removed from the document at the request of the Navy. The Navy will be performing radiation screening surveys to clear areas prior to sampling.

Comment 10: The sentence "Data obtained from a nearby proposed Zone I well pair will also be incorporated into this AOC's assessment." is used throughout the workplan when describing proposed sampling. However, this sentence is misleading, since it implies that the wells installed near a SWMU or AOC are not located in Zone I. The workplan should be revised to clarify this point.

Response 10: The text clearly states that the proposed well pair will be from Zone I...."data obtained from a nearby proposed **Zone I well pair**..." However, the text has been revised to state..."Data obtained from Zone I well pairs located near SWMUs and/or AOCs will be incorporated into their assessments as appropriate."

Comment 11: In several locations in the workplan, the use of a grid-based well pair is proposed in the assessment of a nearby SWMU or AOC. It is acknowledged that a nearby grid-based well pair could potentially be useful in the assessment of a SWMU or AOC. However, in order for the well pair to be used in this manner, not only must the well pair be located close to the SWMU or AOC, but also hydraulically downgradient. The workplan should be revised to indicate that data from a nearby grid-based well pair will be used to assess a SWMU or AOC if it is determined that the well pair is properly located for such a purpose.

Response 11: A grid-based well pair that is hydraulically upgradient of the SWMU or AOC could also be used to determined contribution from other sites and/or background/non-impacted results for comparison purposes. As a result, no change to the work plan has been made as a result of this comment.

Comment 12: The last sentence in several Sampling and Analysis Plan sections of the workplan states "All sampling will adhere to the NAVBASE Final Comprehensive RFI Work Plan, unless otherwise stated." If the sampling proposed in this workplan were to deviate from the Comprehensive Workplan, then this is the appropriate location for stating such. If the sampling procedures of the Zone I RFI Workplan will follow the Comprehensive Workplan, then the phrase "unless otherwise stated" should be deleted from the workplan. The workplan should be revised accordingly.

Response 12: The statement, "... unless otherwise stated" has been deleted throughout the document.

Specific Comments

AOC 671 - Metering House, Former Building 3905G and Surrounding Aviation Gasoline Compound

Comment 13: Table 2.1 (AOC 671 Site Description) notes that "Aviation gasoline" is the Material of Concern at this AOC. This description is vague and provides limited information regarding the possible constituents at this site. The Draft-Final RCRA Facility Assessment, dated November 22, 1994 describes the constituents of concern at this AOC as "BTEX, PAH's, heavy metals and petroleum hydrocarbons." The table should be revised to be consistent with the RFA Report.

Response 13: Table 2.1 has been revised to list VOCs (including BTEX), heavy metals, and petroleum hydrocarbons (including PAHs) as the materials of concern.

Comment 14: According to RFA Report Volume II (dated 11/22/94), two Underground Storage Tanks (USTs) were removed from the vicinity of this AOC. Data generated during removal of the USTs (such as analytical results from soil samples, organic Vapor Analyzer readings, etc.) should be incorporated into the workplan.

Response 14: The RFA, dated November 22, 1994, clearly states... "No information was found to indicate that any investigations or remedial actions were conducted at the former UST sites." Again, in Section 5.144.4, Evidence of Release,... "However, no information was found indicating whether any investigations or remedial actions were conducted at the former UST sites." As a result, no data are available to incorporate into the work plan.

AOC 72 - Building 126 Substation and AOC 673 - Building 169 Paint and Oil Storage

Comment 15: The workplan does not justify the proposed location of the monitoring well pair to be used in the assessment of these AOCs. This issue has been commented on previously by the Department (see the author's review of the Draft Zone H RFI Workplan, Bowers to Walton, dated 8/9/94). The workplan should be revised to include this justification.

Response 15: The justification for incorporation of the grid-based well pair will be included in Section 2.2.7, Sampling and Analysis Plan.

Comment 16: Section 2.2.7 (Sampling and Analysis Plan) notes that four shallow borings will be installed around AOC 672 while six shallow borings will be installed around AOC 673. However, in Table 2.4 (AOC 672 and 673 Sampling Plan) it is noted that 10 soil samples from zero to one foot below ground surface (bgs) and six soil samples from three to five feet bgs will be collected. However, neither the text of the workplan nor Figure 2-2 (AOC #672 & AOC #673 Proposed Sampling Locations) differentiates where only shallow soil samples will be collected and where deeper (3 to 5 feet bgs) soil samples will be collected. The workplan should be revised to address this discrepancy, and to justify the proposed sampling scheme.

Response 16: The text in Section 2.2.7 will be revised to indicate that only shallow samples will be collected from AOC 672. This is due to the possible presence of PCBs in soils in the vicinity of the substation.

Comment 17: The Draft-Final RCRA Facility Assessment Report (dated 11/22/94) notes that AOC 673 (Paint and Oil Storehouse, Building 169) is located on the site of two 25,000 gallon gasoline Underground Storage Tanks (USTs). However, the Zone I RFI Workplan does not mention this. The Department acknowledges that assessment of USTs located at NAVBASE will be managed by the Department's Ground Water Protection Division (GWPD) separately from the RFI. However, the USTs located at this site are relevant to the proposed investigation, and should be noted in the workplan. The workplan should be revised accordingly.

Response 17: The text in Section 2.2 has been revised to be consistent with the November 22, 1994, RFA by mentioning the presence of the two 25,000-gallon USTs.

AOC 675 - Fuel Oil Storage Tank NS 4, AOC 676 - Former Incinerator, and AOC 677 - Grounds of Building NS-2

Comment 18: The description of the area of these three AOCs notes several items of interest, including an oil/water separator, utility conduits, a storm drain, and additional USTs. However, none of these features are shown on Figure 2-3 (AOC #675, AOC #676 and AOC #677 Proposed Sampling Locations). These features should be added to this figure since they are pertinent to the assessment of this area. Sampling will be necessary around these features in order to properly assess this site.

Response 18: The Zone I work plan has been revised to clearly state that the storm drains, utility conduits, and oil/water separators will be addressed in the Zone L Work Plan. The locations of these features were considered and

technical justification for sample locations has been included in the revised plan for clarification. The electrical conduit features have not been included on Figure 2-3. The locations of the oil/water separator, the tanks, and the spill areas have been added to the legend for clarification.

Comment 19: According to the RFI Workplan, a number of spills have occurred on the grounds of Building NS-2 since at least 1977. However, the RFI Workplan does not indicate the locations of these spills. If the precise locations of the spills are not known, then the approximate locations should be indicated in the revised workplan. Soil samples should be collected from the areas of the suspected spill locations. The workplan should be revised accordingly.

Response 19: Figure 2-3 has been revised to include the approximate locations of spills in the area of AOCs 675, 676, and 677. However, the bulk of the soil sample locations were selected due to the history of AOC 676, the former incinerator, and the text has been revised to include justifications for the sample locations.

Comment 20: There is no justification in the workplan for the locations and number of the proposed monitoring wells to be installed at these AOCs. The workplan should be revised to clarify this, and to clarify why the monitoring wells are concentrated around AOC 675. The workplan should be revised accordingly.

Response 20: The text has been revised to include a technical justification for each of the monitoring well locations.

Comment 21: The workplan is unclear from which proposed sampling locations soil sampling will be collected (see Figure 2-3 AOC #675, AOC #676 and AOC #677 Proposed Sampling Locations). According to Figure 2-3, there are eight locations from which soil samples will be collected. If two soil samples are collected from each of these locations, this would mean a total of 16 soil samples will be collected. However, according to Table 2.6 (AOC 675, AOC 676, and AOC 677 Sampling Plan), a total of 26 soil samples will be collected in this area (13 shallow soil samples and 13 deeper soil samples). The workplan should be revised to clarify the number, locations, and depths from which samples will be collected.

Response 21: Figure 2-3 depicts eight soil boring locations and five shallow monitoring well locations. The text in Section 2.3.7 has been revised to state that soil samples will be collected from the boring locations as well as the monitoring well locations totaling 13 samples per depth, consistent with Table 2.6.

AOC 678 - Firefighter School, Former Building 2-V and AOC 679 - Former Wash Rack

Comment 22: A grid-based sampling scheme is proposed for the collection of soil samples over the area of these AOCs. However, the workplan does not include a discussion as to how the grid spacing, and therefore the number of soil samples were determined. The workplan should be revised to clarify why a grid-based approach was chosen over a biased approach at this AOC, to justify the size of the grid, and the number of soil sampling points. This workplan should be revised accordingly.

Response 22: Section 2.4.7, Sampling and Analysis Plan will be revised to provide justification for the sampling grid, grid spacing, and monitoring well placement.

Comment 23: The workplan does not include justification for the locations of the proposed monitoring wells. The justification should be included in the revised workplan.

Response 23: Please refer to Response 22.

AOC 680 - Brake Repair and Welding Area, Northeast Side of Building NS-26

Comment 24: Figure 2-6 (AOC #681 Proposed Sampling Locations) is not to scale. The revised workplan must include a scaled figure.

Response 24: Figure 2-6 will be revised to include a scale.

Comment 25: It is unclear in the text of the workplan and in the figures exactly where the outside hopper is located for this AOC. The figures should be revised to clearly indicate the location of the outside hopper.

Response 25: The outside hopper is encompassed by borings on the immediate outside of Building 681; however, it will be noted on the figure for clarification.

AOC 685 - Former Smoke Drum

Comment 26: The workplan proposes to use a grid-based monitoring well pair that will be located approximately 250 feet north of AOC 685 to aid in determining if groundwater has been impacted at this AOC. However, a discussion is not included in the workplan regarding the potential groundwater flow direction in the vicinity of AOC 685. Until the groundwater flow direction is determined there, the value of using this proposed well pair

to decide if groundwater has been impacted is limited. The workplan should be revised to acknowledge this limitation, and to propose measures to address it, if necessary.

Response 26: The text will be revised to state that the suspected groundwater flow direction is east toward the Cooper River. As stated earlier, the well pair north of AOC 685 may or may not provide useful information in the evaluation of this site. The text will be revised to clarify that if contamination is detected, that additional soil samples/monitoring wells may need to be installed.

AOC 687 - Building X-55 Ammunition Storage Bunker and SWMU 16 - Paint Storage Bunker

Comment 27: The workplan discusses the fact that spilled paint was observed on the earth-covered roof of Building X-55, however, the exact location of this area was not identified or shown on Figure 2-8 (SWMU #16 & AOC #687 Proposed Sampling Locations). This area should be sampled. The workplan should be revised to indicate this area and to clarify the number of samples that will be collected there.

Response 27: The exact location of the spill is not known and therefore cannot be depicted. In addition, the area has been sufficiently covered with samples (six) to detect any contaminants that may still be present.

Comment 28: The workplan does not include a discussion of the expected groundwater flow direction at this SWMU and AOC, therefore the locations of the four proposed monitoring wells cannot be evaluated. If after installation of these wells it is determined that they are not properly located to detect a potential release from this SWMU and AOC, then the installation of additional wells will be necessary.

Response 28: The text will be revised to state that the suspected groundwater flow direction is east toward the Cooper River. In addition, a justification for the monitoring well locations will also be added to Section 2.8.7, Sampling and Analysis Plan.

AOC 688 - Building X-56 Ammunition Storage Bunker

Comment 29: The workplan proposes the collection of two sediment samples from the vicinity of this AOC, but the workplan does not state why sediment samples will be collected as opposed to soil samples. They type, number, and depths of all samples collected should be justified in the workplan. In this section (2.9), the workplan should specifically discuss why

sediment samples are appropriate over soil samples.

Response 29: The text will be revised in Section 2.9.7, Sampling and Analysis Plan to provide justification for sediment sampling only.

Comment 30: The workplan proposes to utilize "All usable data obtained from the proposed nearby Zone I well pair" in the assessment of this AOC. As noted previously in this review, the data from such a well pair may or may not be appropriate for use in the assessment of this AOC since the groundwater flow direction is not discussed in the workplan. Therefore, the proposed well pair may not be located appropriately to properly assess this AOC. The workplan should be revised to acknowledge this limitation.

It appears that Figures 2-10 (SWMU #12 Old Firefighter Training Area) and 2-11 (AOC #690 Dredged Materials Area Road Southern Tip of Base) have been switched. Apparently, Figure 2-11 should be included in section 2.10 (AOC 689 - Southern Tip of Base (Marina Parking Area) and AOC 690 - Dredged Materials Area Roads) of the RFI Workplan, while Figure 2-10 should be included in section 2.11 (SWMU 12 - Old Firefighter Training Area). The comments generated below on sections 2.10 and 2.11 are based on this assumption.

Response 30: Please refer to Response 26. Figures 2-10 and 2-11 will be reversed as suggested.

AOC 689 - Southern Tip of Base (Marina Parking Area) and AOC 690 - Dredged Materials Area Roads

Comment 31: Section 2.10.1 (Previous Investigations) notes that Appendix D of the workplan includes analytical results of sediment samples that were collected on the southern end of the base. However, Appendix D does not include such data. The data should be included in the revised workplan.

Response 31: The revised work plan will contain the previous investigation of the sediment sampling performed at the southern end of the base as Appendix D.

Comment 32: The Volume II RFA Report (dated 11/22/94) describes AOC 690 (Dredged Materials Road) as the network of roadways around the southern end of the base, including West Road, Lunsford Loop, and part of Juneau Avenue. Figure 5-160 (AOC #690 Dredged Materials Road) included in the RFA Report shows the locations of these roads. However, according to Figure 2-11 (AOC #690 Dredged Materials Area Road, Southern Tip

of Base), only a portion of the roads are to be sampled. The workplan should be revised to propose sampling over the entire AOC, or to include justification for limiting the sampling to the area proposed.

Response 32: The portion of the roadways shown in Figure 2-11 are accurate for the Zone I investigation. The remainder of the roadways shown on Figure 5-160 of the RFA are located within Zone H and are scheduled to be sampled as part of Phase II of that investigation. Between Zones H and I, all roadway depicted in Figure 5-160 will be sampled. As a result, no changes to the Zone I work plan will be made.

Comment 33: Figure 2-11 (AOC #690 Dredged Materials Area Road, Southern Tip of Base) includes a symbol for surface water samples. However, the workplan does not propose the collection of surface water samples. Either the workplan should be revised to include the collection of surface water samples, or this symbol should be deleted from Figure 2-11.

Response 33: Surface water sampling is included in the Zone J work plan. Figure 2-11 will be revised to delete the surface water sample symbol.

Comment 34: Table 3.20 (AOCs 689 and 690 Sampling Plan) notes that six shallow and six deep groundwater monitoring wells are proposed to investigate these AOCS. However, only five well pairs are shown in Figure 2-11 (AOC #690 Dredged Materials Area Road, Southern Tip of Base). The workplan should be revised to indicate the location of the sixth well pair.

Response 34: The text and Table 2.20 will be revised to include the correct number of well pairs (5).

**RESPONSE TO COMMENTS
FROM**

**U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA), 1994
RESOURCE CONSERVATION AND RECOVERY ACT (RCRA)
FACILITY INVESTIGATION (RFI), ZONE I**

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

Contract Number: N62467-89-D-0318

**Prepared by:
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February 24, 1995

**U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA) COMMENTS, 1994
RESOURCE CONSERVATION AND RECOVERY ACT (RCRA)
FACILITY INVESTIGATION (RFI), ZONE I**

GENERAL COMMENTS

- Comment 1:
- a.) More information should be presented on the hydrogeology in the area of Zone I. The regional/hydrogeologic description in the RFI Work Plan is inadequate and does not include a local description. The discussion should include depths and thicknesses of formations, 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 ground water flow should be included. The Comprehensive Sampling and Analysis Plan states that ground water in the surficial aquifer flow to the north-northeast into the Cooper River and south-southeast into Shipyard Creek. The potentiometric surface map should indicate approximately the local ground water flow directions and ground water divides.
 - 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 site specific SALs, the soil/water partitioning coefficient (K_d) should be calculated for several soil samples representing each contaminated soil type. K_d values may be determined using a leachate procedure in conjunction with a dilution/attenuation factor obtained from modeling efforts to determine appropriate SALs. The approach use to determine K_d s and the model selected for calculating SALs should be proposed and submitted to EPA and SCDHEC for review.
 - c.) In reference to the contaminant background issues, background levels for the various soil types and fill areas should be determined as discussed in EPA's comments for Zone C being submitted at this same time but in a separate letter.
 - d.) The approximate depth that the ground water monitoring wells will penetrate should be indicated in the "sampling plan" tables.
 - e.) Throughout the document, a number of "Objectives" sections for the AOCs and SWMUs state 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 already 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 1:
- a.) The hydrogeologic information is included in the Comprehensive RFI Work Plan. The Comprehensive Plans were approved as of August 30, 1994.
 - b.) 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.
 - c.) Please refer to Response B. 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.
 - d.) Generally speaking shallow groundwater monitoring wells are being installed to a depth of 15 feet below ground surface. The terminating depth for deep groundwater monitoring wells varies based on the top of the Cooper Marl. Currently data are too limited to predict the depth. Well screening will be determined on a site-specific basis in the field and depth therefore has not been incorporated into the sampling tables.
 - e.) The text has been revised as requested within each subsection.

Comment 2: Page 1-1 and globally, the name Shipyard River is used. 10/01/92 - 03/31/93 documents, this water body was called Shipyard Creek. To change the way this water body is referred to at this point in time would cause needless confusion. Shipyard Creek is recommended.

Response 2: The work plan has been revised to be consistent and is referred to as Shipyard Creek throughout.

Comment 3: Page 2-1 and globally. The first time that an abbreviation is used, it needs to be identified, e.g., the CSI at AOC 671.

Response 3: The work plan has been revised to include a list of acronyms. In addition, the first time an abbreviation is used in the document it is spelled out for the reader.

Comment 4: Page 2-1 and globally. No mention is made of sampling for dioxins throughout Zone I, as agreed upon during the Scoping Meeting. Systematic dioxin sampling needs to be included throughout Zone I.

- Response 4: The work plan has been revised to include dioxin sampling at the southern tip of the base.
- Comment 5: Page 2-3 and globally. Reference is made to the objectives (plural) of the RFI but only one (singular) objective is stated. The correct verb tense should be used.
- Response 5: The work plan has been revised as requested.
- Comment 6: Page 2-6 and globally. The statement is made that "While there is a low potential, the site cannot be totally excluded until survey data can be established." The meaning and intent of this statement is not clear.
- Response 6: The work plan has been revised to clarify the meaning of the above referenced statement.
- Comment 7: For Areas of Concern (AOCs) and Solid Waste Management Units (SWMUs) having vegetated areas, e.g. AOC 685 and SWMU 12 (Page 2-35, Section 2.7.4; and Page 2-58, Section 2.11.4), potential receptors need to be identified.
- Response 7: 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 8: Previous health effects related comments of a general nature submitted on the Zone H RFI Work Plan were not addressed in the Zone I RFI Work Plan.
- Response 8: 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 into the Zone I Work Plan.
- Comment 9: For each SWMU and AOC, there is discussion regarding the relationship between the biased sampling plan for the SWMU/AOC and the systematic grid-based zone-wide sampling plan. These discussions greatly improve this document.
- Response 9: Comment noted. Thank you.
- Comment 10: 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 10: 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 11: 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 document.

Response 11: Please refer to Response 10.

SPECIFIC COMMENTS

Comment 1: Page 1-7. The statement is made that "An offsite representative dredged materials area will be investigated to determine background concentrations for some chemicals relevant to the Zone I Work Plan will be conducted as part of the Final Comprehensive RFI Work Plan." This is totally unacceptable; EPA is concerned that this proposal would even be made. The anthropogenic contribution to contamination will be determined based on comparison to naturally occurring environmental constituents (i.e., naturally occurring background) rather than to another anthropogenic contaminated area (i.e., anthropogenic background).

Response 1: This approach has been approved in the Comprehensive RFI Work Plans dated August 30, 1994.

Comment 2: AOC 671. The two wells in the north and northeast corner of the site should be moved closer to the UST so that they are located adjacent to, and directly downgradient of, the USTs.

Response 2: The grid-based well pair has been relocated as requested. Please refer to Figure 2-1.

Comment 3: AOC 672.

a. Soil needs to be identified as a medium to be established at AOC 672.

b. Given that the transformer at the substation was reported to have a moderate leak in 1981, the soil boring proposed in the area should be collected at the 0-1 foot interval and the 3-5 foot interval.

Response 3: a. Table 2.3 has been revised to include soil as a medium for

sampling.

- b. Table 2.4 has been revised to include the 3-5 foot soil interval for samples around the former transformer leak.

Comment 4: AOC 673. The materials of concern include paint, oil, and solvents. Based on the type of contaminants used at the site, a shallow and deep monitoring well should be installed downgradient of Building 169.

The proposed shallow/deep monitoring wells that serve to evaluate zone perimeter ground water quality are in close proximity to the AOCs. The location of these wells should be moved approximately 40 feet southeast to optimize the usefulness of this well by providing downgradient water quality data of the site ground water.

Response 4: The grid-based well pair (shallow and deep) has been relocated as requested. Please refer to Figure 2-2.

Comment 5: AOC 675, 676, and 677.

- a. Table 2.5 states that several petroleum spills have occurred since 1977. An additional monitoring well should be installed in the northeast corner of the site to determine if BTEX compounds are present downgradient of Building NS-2.
- b. Page 2-12 states that a storm water drain exists on the site. No sediment samples are proposed for the site. A sediment samples should be collected in the area of the storm water drain.
- c. Page 2-12 states that the abandoned USTs are located near NS-3. Are the locations of these USTs known? If so, they should be plotted on Figure 2-3.

Response 5: a. There is a shallow monitoring well directly downgradient of NS2, the former USTs, and the spill sites. Please refer to revised Figure 2-3.

b. An attempt to collect a sediment sample from the storm drain has been added. Please refer to revised Table 2.6.

c. Figure 2-3 has been revised as requested to include the locations of the former USTs.

Comment 6: Page 2-15, Section 2.3.5, Second Paragraph. It should read "...AOC 677 is to define ..."

- Response 6: The work plan has been revised as requested.
- Comment 7: Page 2-20. Table 2.7 should be moved to become the page after Page 2-18.
- Response 7: The work plan has been revised as requested.
- Comment 8: Page 2-28. Figure 2-5 should be moved to become the page after Page 2-26.
- Response 8: The work plan has been revised as requested.
- Comment 9: Page 2-29. Table 2.10 should be moved to be immediately after Figure 2-5.
- Response 9: The work plan has been revised as requested.
- Comment 10: AOC 685.
- a. Page 2-36, Section 2.7.7, and Page 2-37, Figure 2-7 show a ditch present at AOC 685. If contamination is found, sampling needs to be extended into the ditch.
 - b. The proposed shallow/deep monitoring wells that serve to evaluate ground water quality for the zone perimeter are in close proximity to AOC 685. The location of these wells should be moved approximately 200 feet to the south to optimize the usefulness of this well by providing downgradient water quality data of the site ground water.
- Response 10:
- a. Text has been added that states if contamination is found, sampling will be extended into the ditch to define the nature and extent. Please refer to Section 2.7.7.
 - b. The grid-based well pair has been relocated as requested. Please refer to revised Figure 2-7.
- Comment 11: Page 2-41, Section 2.8.5. It should read "...SWMU 16 is to fill the ..."
- Response 11: The work plan has been revised as requested.
- Comment 12: Page 2-42, Section 2.8.7
- a. Include a description of the east drainage ditch (width, depth, nature of the bottom, flow direction, etc.). Also indicate whether

there is a pathway from this ditch to the nearby wetlands and/or Cooper River.

- b. Indicate whether the nature of the area surrounding the bunker at AOC 687 is such that terrestrial, wetlands, and aquatic biota might be potential receptors.

Response 12:

- a. The east drainage ditch is approximately 4 feet wide, 2 feet deep, the bottom is vegetated, and surface water flow direction is north. This information has been added to the work plan as requested.
- b. Section 2.8.4, Potential Receptors already states that biological receptors (i.e., terrestrial and aquatic biota) are potentially affected by AOC 687. However, text has been added for clarification.

Comment 13:

Page 2-43, Figure 2-8. Show the location and local extent of the east drainage ditch in this figure.

Response 13:

Figure 2-8 has been revised as requested.

Comment 14 is a duplication of Comment 13.

Comment 15:

Page 2-45, Table 2.17. Soil should be sampled.

Response 15:

Table 2.17 has been revised to include soil as a medium for sampling.

Comment 16:

Page 2-46 -2-47, Section 2.9.5. Sediment is not mentioned.

Response 16:

Sediment has been added as requested.

Comment 17:

Page 2-47, Section 2.9.7.

- a. As mentioned for Section 2.8.7, include a description of the east drainage ditch, and indicate whether there is a pathway from this ditch to the nearby wetlands and/or Cooper River.
- b. Indicate whether the nature of the area surrounding the bunker at AOC 688 is such that terrestrial, wetlands, and aquatic biota might be potential receptors.
- c. Why are soil samples planned for AOC 687 and SWMU 16 (Page 2-43, Figure 2-8) but not for AOC 688 and SWMU 56? Since both areas are covered ammunition storage bunkers and paint was spilled at both locations, it seems that soil sampling should be conducted at both areas.

- Response 17:
- a. The work plan has been revised as requested.
 - b. The potential receptors section has been revised as with AOC 687.
 - c. No soil samples are planned for AOC 688 and SWMU 56 because no paints and solvents were ever stored or spilled outside the concrete bunker. As stated in the work plan, paints and solvents were stored and spilled on top of the bunker at AOC 687 and SWMU 16. This accounts for the differing sampling approaches.
- Comment 18: Page 2-48, Figure 2-9. Show the location and local extent of the east drainage ditch in this figure.
- Response 18: Figure 2-9 has been revised as requested.
- Comment 19: Page 2-49, Table 2.18. Soil sampling is not mentioned.
- Response 19: Table 2.18 does not list soil sampling because no soil sampling is proposed only sediment sampling from the nearby drainage ditch.
- Comment 20: AOC 688. No soil samples are proposed for this AOC. Based on past activities at the site, soil samples should be collected in a similar fashion as is proposed for AOC 687.
- Response 20: Please refer to Response 17c. As a result, no soil samples have been added to the work plan.
- Comment 21: Page 2-51, Table 2.19. For AOC 689, construction debris is not the material of concern; of concern are the unknown materials.
- Response 21: Construction debris has been deleted from Table 2.19.
- Comment 22: Page 2-54, Section 2.10.7. Figures 2-10 and 2-11 are scrambled and incomplete. Figure 2-10 is for SWMU 12. Figure 2-11 is for AOC 690. AOC 689 is missing from Figure 2-10; the exact location of the fire training pit or the construction laydown yard should be indicated on the figure. Also, one of the wells should be moved to the center of the 4-foot diameter oil spill.
- Response 22: The work plan has been revised and reordered as requested.
- Comment 23: Page 2-56, Table 2.20. Figure 2-11, Page 2-62 should be moved before this table.
- Response 23: The work plan has been revised as requested.

Comment 24: Page 2-57, Table 2.21. Coal ash needs to be added as a material of concern.

Response 24: Coal ash has been added as a material of concern as requested.

Comment 25: Page 2-58, Section 2.11.4. Where is the laydown area with respect to SWMU 12?

Response 25: See Response 17.

Comment 26: Page 2-60. The Figure and Table for SWMU 12 should be moved to the bottom of this page.

Response 26: The work plan has been revised as requested.

Comment 27: Chapter 3, Systematic (Grid Based) Sampling Plan. Only surface water/sediment samples are proposed for the dredged material area. Ground water and soil samples are proposed for the periphery of the dredged material area, but no samples are proposed for the interior of the site. The text states that the sampling proposed will not adequately characterize background nor adequately characterize the dredge material. Ground water and soil samples should be collected at the interior of the site as part of the grid-based sampling plan. These data are necessary to adequately characterize the dredge material and the ground water associated with it.

Response 27: Please refer to Section 1.0 for a description and characterization of the dredged materials area. Soil samples are already proposed for the interior of the site as part of the grid based sampling plan. Please refer to Figure 3-2 of the work plan. The text states that these samples will adequately characterize background.

Comment 28: Page 3-1.

- a. The statement is made that the data collected for the dredged material area will provide baseline data for calculating risk at other NAVBASE areas filled by dredge materials. The data obtained from the Zone I dredge material should not be used for a baseline data set for other NAVBASE fill areas for the following reasons. Each fill area was deposited during different times over a 50 year span. One fill area was deposited during the 1920s, another during the 1930s, one area from the 1930s to the 1970s, and the material at Zone I was deposited during the late 1940s. It is likely that each fill area originated from unique locations and unique conditions in the Cooper River resulting in different sediment/soil types for each area. Also, given that some fill material was

dredged 50 years previous to other fill areas, the river sediment during the earlier period may have been less contaminated than sediment dredged recently. In addition, any contaminants present in the earlier fill material has had a much longer time for constituents to leach out. Therefore, EPA recommends that the Zone I dredge material data not be used as a baseline data set for other fill areas.

b. The source and nature of these dredge materials is important. A brief explanation of these materials would greatly improve this section.

Response 28: a. Please refer to Specific Response 1.

b. Please refer to Section 1.0 for the requested information.

Comment 29: Figure 3-1. The laydown area needs to be identified.

Response 29: Figure 3-1 has been revised to include the "laydown yard."

Comment 30: Pages 3-3 - 3-4, Section 3.0. One sediment sample should also be collected from the downgradient end of each of the two spillways, to check for possible contaminant migration. This should be done in addition to the planned sediment sampling in the southern drainage ditch.

Response 30: These samples will be collected as part of the Zone J investigation.

Comment 31: Page 3-4. Grid-based soil borings should also be advanced within the diked area.

Response 31: Samples are already proposed within the diked area. Please refer to Figure 3-2. These samples were referred to as sediment samples due to the fact that the diked area is under water throughout most of the year.

Comment 32: Samples should be collected from the surface water and sediment sampling at AOC 685, on the same side of Juneau Road. Presumably, the outfall of the ditch into the Cooper River will be addressed in the Base-wide Surface Water/Sediment Investigations.

Response 32: As part of the Confirmatory Sampling Investigation (CSI), samples are proposed immediately around the site. If contamination is detected, additional samples from the ditch will be proposed to define the nature and extent of contamination.

Comment 33: Page 4-1, Section 4.0.

- a. Compliance should include the HSWA Permit in addition to the regulations.
 - b. Division of the Base into investigative zones was a team, rather than an EPA, effort.
- Response 33:
- a. The HSWA Permit reference has been added as requested.
 - b. USEPA has been replaced with the base closure team as requested.
- Comment 34:
- Page 4-23. Table 4.16. Dioxins and tributyl tin need to be added as materials of concern. The material of concern is not construction debris; it is the unknown materials which were disposed of here.
- Response 34:
- Table 4.16 has been revised as requested.
- Comment 35:
- Page 4-26, Table 4.18. Add coal ash as a material of concern.
- Response 35:
- Table 4.18 has been revised as requested.
- Comment 36:
- Pages 4-28 - 4-30. The information here is scrambled.
- Response 36:
- This information has been revised for clarification.
- Comment 37:
- Appendix C.
- 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 37:
- Appendix C has been revised as requested.
- Comment 38:
- Appendix D. This section is missing.
- Response 38:
- Appendix D is included in the revised work plan.
- Comment 39:
- Appendix F. This section is missing.
- Response 39:
- Appendix F has been deleted from the revised work plan. A copy of all the MSDS are present at the office for all field personnel.